STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

SHASTA RIVER ADJUDICATION PROCEEDINGS

REPORT

On

WATER SUPPLY AND USE OF WATER

From

SHASTA RIVER AND TRIBUTARIES

SISKIYOU COUNTY

CALIFORNIA

Submitted as Evidence

July 1, 1925

Submitted by GORDON ZANDER, Hydraulic Engineer.

Approved July 1, 1925.

Edward Hyatt

Chief of Division of Water Rights

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Hydraulic Engineer to Chief of Division of Water Rights.

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STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Sacramento, California

July 1, 1925.

Chief of Division of Water Rights,
Department of Public Works,
State of California.

Dear Sir:-

The accompanying report on the Water Supply and Use of Water from Shasta River and its tributaries, in Siskiyou County, is herewith submitted for your approval.

This report has been prepared pursuant to the order entered by the Division of Water Rights on December 21, 1921, granting the petition of the Grenada Irrigation District and nineteen other water users for a determination of the relative rights, based upon prior appropriation, of the various claimants to the waters of Shasta River and its tributaries. The purpose of this report is to present the necessary engineering data upon which to base the findings in the above mentioned proceedings, which data were collected during a field investigation made under the supervision of the undersigned.

The field investigation covered the period extending from May 1, 1922 to December 15, 1922, and from April 4, 1923 to December 5, 1923, and included measurements of the water supply and of the various diversions from the stream system, a study of the duty of water

on certain typical areas, and a complete survey of all diversion systems and irrigated areas. The survey was made by planetable except in Little Shasta Valley and in portions of the Parks Creek and Yreka Creek areas, where transit and stadia were used. Advance sheets of the United States Geological Survey of the Shasta Valley Area made in 1921 and 1922 were available, and these were of material assistance in laying out the field work.

Mr. Paul Beck, Assistant Hydraulic Engineer, was in charge of the work in the field during the 1922 season, and Mr. Harrison Smitherum, Assistant Hydraulic Engineer, was in charge during the 1923 season. Mr. Fred Rider served as principal field assistant throughout the entire field investigation, and made the major portion of the planetable survey.

A set of maps has been prepared from the data collected, consisting of 199 sheets on a scale of one inch to three hundred feet and a key map on a scale of one and one half inches to one mile, and the same is herewith submitted as a part of this report.

Respectfully submitted,

Gordon Zander

Hydraulic Engineer.

REPORT

ON

WATER SUPPLY AND USE OF WATER

from

SHASTA RIVER AND TRIBUTARIES

INTRODUCTION

In pioneer days, the waters of the Shasta River Stream System were used extensively for mining purposes, and many of the water rights date back to the early fifties. A large ditch, known as the "Yreka Ditch", diverting from Shasta River at a point about three miles south of Edgewood, was constructed during the mining boom to convey water for use in mining operations in the vicinity of Hawkinsville. This ditch also diverted from practically every tributary entering the Shasta River Stream System from the west, including Parks Creek, Willow Creek, and Yreka Creek. The total length of the ditch is said to be about ninety miles. Following the abandonment of the mining operations in the vicinity of Hawkinsville, the upper portion of the ditch has been used to divert water from Shasta River, Parks Creek, and Willow Creek for use for the irrigation of a considerable area of land in the vicinity of Gazelle.

Following the mining boom of early days, agriculture gradually superceded the mining industry in importance in Shasta Valley, and the extent of the use of the waters of the Shasta River and its tributaries for irrigation has increased until there are at present over forty thousand acres of irrigated land in the valley.

Difficulties over the use of the waters of the stream system first occurred in July, 1921, when several of the lower water users on the river, possessing very old rights, complained to the Division of Water

Rights of lack of water due to diversions by permittees of the office. An investigation was made by the Division and there followed a conference with representatives of the Grenada Irrigation District, the latest appropriator on the stream and the one whose diversion was responsible for the complaint. The directors of the district agreed to operate their pumping plant in such a manner as the Division should direct, and an engineer of the Division was therefore stationed in the valley for the remainder of the 1921 irrigation season. The district's pumping plant was operated in such a manner as to allow ample water to pass down to the lower users, at the same time permitting the district to utilize such water as was available for it.

The supervision over the diversion of water from the river during the period of shortage in 1921 demonstrated to the water users the advantages of state supervision over the distribution of water. Realizing that a complete adjudication of the water rights on the stream system would be necessary as a basis for administration, twenty water users, representing over five thousand acres of irrigated land, submitted a petition requesting adjudication proceedings under the provisions of sections 25 to 36f, inclusive, of the Water Commission Act. An order granting the petition and initiating the proceedings was entered by the Division on December 21, 1921.

GENERAL DESCRIPTION OF WATERSHED

The Shasta River stream system is an important tributary of Klamath River from the south, and traverses Siskiyou County from South to North.

The drainage basin comprises an area of about 850 square miles, and is bordered on the west by a branch of the Coast Range Mountains, and on the east by the Cascade Range of mountains. Spurs of these ranges meet to form the northern rim of the basin, and the rocky gorge through which Shasta River discharges into Klamath River. The southern boundary is formed by Mount Shasta and by the pass immediately south of Weed which separates the Sacramento River and the Klamath River drainage basins.

The summit of Mount Shasta, at an altitude of 14380 feet, is the highest point on the rim of the basin, from which point the rim drops abruptly to the west to an altitude of about 3900 feet at the pass south of Weed. The altitude of the crest of the mountains bordering the basin on the west varies from about 9000 feet at the southern end to about 3000 feet at the northern end, and the altitude of the crest of the mountains bordering on the east averages about 5000 feet.

Shasta River has its source in three branches, which rise on the slopes of Mount Eddy at an altitude of about 6000 feet, and which unite to form the main stream at a point in the NW¼ Sec. 16, T. 41 N., R. 5 W., M. D. B. & M. From this point the river flows in a general northerly direction for a distance of about thirty-five miles to its confluence with Klamath River. Four main tributaries, Parks Creek, Willow Creek, Julian Creek, and Yreka Creek enter from the west, and six main tributaries, Boles Creek, Beaughan Creek, Jackson Creek, Carrick Creek, Big Springs Creek, and Little Shasta River enter from the east.

Shasta Valley comprises about fifty percent of the area of the drainage basin, and is one of the largest mountain valley areas in the State. It is approximately thirty miles long by fifteen miles wide, with the major axis running north and south, and contains an agricultural area

roughly estimated at 100,000 acres, of which about 40,000 acres are at present under irrigation. The continuity of the agricultural area is badly broken up by volcanic buttes and ridges rising from the valley floor, which vary in elevation from about twenty feet to about eight hundred feet.

The altitude of the valley floor varies from about 2900 feet near Edgewood to about 2400 feet at the extreme northern end.

CLIMATE

The climate of the Shasta River Basin is typical of the mountain plateau valleys of California, and in common with the climate throughout the State, is characterized by a wet and dry season. The wet season extends from about October 1st to about April 1st, and approximately 80 per cent of the seasonal precipitation falls during this period. The remainder of the year constitutes the dry season, during which time it is necessary to supplement the natural soil moisture with moisture applied through irrigation. Thunder storms are frequent during the summer months, which accounts for the relatively high precipitation throughout the dry season. The winters are moderately severe, the mean minimum temperatures falling below freezing during November, December, January, February, and March. The summers are warm throughout the day but cool during the night. The mean maximum temperature at Sisson ranges from 74 degrees to 80 degrees during the period from June to September and that at Montague ranges from 84 degrees to 90 degrees during the same period. The highest temperature on record at Montague is 108 degrees and the lowest is minus 10 degrees, a range of 118 degrees.

The growing season in Shasta Valley is short. From records

kept at Montague over a period of 18 years, the maximum and minimum growing seasons were 204 days and 101 days, respectively; the average season being 140 days.

Summaries of climatological records kept by the United States Weather Bureau at Montague and Sisson, and assumed to represent average conditions throughout the Shasta River Basin, are presented in Tables 1, 2, and 3, submitted at the end of this report.

SOIL

The results of a soil survey of the Shasta Valley Area made in 1919 by the United States Department of Agriculture and the University of California Experiment Station, are available in a report entitled "Soil Survey of the Shasta Valley Area" - by E. B. Watson, of the United States Department of Agriculture, in Charge, and W. E. Swank and Alfred Smith, of the University of California.

The soils of the Shasta Valley Area are classed in four groups, as follows:-

(1) Residual soils - soils formed by the weathering in place of the consolidated rocks.

(2) Soils derived from glacial material occurring as ice laid till and glacial outwash deposited by glacial streams.

(3) Soils derived from the weathering in place of the old valley filling material washed down from the surrounding hills.

(4) Recent alluvial soils - soils derived from alluvial materials washed down from the surrounding hills in times so recent that they have undergone no great change from weathering.

The above report, together with a comprehensive soil map, give a complete classification of the various types of these groups, and also the locations where each type occur. Further discussion here will therefore be confined to a broad description of each group and the location of the most extensive areas of each that are under irrigation.

Soils of Group (1) range from a loam to a clay adobe. They are underlain at shallow depths by bed rock, retain moisture only fairly well, and are of little value agriculturally. One small area near Forest House on the Scott Valley Road is under irrigation.

Soils of Group (2) have a coarse, sandy top soil; are underlain by a mass of porous sand, gravel, and boulders; and retain moisture poorly. These soils occupy the foot slopes of Mount Shasta, and only a small percentage of this area is under irrigation. Irrigated areas are located near Weed, Edgewood, and the Shasta View School, and require an excessive amount of water for the successful production of crops. These soils are of but little value agriculturally without irrigation.

Soils of Group (3) range from a gravelly loam to a clay adobe; are underlain at shallow depths by hardpan; and retain moisture poorly. In the poorly drained areas of this type of soil along Little Shasta River and Willow Creek, alkali appears in spots. Soils of this group are of important consideration in the adjudication proceedings because of the fact that extensive areas of uncultivated meadow lands of this type are irrigated. These areas are located in Little Shasta Valley and within the Willow Creek drainage area between Gazelle and Grenada, and are used exclusively for the production of meadow hay and pasturage. Poor crops of grass result without irrigation.

Soils of Group (4) range from a gravelly or sandy loam to a

clay adobe, the sandy loam predominating. The soils derived from sedimentary rocks occupy the western border of the valley and are underlain by a deep pervious subsoil; while those derived from igneous rocks are found scattered throughout the scabland region on the east and are underlain by lava bed rock at varying depths below the surface. The top soil is loose and friable and retains moisture fairly well. Large areas under irrigation are found between Gazelle and Grenada, near Mayten, and on the north side of Little Shasta Valley. Smaller areas are scattered throughout the valley. Soils of this group comprise the best and most extensively irrigated agricultural lands of the valley. The lands are readily adaptable to irrigation and from good to maximum yields are returned. Without irrigation this type of soil is of little value.

In general, the soils of Shasta Valley which are under irrigation may be classed as sandy loam, underlain in part by a deep loose subsoil, and in part by an impervious hardpan or bedrock, both of which have a tendency to lower the water retaining capacity of the soil. The lands are readily adaptable to irrigation and the soils very fertile. With irrigation, good to maximum yields are returned, but without irrigation the lands have but little value.

CROPS

Due to the shortness of the growing season, agriculture on a commercial basis is limited to the growing of the hardier grains and forage crops. Alfalfa and meadow hay are the principle irrigated crops. In the case of alfalfa, three cuttings, with an average yield of 1 to $1\frac{1}{2}$ tons per acre per cutting, are harvested; and a fourth crop is pastured.

The meadow grasses produce one crop of hay and pasturage throughout the remainder of the season. The greater portion of these products are used locally in the dairying and live stock industries. A small amount of alfalfa hay is shipped out of the valley. Small irrigated orchards and truck gardens, usually found on each ranch, produce a variety of fruits and vegetables for home use, but are of little importance commercially.

RUN-OFF RECORDS

In connection with the investigation of the water supply of the Shasta River Stream System, records of stream flow were secured by the Division of Water Rights on Shasta River and tributaries during the periods from May to December 1922, and from April to December 1923. For this purpose six stream flow measuring stations were established on Shasta River; two each on Parks Creek, Boles Creek, and Little Shasta River; and one on Big Spring Creek. On Beaughan, Jackson, and Carrick Creeks the normal flow of each stream was determined by the summation of the discharges of miscellaneous springs tributary to their respective watersheds. Miscellaneous measurements were secured on Willow and Yreka Creeks.

In general the stations on Shasta River were located below the confluence of each of the important tributaries, while wherever practicable those on the tributaries were located one above and one below all diversions from the stream. This arrangement of stations was planned having in view the study of water supply and corelated problems over the stream system as a whole, on each of the tributaries, and in each of the five areas into which the valley is naturally divided from the standpoint of water supply problems, namely, Shasta River above Big Spring Creek; the

Big Springs Area; Shasta River below Big Spring Creek; Little Shasta River; and Yreka Creek and tributaries.

Each station was equipped with a staff gage, and these gages were read at frequent intervals by unpaid observers. The engineer in charge of the field investigation also read the various gages at frequent intervals. Sufficient current meter measurements were made at each station to construct a rating curve for the same, and the records of gage heights for the various stations were applied to the respective rating curves to determine the corresponding discharges.

In addition to the stations established by the Division of Water Rights, the Water Resources Branch of the United States Geological Survey maintains an important stream flow measuring station on the Shasta River near Montague. Prior to June 26, 1923 this station was equipped with a staff gage, read daily by a paid observer. Subsequent to the above date, the record of daily gage heights has been obtained by a continuous water stage recorder, installed at the station by the Division of Water Rights in cooperation with the Water Resources Branch of the United State Geological Survey.

Descriptions of the stream flow measuring stations, and of the records secured on each stream, follow. Beginning with the Shasta River, the several stations on that stream are given in the order of their locations, starting with the uppermost. The tributaries are then treated in the order in which they enter the Shasta River, starting with the uppermost.

Shasta River.

The uppermost station on Shasta River (Gage 10) was located below the junction of Eddy Creek, in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 9, T 41 N, R 5 W (see map

sheet 5). Water is diverted above the station for irrigation. Records are available for the periods May 8 to August 12, 1922 and April 1 to October 24, 1923, (see Tables 4 and 5). Hydrographs plotted from the records contained in these tables are shown on Plates I and II.

The second station on Shasta River (Gage 19) was located below the junction of Boles Creek, in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 33 T 42 N, R 5 W (see map sheet 10). Records are available for the periods May 12 to November 11, 1922, and April 6 to October 8, 1923 (see Tables 6 and 7). Hydrographs plotted from the records contained in these tables are shown on Plates III and IV.

The third station on Shasta River (Gage 1) was located one mile below Edgewood, in the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 20, T 42 N, R 5 W (see map sheet 73). Beaughan and Jackson creeks enter the river above the station. During 1921 and 1922 the station was maintained in cooperation with W. D. Duke in connection with the investigation of Duke's Reservoir Project. Records are available for the periods December 20, 1921 to August 10, 1922 and April 6 to September 30, 1923 (see Tables 8 and 9). Hydrographs plotted from the records contained in these tables are shown on Plates V and VI.

The fourth gage on Shasta River (Gage 16) was located one half mile below the confluence of Parks Creek and one fourth mile above Big Spring Creek, in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 9, T 43 N, R 5 W (see map sheet 87). Records are available for the periods May 10 to December 13, 1922, and April 5 to December 5, 1923 (see Tables 10 and 11). Hydrographs plotted from the records contained in these tables are shown on Plates VII and VIII.

The fifth station on Shasta River (Gage 12) was located two and one half miles below the confluence of Big Spring Creek, in the NW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 6, T 43 N, R 5 W (see map sheet 111). In connection with this station

measuring stations were also maintained on the Grenada Irrigation District 1st lift pump discharge (*Gage 39) and on the Edson-Foulke Grenada Ditch (*Gage 23). Records are available for the periods May 30 to October 1, 1922, and April 8 to September 28, 1923, as follows:

(1) Daily discharge of the Shasta River at Gage 12 (see Tables 12 and 13).

(2) Daily discharge of Shasta River below Big Spring Creek, being the summation of the daily discharges at Gages 12, 39, and 23 (see Tables 14 and 15).

Hydrographs plotted from the records contained in the above tables are shown on Plates IX to XII, inclusive.

The sixth station on the Shasta River is the measuring station maintained by the Water Resources Branch of the United States Geological Survey. The gage is located at the highway bridge near Montague, in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 33, T 45 N, R 6 W (see map sheet 129). Little Shasta River enters about one mile above this station, and Yreka Creek enters about six miles below it. Water is diverted above the station for irrigation between about April 1 and about October 1 of each year. During July, August, and part of September, the flow passing the station is mainly return flow from irrigation. Records are available for the periods August 24, 1911 to September 30, 1913, and September 20, 1916 to September 30, 1924 (see Tables 16 to 25, inclusive). Hydrographs plotted from the records contained in these tables are given on Plates XIII to XXIV, inclusive.

The seventh and lowest station on the Shasta River (Gage 26) was located one quarter of a mile above the junction of Yreka Creek, in the

*The results of measurements secured at Gages 39 and 23 are shown on Tables 63 and 64, and 65 and 66, respectively.

southwest corner of Sec.6, T45 N, R 6 W (see map sheet 197). The station is located below all diversions for irrigation purposes. During July, August, and the early part of September the greater part of the flow passing the station is return water from irrigation above. Records of the daily discharge for the period May 23 to December 12, 1922, and of miscellaneous measurements made during 1923, are available (see Tables 26 and 27). A hydrograph plotted from the record of 1922 is shown on Plate XXV.

Boles Creek.

The upper station on Boles Creek (Gage 38) was located at the H. Behnke Ranch, in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 3, T 41 N, R 5 W (see map sheet 18). Water is diverted above the station for irrigation between about April 1 and about October 1 of each year. Records are available for the periods of May 12 to August 11, 1922, and April 6 to October 1, 1923 (see Tables 28 and 29). Hydrographs plotted from the records contained in these tables are shown on Plates XXVI and XXVII.

The lower station on Boles (Gage 4) was located just above the junction with Shasta River, in the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec.33, T 42 N, R 5 W (see map sheet 10). During June, July, August, and September the flow passing the station is principally return water from irrigation. Records are available for the periods May 8 to August 30, 1922, and April 6 to September 27, 1923 (see Tables 30 and 31). Hydrographs plotted from the records contained in these tables are shown on Plates XXVIII and XXVIX.

Beaughan Creek.

The normal flow of Beaughan Creek was determined by the summation of the discharges of miscellaneous springs, of apparently constant flow, tributary to the stream (see Table 32).

Jackson Creek.

The normal flow of Jackson Creek was determined by the summation of the discharges of miscellaneous springs, of apparently constant flow, tributary to the stream (see Table 33).

Carrick Creek:

The normal flow of Carrick Creek was determined by a summation of the discharges of miscellaneous springs, of apparently constant flow, tributary to the stream (see Table 34).

Parks Creek.

The upper station on Parks Creek was located about 1/2 mile above the L. Dennis Ranch, in the NW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec.1, T 41 N, R 6 W (see map sheet 43). Two small ditches divert water from Parks Creek above the station for the irrigation of about 45 acres of land, otherwise the measurements at the station represent the flow available at the head of Parks Creek. Records are available for the periods May 6 to August 19, 1922, and November 1 to August 1, 1923 (see Tables 35 and 36). Hydrographs plotted from the records contained in these tables are shown on Plates XXX and XXXI.

The lower station on Parks Creek was located at the W. D. Duke Ranch, in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 32, T 43 N, R 5 W (see map sheet 79). During the season of 1921-1922 the gage was maintained in cooperation with W. D. Duke in connection with the investigation of Duke's Reservoir Project. Records of daily discharge from December 20, 1921 to July 18, 1922, and of miscellaneous measurements made during 1923, are available (see Tables 37 and 38). Hydrographs plotted from the record contained in Table 37 are shown on Plates XXXII and XXXIII.

Big Spring Creek.

The measuring station on Big Spring Creek (Gage 21) was located below the confluence of Little Spring Creek, in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 4, T 43 N, R 5 W (see map sheet 90). All diversions from Big Spring and Little Spring Creeks, namely the Big Springs Water Company Pump, the Stallcup and Sons Pump, the Louie Brothers Main Ditch, and the Louie Brothers ditches from Little Spring Creek, divert above the station. Due to acquatic growths in the channel it was impossible to secure satisfactory discharge records at the station. However, an approximation of the flow of Big Spring Creek at the point of confluence with Shasta River, just below the station, has been obtained by taking the difference between the discharge of Shasta River below Big Spring Creek (Tables 14 and 15) and Shasta River above Big Spring Creek (Tables 10 and 11). Records are available for the periods May 30 to October 1, 1922, and April 8 to September 20, 1923 (see Tables 39 and 40). Hydrographs plotted from the records contained in the above tables are shown on Plates XXXIV and XXXV. An analysis of the flow of Big Spring Creek compiled from miscellaneous measurements on that stream and from measurements of the diversions therefrom, is submitted in Table 41. A summation of the flow available for diversion by existing systems in the Big Springs Area, supplying the lands irrigated by the Big Springs Water Company, Louie Brothers, and Stallcup and Sons, is shown in Table 42.

Willow Creek.

Three measurements were taken on Willow Creek above the intake of the Edson Foulke Willow Creek Ditch, Diversion #301 (see map sheet 49). The results obtained follow:-

Date	Discharge in Second Feet
May 20, 1922	3.85
June 12, 1922	3.04
June 19, 1922	1.88

Little Shasta River.

The upper station on Little Shasta River (Gage 13) was located at the head of Little Shasta Valley, in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 16, T 45 N, R 4 W (see map sheet 143). A small quantity of water is diverted above the station for irrigation between about April 1 and about October 1 of each year. The flow of numerous constant flow springs are tributary to the stream below the station. Under normal operating conditions, however, this latter flow is used for the irrigation of lands lying adjacent to the springs, and very little of it reaches Little Shasta River during the irrigation season. Records of daily discharge at Gage 13 are available for the periods May 13 to November 17, 1922, and April 5 to June 26, 1923 (see Tables 43 and 44). Hydrographs plotted from the records contained in these tables are shown on Plates XXXVI and XXXVII. A summation of the flow of springs tributary to Little Shasta River below the measuring station is submitted in Table 45.

The lower station on Little Shasta River (Gage 5) was located on the H. E. Jones Ranch, about one mile above the point of confluence with the Shasta River, in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 35, T 45 N, R 6 W (see map sheet 128). Records are available for the periods May 5 to June 25, 1922, and December 21, 1922 to May 19, 1923 (see Tables 46 and 47). Hydrographs plotted from the records contained in these tables are shown on Plates XXXVIII and XXXIX.

Yreka Creek

Two current meter measurements were taken on Yreka Creek. The

Results obtained follow:-

Date	Location of point of measurement	Discharge in Second Feet
May 23, 1922	500 feet above junction with Shasta River.	2.86
June 27, 1922	George Simmons Ranch.	1.06

USE OF WATER AND DIVERSION MEASUREMENTS

The waters of Shasta River and its tributaries are used for domestic, stock watering, railroad, mining, and power development purposes and for the irrigation of 39,536 acres of land.

The irrigated area has been further classified as irrigated or sub-irrigated. Under this classification the areas watered directly by artificial diversion systems have been considered as irrigated, while the areas which are sub-irrigated by seepage from main diversion ditches, and also the areas lying adjacent to springs and stream channels, which are naturally sub-irrigated therefrom, without artificial diversion, have been considered as sub-irrigated. Of the total irrigated area there are 36,531 acres irrigated by direct diversion; 1,611 acres sub-irrigated by seepage from ditches; and 1,394 acres sub-irrigated from springs and stream channels.

A complete survey of the diversion systems and the irrigated areas was made by the Division of Water Rights during the periods from May 1, 1922 to December 15, 1922, and from May 2, 1923 to December 5, 1923. The survey was made by planetable, except in Little Shasta Valley, and in portions of the Parks Creek and Yreka Creek areas, where transit and stadia were used. The data obtained from the survey have been plotted to a scale of one inch to three hundred feet and are shown on map sheets numbers 1 to 199, inclusiv

A map of the watershed on a scale of one and one half inches to one mile has been prepared from the data obtained on these map sheets, from advance sheets of the United States Geological Survey of the Shasta Valley Area made in 1921 and 1922, and from United States Forest Service maps of the Klamath and Shasta National Forests. A key map showing the location of map sheets numbers 1 to 199, inclusive, has also been prepared.

The diversion points of the various ditches and canals have been indicated on the maps by numbers 1 to 608, inclusive. Starting with the uppermost diversion on Shasta River as 1, the diversions have been numbered consecutively down stream to the point of entry of the first tributary, Dale Creek; the uppermost diversion on the tributary is then given the next consecutive number, and the remaining diversions on the tributary are given consecutive numbers down stream until the Shasta River is reached. The first diversion on Shasta River below the confluence of the tributary is then given the next consecutive number, and so on throughout the stream system.

The areas irrigated or sub-irrigated under the various diversion systems, and the areas sub-irrigated from springs and stream channels, as shown on map sheets numbers 1 to 199, inclusive, were computed by the use of planimeters. An Acreage Table, submitted as an appendix to this report, has been prepared from the data contained on the map sheets, showing the acreages, descriptions, and kind of crops on these areas. The use of water under each diversion is further discussed hereinafter, under the sub-heading, "Description of Diversion Systems".

Measurements were made on all the diversions from Shasta River and its tributaries by the Division of Water Rights during the periods from May 1, 1922 to December 15, 1922 and from April 4, 1923 to December 5,

1923.

On the larger gravity diversions, namely the Edson-Foulke Yreka Ditch, (Diversion 18), Edson-Foulke Willow Creek Ditch (Diversion 301), Louie Brothers Main Ditch (Diversion 241), Edson-Foulke Grenada Ditch (Diversion 250), Antonio Ditch (Diversion 502), and Fiock Ditch (Diversion 503), and on the first lift ditches of the Big Springs Water Company and the Grenada Irrigation District pumping plants (Diversions 240 and 249, respectively), permanent measuring stations were established. These stations were equipped with staff gages and records of daily discharges were obtained in a manner similar to that described for the measuring stations on the streams (see page 9 of this report). The results of the measurements secured at these stations are submitted at the end of this report in Tables 48 to 70, inclusive. The number or numbers of the tables pertaining to each diversion are given under the descriptions of that diversion.

On various of the pumping plants records of diversions, in terms of the total acre feet of water pumped, were secured for the irrigation seasons of 1922 and 1923. These quantities were computed for each plant from the overall efficiency of the plant, as determined by tests made by the engineer in charge of the field investigation during 1922, and the record of power consumption, which was obtained from the California Oregon Power Company. The results obtained for each plant are shown in Table 71 submitted at the end of this report.

On all other diversions, measurements were taken for the purpose of determining the flow normally used for irrigating and the flow required to fill the conduit to capacity. These measurements are hereinafter referred to as the "normal irrigating head" and the "Maximum

capacity" of the conduit, respectively. The measurements were taken near the heads of the respective ditches and were made in the presence of the ditch owner or his representative whenever possible. Whenever sufficient water was available to fill the ditch to maximum capacity at least two discharge measurements were taken on each diversion. It was the practice to have the ditch owner or his representative turn into the conduit the amount of water he considered the normal irrigating head. This flow was then measured to determine the normal irrigating head. The conduit was afterwards filled to capacity and a second measurement taken to determine the maximum capacity of the conduit. When there was insufficient water to fill the conduit to maximum capacity, the available flow was measured, and the maximum capacity of the conduit was computed from hydraulic data obtained by the measurement, substituted in Kutter's Formula. Assumed values of n = 0.013 and 0.025, for flume and ditch sections, respectively, were used in the computations. On the ditches which were not in use during the period covered by the investigation, only the maximum capacities were determined. In such cases the slope and crossectional area over an average section of each conduit were measured, and the maximum capacity of the conduit computed from Kutter's Formula. Values of n = 0.013 and 0.025 for flume and ditch sections, respectively, were used. The results obtained by these measurements are given under the descriptions of the respective diversions.

The discharge measurements were taken with a current meter, float, or weir, or were volumetrically computed, dependent upon the size of the stream to be measured. Small Price current meters were used, the same having been rated by the United States Geological Survey at the Bureau of Standards in Washington, D. C. Float measurements consisted of

timing the passage of a surface float over a measured distance along the conduit. The mean velocity for the measuring section was computed from the surface velocity by applying the factors 0.72 and 0.80 for ditch and flume sections, respectively. The weir measurements were made with a portable Cippoletti weir having a crest length of one and one-half feet. Volumetric measurements were made by timing the filling of a vessel of known capacity.

The results of measurements of the diversions from Shasta River and its tributaries, during the irrigation season of 1912, made by N. M. Stover of the Office of Experiment Stations of the United States Department of Agriculture, and available through Office of Experiment Stations Bulletin 254, have also been included in this report under the descriptions of the respective diversions.

The resulting discharges obtained by the above described diversion measurements are given in terms of cubic feet per second (second feet). For the convenience of those who wish to convert the results to discharge in Miners Inches (M.I.) the following equivalents are given.

(1) 1 Second Foot = 50 M.I. measured under a four inch pressure.

(2) 1 Second Foot = 40 M.I. measured under a six inch pressure.

DESCRIPTION OF DIVERSION SYSTEMS

Descriptions of the diversion systems from Shasta River and its tributaries, taken up consecutively from 1 to 508, follow. A summary of the data contained under these descriptions is submitted in Table 72 at the end of this report. In this table the names of the various diversion systems are listed alphabetically, and the corresponding diversion

number, name of stream from which diversion is made, and total acreage irrigated under the system is given for each.

Diversion 1 is that of the Hammond Ditch, diverting from the west side of Shasta River in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 33 T 41 N, R 5 W (see map sheet 1).

The conduit is an earth ditch about one fourth of a mile long. An area of 43.8 acres of mountain hillside pasture land is irrigated under the ditch. The wild flooding method of irrigation is used, and much of the water diverted is returned to Shasta River or to Diversion 2 which lies directly below Diversion 1 (see map sheet 1, and Acreage Table page 111).

A current meter measurement was taken on the ditch June 6, 1923. The ditch was running full at the time, and the resulting discharge of 2.35 second feet represents the maximum capacity of the ditch. Charles Hammond, who was present when the measurement was made, stated that this flow was also the normal irrigating head.

Diversion 2 is that of the Hammond Ditch, diverting from the west side of Shasta River in the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 28 T 41 N, R 5 W (see map sheet 1).

The conduit is an earth ditch about one fourth of a mile long. An area of 25.7 acres of mountain hillside pasture land is irrigated under the ditch. The wild flooding method of irrigation is used, and much of the water diverted is returned to Shasta River. The area irrigated by this diversion also lies under Diversion 1 (see map sheet 1, and Acreage Table pages 111 and 112).

A current meter measurement showing a discharge of 0.82 second foot was taken June 6, 1923. This discharge represents the normal irrigating head carried by the ditch, as stated by Charles Hammond, who was present when the measurement was made. The maximum capacity of the

ditch was computed and found to be 1.74 second feet.

Diversion 3 is that of the Hammond Ditch (Durney Mill Ditch), diverting from the east side of Shasta River in the NW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 27 T 41 N, R 5 W (see map sheet 1).

The conduit is an earth ditch about one mile long, terminating at the Durney Lumber Mill, in the SW$\frac{1}{4}$ of Sec. 22 T 41 N, R 5 W. The water diverted by the ditch is used for domestic and mill purposes. The area lying under the ditch is heavily wooded and brush covered. No indications that irrigation had been practiced could be found, (see map sheet 2).

A current meter measurement was taken on the ditch June 16, 1923, showing a discharge of 1.11 second feet. The ditch was running full at the time of measurement, and the discharge represents the maximum capacity of the ditch. Charles Hammond was not present when the measurement was made, but later stated that the flow of the ditch was normally kept to the maximum capacity when that amount of water was available.

Diversion 4 is that of the Dobkins Ditch, diverting from the west side of Shasta River in the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 21 T 41 N, R 5 W (see map sheet 2).

The conduit is an earth ditch about one half of a mile long. An area of 29.1 acres of pasture land is irrigated under the ditch, (see map sheet 2, and Acreage Table page 52).

A current meter measurement, showing a discharge of 1.35 second feet, was taken on the ditch May 28, 1923. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by J. M. Dobkins, who was present at the time the measurement was made.

The results of measurements taken in 1912 and available through O.E.S. Bulletin 254, which designates this ditch as Dobkins No. 1, show a

mean daily discharge of 0.42 second foot, and a maximum diversion of 0.69 second foot for the period June 5 to July 10.

Diversion 5 is that of the Dobkins Ditch diverting from the west side of Shasta River in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 21 T 41 N, R 5 W (see map sheet 2).

The conduit is an earth ditch about one fourth of a mile long. An area of 4.3 acres of pasture land is irrigated under the ditch, (see map sheets 2 and 3, and Acreage Table page 52).

A current meter measurement was taken on the ditch May 28, 1923, which showed a discharge of 1.58 second feet. This discharge represents the normal irrigating head, as stated by J. M. Dobkins, who was present when the measurement was made. The measurement also represents the maximum capacity of the ditch, as the ditch was running full.

The results of measurements taken in 1912 and available through O.E.S. Bulletin 254, which designates this ditch as Dobkins No. 2, follow:

Date	Discharge in Second Feet
May 29,	1.59
June 5,	1.21
June 27,	0.50
July 11.	1.20

Diversion 6 is that of the I. M. Dow Ditch, diverting from the east side of Shasta River in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 21 T 41 N, R 5 W,(see map sheet 2).

The conduit is an earth ditch about three fourths of a mile long, conveying water to sections 15 and 16, T 41 N, R 5 W, where it is used for the irrigation of 73.8 acres, of which 69.7 acres are owned by I. M. Dow. The remaining 4.1 acres are on the property of C. S. Hammond, (see map sheet 3, and Acreage Table pages 55 and 114).

A current meter measurement was taken on the ditch May 29, 1923. The ditch was running full at the time the measurement was taken, and the

discharge of 2.13 second feet represents the maximum capacity of the ditch. This flow is also the normal irrigating head, as stated by Mr. I. M. Dow, who was present when the measurement was made.

The results of measurements taken in 1912, and available through O.E.S. Bulletin 254, which designates this ditch as Dow No. 1, show a mean daily discharge of 1.91 second feet, and a maximum discharge of 2.23 second feet, for the period June 5 to 24.

Diversion 7 is that of the Dobkins Ditch, diverting from the east side of Shasta River in the SW¼ SE¼ Sec. 16 T 41 N, R 5 W, (see map sheet 3).

The conduit is an earth ditch about three fourths of a mile long, and conveys water to the N½ of Sec. 16 T 41 N, R 5 W, where it is used for the irrigation of 14.8 acres. Water is also diverted by the ditch, during the winter season, to a small reservoir, of 5.8 acre feet capacity, located in the SE¼ NW¼ Sec. 16 T 41 N, R 5 W, where it is used by the B. O. Arney Ice Company for the production of natural ice, (see map sheet 3 and Acreage Table page 52).

A current meter measurement taken on the ditch May 28, 1924 showed a discharge of 1.49 second feet. This flow represents the maximum capacity of the ditch, as it was running full at the time of measurement. It also represents the normal irrigating head, as stated by J. M. Dobkins, who was present when the ditch was measured.

The results of measurements taken in 1912 and available through O.E.S. Bulletin 254, which designates this ditch as Dobkins No. 3, follow:

Date	Discharge in Second Feet
June 5,	1.19
June 9,	0.92
June 17,	0.95
June 27,	0.95
June 28-29,	0.92
July 2,	0.92
July 11.	0.92

Diversion 7A is that of C. S. Hammond from Dobkins Lake.

Dobkins Lake is a small natural body of water lying at the head waters of Dale Creek, in Lots 10 and 15, Sec. 6 T 40 N, R 5 W, (see map sheet 199). The lake has been converted into a storage reservoir by the construction of a dam across the outlet, under authority of Permit 902 issued on Application 1981, filed by C. S. Hammond, August 21, 1920.

The dam is 126 feet long by 12 feet high, with top and bottom widths of 2 feet and 12 feet, respectively, and consists of a dry rock wall with a loose earth fill against the upstream face. The rock wall is 2.0 feet wide on top, with the down stream face battered 1:4. The bottom width of the rock wall could not be determined, due to the earth fill. The earth fill contains a large quantity of loose rock which was placed dry against the upstream face. It is triangular in cross section and is carried up from the bottom of the dam to the level of the spillway crest on a slope of about 1:1½.

A spillway is provided for by an earth cut, approximately 24 feet wide by 1.35 feet deep, at the west end of the dam.

The outlet is a galvanized iron pipe, 12 inches in diameter by 12 feet long, controlled by a slide gate at the upstream end. The bottom of the outlet pipe is 9.95 feet below the spillway crest.

Immediately up stream from the outlet gate there is a rock reef, which forms the natural outlet of the lake. This reef is 2.65 feet higher

than the bottom of the outlet pipe, and controls the minimum depth to which the water level of the lake can be drawn. The available storage capacity of the lake is, therefore, contained between the contours representing the elevations of the rock reef and the spillway crest, or assuming zero elevation at the bottom of the outlet pipe, between the 2.65 feet and 9.95 feet contours. From a contour survey of the lake made by the Division of Water Rights in 1923, the maximum available storage capacity was found to be 72.3 acre feet.

The conduit system consists of about four miles of the natural channel of Dale Creek; the Hammond Ditch, (Diversion 8) diverting from Dale Creek and extending to Eddy Creek; and the Hammond or Scott Ditch, (Diversion 12) diverting from Eddy Creek, (see map sheets 2, 3, 4, 6, and 199, and descriptions of Diversions 8 and 12).

The new work on the construction of the Dobkins Lake diversion system consisted of the building of the dam at Dobkins Lake and the extending of the Hammond Ditch (Diversion 8) from a point about three quarters of a mile below the head to Eddy Creek. The dam was completed in 1923 with an available storage capacity of 72.3 acre feet. The ditch extension was completed in 1924 prior to the beginning of the irrigation season of that year.

Approximately 60 acre feet of water was stored for the 1924 season, and was used during that season, as a supplemental supply for lands irrigated by C. S. Hammond under Diversions 8 and 12 (see map sheets 2 to 9, inclusive, and Acreage Table pages 112 and 113).

The right to store water in Dobkins Lake was initiated by Application 1981, filed August 21, 1920, by C. S. Hammond, upon which Permit 902 has been issued allowing the storage of 960 acre feet per annum

to be collected between the period from about October 1 to about July 15 of each season. The impounded water is to be used for the irrigation of about 940 acres described as follows:

SW¼ of Sec. 4, S½ of SW¼ of NW¼ of Sec. 4,
NE¼ of Sec. 5, SE¼ of Sec. 5,
N½ of NE¼ of NE¼ of Sec. 8,
W½ of NW½ of Sec. 16, W½ of SW¼ of Sec. 16,
and SE¼ Sec. 17, T 41 N, R 5 W and
SW¼ of SE¼ Sec. 32, 20 acres in NW¼ of
SE¼ Sec. 32 and 20 acres in SE¼ of SW¼
Sec. 32 T 42 N, R 5 W.

This right is subject to all prior rights, and does not permit the diversion of the natural flow of Dale Creek, through the extension of Diversion 8, for use on lands not irrigated from Dale Creek prior to the time said right was initiated.

The following measurements were taken at Dobkins Lake:

Discharge Measurements

Date	Stream	Location	Discharge in Second Feet
6-29-24	In flow to Dobkins Lake	Head of Lake.	0.50 (Estimated)
6-29-24	Dale Creek	500 feet below Dobkins Lake.	1.30 (Current meter)

Storage Data for Dobkins Lake

Depth of Water above bottom of Outlet Pipe. Feet.	Storage. Acre Feet.	Remarks
9.95	72.3	Maximum available capacity.
8.75	60.0	Approximate maximum storage, 1924.
7.95	52.0	On hand June 29, 1924.

Capacity and area curves for Dobkins Lake are submitted on

Plate LV.

Diversion 8 is that of the Hammond Ditch, diverting from the west side of Dale Creek in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 21 T 41 N, R 5 W (see map sheet 2).

The conduit is an earth ditch about two miles long, extending from Dale Creek to Eddy Creek. Prior to the 1924 irrigation season, the water was used for the irrigation of 84.4 acres of pasture land in Sections 16, 17, and 21, T 41 N, R 5 W (see map sheets 2 to 4, inclusive, and Acreage Table page 112). The use of water from the ditch during the 1924 season is discussed under Diversion 7A, from Dobkins Lake.

A current meter measurement taken on the ditch June 6, 1923, gave a discharge of 5.63 second feet. This discharge represents the maximum capacity of the ditch, as the ditch was running full when measured. It also represents the normal irrigating head, as stated by Charles Hammond, who was present at the time the measurement was made.

The results of measurements taken in 1912, and available through O.E.S. Bulletin 254, which designates this ditch as Durney No. 2, show a mean daily discharge of 0.31 second foot and a maximum discharge of 0.64 second foot, for the period June 7 to 27.

Diversion 9 is that of the Hammond Ditch, diverting from the east side of Dale Creek in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 21 T 41 N, R 5 W (see map sheet 2).

The conduit is an earth ditch about three fourths of a mile long, crossing to the west side of Dale Creek, by means of a short flume section located 200 feet below the head, and terminating in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 16 T 41 N, R 5 W. The water diverted by the ditch is used for the irrigation of 63.7 acres of pasture land. There are also 12.1 acres of pasture land sub-irrigated from this ditch, making a total acreage of 75.8 acres under

the ditch (see map sheet 3, and Acreage Table page 112).

A current meter measurement with the ditch running full, was taken June 6, 1923. The measured discharge was 4.20 second feet. This flow represents the maximum capacity of the ditch, and also the normal irrigating head. Charles Hammond, who was present, stated that the ditch was always run to maximum capacity when that amount of water was available.

Diversion 10 is that of the Dobkins Ditch heading on an unnamed fork of Dale Creek. The diversion point is located in the NE¼ NW¼ Sec. 21 T 41 N, R 5 W (see map sheet 2).

The conduit is an earth ditch about 800 feet long. An area of 0.5 acres of pasture land is irrigated under the ditch (see map sheet 3, and Acreage Table page 52).

A current meter measurement was taken on the ditch May 28,1923, showing a discharge of 0.18 second foot. This discharge represents the flow available for diversion on the above date. The ditch had not been cleaned in 1923 and was in poor shape; consequently an accurate determination of the maximum capacity could not be made. Mr. Dobkins, however, stated that the maximum capacity and normal irrigating head would be the same as for the Dobkins Ditch (Diversion 4), or 1.35 second feet.

The results of measurements taken during 1912, and available through C.E.S. Bulletin 254, which designates this ditch as Dobkins No. 4, show a discharge of 2.83 second feet on May 29, and for the period June 5 to July 10 a mean daily discharge of 2.30 second feet and a maximum discharge of 3.15 second feet.

Diversion 11 is that of the R. Dow Ditch, diverting from the north side of Eddy Creek in the SE¼ NW¼ Sec. 17 T 41 N, R 5 W (see map sheet 4).

The conduit is an earth ditch about one and one half miles in length, terminating at the north line of the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 8 T 41 N, R 5 W. At the south line of the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 8 T 41 N, R 5 W, the ditch crosses a swale running through the R. Dow Ranch, which is used as a lateral from the main ditch. The distribution system is composed of several ditches re-diverting from this swale, one of which is extended to the H. T. Cooper Ranch, and terminates in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 9 T 41 N, R 5 W. The water diverted by the ditch is used for the irrigation of 74.9 acres of meadow hay and pasture land, 63.5 acres of which are owned by R. Dow, and 11.4 acres of which are owned by H. T. Cooper (see map sheets 5 and 6, and Acreage Table pages 55 and 42).

A current meter measurement taken May 31, 1923, with the ditch running full, showed the maximum capacity to be 1.79 second feet. This discharge also represents the normal irrigating head, as stated by I. M. Dow, who was present when the measurement was made.

The results of measurements taken during 1912, and available through O.E.S. Bulletin 254, which designates this ditch as Dow No. 2, follow:

Date	Discharge in Second Feet
May 30,	5.59
June 7,	4.89
June 27,	2.29
July 11,	0.68
July 24.	0.50

Diversion 12 is that of the Hammond Ditch, locally known as the Scott Ditch, diverting from the north side of Eddy Creek in the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 17 T 41 N, R 5 W (see map sheet 4).

Diversion is made by means of a low rock dam, provided with a timber waste gate to control the flow into the ditch. From the dam the

water is conveyed by an earth and rock cut ditch, one and one-half miles in length, to the Edson-Foulke Yreka Ditch, in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 8 T 41 N, R 5 W. At this point the water is carried across the latter ditch and distributed by the Scott Ditch System, or is spilled into the Edson-Foulke Yreka Ditch, and re-diverted therefrom by six take-outs on the Hammond Ranch. The water diverted by the ditch is used for the irrigation of 49.9 acres on the H. T. Cooper Ranch, and 373.7 acres on the C. S.Hammond Ranch, a total of 423.6 acres (see map sheets 5 to 8, inclusive, and Acreage Table pages 42 and 113).

Under operating conditions it is common practice, during the early part of the season when water is plentiful, for the Hammond Ranch to divert water from the Edson-Foulke Yreka Ditch in excess of that put into it by the Scott Ditch, and it is probable that the lands on the Hammond Ranch under the Scott Ditch System are partially irrigated by Edson-Foulke Yreka Ditch waters. Due to the commingling of Scott Ditch water with that of the Edson-Foulke Yreka Ditch, it was impossible to segregate the acreages irrigated under each ditch. The total acreage on the Hammond Ranch under the Scott Ditch System was therefore credited to the Scott Ditch.

The Scott Ditch Diversion System is also used for the conveyance of water stored in Dobkins Lake, as explained under Diversion 7A. This water was used during 1924 as a supplemental supply to the natural flow of Eddy Creek for the irrigation of the 373.7 acres on the Hammond Ranch, as given above.

The irrigated area under the Scott Ditch System varies from steeply sloping land below the Yreka Ditch to comparatively level land between the county road and Shasta River. The principal crops are meadc

hay and pasturage. The wild flooding method of irrigation is used. The water is kept on the land continuously except during the period necessary for haying. During the early part of the season when water is plentiful, excessive amounts are used, and there is much return flow to Shasta River.

The right to use the Edson-Foulke Yreka Ditch for the distribution of Scott Ditch waters is based on an agreement between the Edson-Foulke Company and the former owners of the Scott Ditch.

The H. T. Cooper Ranch has a right under the Scott Ditch to a flow of 10 Miners Inches of water, measured under a four inch pressure. This right was deeded to the ranch for right-of-way privileges.

The results of current meter measurements taken on the Scott Ditch, follow:

Number of Measurement	Date	Location	Discharge in Second Feet	Hydrographer
1	7-18-22	At head.	3.80	P. L. Beck.
2	8-19-22	At head.	2.66	P. L. Beck.
3	6-6-23	At head.	10.93	H.Smitherum.
4	7-20-23	At flume crossing Edson-Foulke Yreka Ditch.	2.75	H.Smitherum.

The discharge of 10.93 second feet obtained by measurement 3, represents the maximum capacity of the ditch, and also the normal irrigating head. The ditch was running full when the measurement was taken, and Charles Hammond stated that the ditch was normally operated at maximum capacity as long as that amount of water was available.

The results of measurements taken on the Scott Ditch in 1912 and available through O.E.S. Bulletin 254, follow:

Date	Discharge in Second Feet
May 20,	16.54
June 7,	15.85
June 27,	7.93
July 11,	5.51
July 24.	4.81

Diversion 13 is that of the Hammond Ditch, diverting from the south side of Eddy Creek, in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 17, T 41 N, R 5 W (see map sheet 4).

The conduit is an earth ditch about one eighth of a mile long. An area of 9.0 acres of pasture land is irrigated under the ditch (see map sheets 3 and 4, and Acreage Table page 114).

A current meter measurement was taken on the ditch June 6, 1923, showing a discharge of 0.91 second foot. The ditch was running full when the measurement was made. Charles Hammond stated that the ditch was normally operated at full capacity when that amount of water was available. This discharge therefore represents the maximum capacity and the normal irrigating head of the ditch.

The results of measurements taken in 1912 and available through O.E.S. Bulletin 254, which designates this ditch as Durney No. 1, show a mean daily discharge of 0.29 second foot, and a maximum discharge of 0.66 second foot, for the period June 7 to 24.

Diversion 14 is that of the Hammond Ditch, diverting from an unnamed fork of Eddy Creek, in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 16 T 41 N, R 5 W (see map sheet 3).

The conduit is an earth ditch 200 feet long. An area of 0.1 acre of pasture land is irrigated under the ditch (see map sheet 3, and Acreage Table page 114).

No measurements were taken on the ditch as it was not indicated as a diversion by Charles Hammond, when the other Hammond ditches were

being measured.

Diversion 15 is that of the Dobkins Ditch, diverting from the east side of Shasta River in the NW¼ NW¼ Sec. 16 T 41 N, R 5 W (see map sheet 3).

The conduit is an earth ditch about one fourth of a mile long. The ditch was originally used to divert water for both irrigation and milling purposes. The latter use has, however, been abandoned for some 20 years and the water is now used for the irrigation of 17.1 acres (see map sheets 3 and 5, and Acreage Table pages 52 and 53).

A current meter measurement representing the maximum capacity and also the normal irrigating head of the ditch was made May 29, 1923, and gave a discharge of 3.43 second feet. The ditch was running full at the time, and J. M. Dobkins stated that the ditch was normally operated at maximum capacity when water was available.

The results of measurements taken in 1912 and available through O.E.S. Bulletin 254, which designates this ditch as Dobkins No. 5, follow:

Date	Discharge in Second Feet
May 28,	4.12
June 5,	2.44
July 11,	2.07

Diversion 16 is that of the R. Dow ditch, diverting from the west side of Shasta River in the NW¼ NW¼ Sec. 16 T 41 N, R 5 W (see map sheet 3).

The conduit system consists of an earth ditch about 100 feet in length, about 900 feet of the natural channel of a small tributary of the Shasta River, and an earth ditch about 1000 feet long diverting from this channel. An area of 5.1 acres is irrigated under the ditch (see map sheet 5, and Acreage Table page 55).

Two current meter measurements were taken on the ditch May 31,

1923; one at the head of the ditch; the other 1000 feet below the head. The measurement at the lower point was taken to determine if there was an inflow to the ditch, from springy ~~ground~~ traversed by the ditch between the two points of measurement. Each measurement resulted in a discharge of 0.62 second foot, indicating that the flow of the ditch is not appreciably increased by inflow from this source.

I. M. Dow stated that the flow of 0.62 second foot represented the normal irrigating head required for the acreage under the ditch. It also represents the maximum capacity of the ditch as a flume 100 feet below the lower measuring point was running full. The maximum capacity is, however, limited by the flume section, and could be increased by repairing the flume.

The results of measurements taken in 1912, and available through O.E.S. Bulletin 254, which designates this ditch as Dow No. 3, follow:

Date	Discharge in Second Feet
June 27,	1.73
July 11,	1.20
July 24.	0.76

Diversion 17 is that of the Dobkins Ditch, diverting from the east side of Shasta River in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 9 T 41 N, R 5 W (see map sheet 5).

The conduit is an earth ditch 500 feet long, conveying water to the Dobkins Ranch, in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 9 T 41 N, R 5 W, where it is used for stock watering purposes (see map sheet 5).

No measurements were taken on this ditch, as it was not indicated as a diversion by J. M. Dobkins at the time his other diversions were being measured.

Diversion 18 is that of the Edson and Foulke Company Ditch, diverting

from Shasta River in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 9 T 41 N, R 5 W (see map sheet 5). The ditch is locally known variously as the "Yreka Ditch", "Big Ditch", "Edson Ditch", "Foulke Ditch", "Shasta Canal", and "Edson-Foulke Yreka Ditch". In this report, and on the maps and tables accompanying same, the ditch has been designated as the Edson-Foulke Yreka Ditch.

As originally constructed the ditch was about 90 miles long, extending from the intake on Shasta River to Yreka and Hawkinsville. The conduit was an earth and rock cut ditch, carried along the slopes of the mountains bordering Shasta Valley on the west, at an average elevation of some 500 feet above the valley floor. The numerous creeks and gulches encountered along the course of the ditch were crossed on timber flumes, and diversions from these creeks and gulches were constructed as feeders to the main ditch. Construction was completed in 1856, and the water was then used near Yreka and Hawkinsville for hydraulic mining purposes. Water was sold to the miners at 20¢ per Miners Inch. A limited supply of water above that required for mining was sold for irrigation purposes in Shasta Valley and near Yreka.

With the decline of mining the use of the waters diverted by the ditch was changed from mining to agricultural purposes, and the enterprise, never financially successful, passed through several ownerships. In about 1887 the Edson and Foulke Company purchased the ditch system, and that portion of the ditch lying between Macks Gulch and Hawkinsville, a distance of about 75 miles, was abandoned. Subsequent to the above date the water has been used for the irrigation of lands between the intake and the L. M. Foulke ranch in the W$\frac{1}{2}$ Sec. 16 T 43 N, R 6 W (see map sheet 103).

The following description of the diversion system pertains only to that portion of the ditch in use at the present time.

The diversion conduit is an earth ditch cut into the west bank of Shasta River in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 9 T 41 N, R 5 W. The bottom of the ditch is on a level with the stream bed, and no dam is necessary during the period of high water. A temporary low rock and dirt dam thrown across the river as necessity arises, serves to divert the water as the available flow decreases. The ditch diverts the entire flow of the river up to the maximum capacity of the ditch. A wasteway and a wooden head gate, located a short distance below the intake, serve to control the flow of the ditch. That portion of the old ditch still in use is approximately 16 miles long, and extends from the intake to Macks Gulch. The ditch alignment remains as originally located, except that flume sections around several rocky points have been abandoned and the ditch cut through these points. It is also claimed by the Edson and Foulke Company that the ditch section has never been enlarged since the ditch was acquired by that company. It is probable, however, that the carrying capacity has been increased, due to enlargement and improvement of the ditch section through the process of ditch cleaning from year to year.

At a point three miles below the intake the ditch crosses Parks Creek on a wooden flume, and water is diverted into the ditch from that stream by a short earth ditch, indicated on the map as Diversion 183 (see map sheet 43). Just below the confluence of the Parks Creek Diversion, the Edson-Foulke Yreka Ditch is provided with a wooden headgate and a spillway to regulate the flow of the ditch below Parks Creek. Water in excess of that required below Parks Creek is returned to that stream through the spillway.

About ten miles below Parks Creek the ditch crosses Willow Creek and additional water is supplied to the ditch from that stream, by means

of a short earth ditch and flume, indicated on the map as Diversion 301 (see map sheet 49).

The main distributing point for the waters of the Edson-Foulke Yreka Ditch is located seven miles below Parks Creek, in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 15, T 42 N, R 6 W. At this point there is located a division weir, which divides the water flowing in the ditch at the weir, between the Edson and Foulke Company and the Webb Ditch in the ratio of three to one, respectively. From the weir the water allotted to the Edson and Foulke Company is distributed for irrigation on the Gazelle Ranch of that company. The water allotted to the Webb Ditch is conveyed in a northerly direction across Willow and House Creeks to the northeast corner of Sec. 16 T 43 N, R 6 W, and is used for the irrigation of lands owned by F. S. Armstrong, S. Elizabeth Foulke, Lewis M. Foulke, and Leland S. Foulke.

The Edson and Foulke Company's distribution system comprises that portion of the Edson-Foulke Yreka Ditch lying between the division weir and Macks Gulch; a lateral diverting from the main ditch below the weir and extending in a northerly direction across Willow and House Creeks; those portions of the natural channels of the Willow Creek stream system contained within the Edson and Foulke Company's Gazelle Ranch, namely, Willow Creek, House Creek, Macks Gulch, Kiernan Slough, and McCloud Slough; the numerous ditches diverting from the above named streams; and a storage reservoir located in sections 35 and 36 T 43 N, R 6 W. In operation the water conveyed by the Edson-Foulke Yreka Ditch below the division weir is carried across Willow Creek, and together with additional water diverted from that stream, is spilled into Macks Gulch. The water carried by the lateral diverting from the main ditch below the weir, is distributed directly therefrom or is spilled into Willow or House Creeks. Kiernan and

McCloud sloughs receive their main water supply from the Edson-Foulke Yreka Ditch through return flow from irrigation under that ditch. From Macks Gulch, Willow Creek, House Creek, Kiernan Slough and McCloud Slough, the water is rediverted and distributed for irrigation by numerous ditches diverting from these streams. Water stored in the reservoir is diverted from Willow Creek below the points of confluence of Macks Gulch and House Creeks and from Kiernan Slough, and is used for the late irrigation of pasture lands lying below the reservoir.

The Edson and Foulke Company reservoir is located in sections 35 and 36 T 43 N, R 6 W, in a natural depression surrounded on all sides, except the south side or inlet end of the reservoir, by low lying hills (see map sheets 61 and 62). An earth levee 130 feet long by 10.5 feet wide (top dimensions) has been constructed across a low depression near the inlet end of the reservoir to increase the storage capacity. The outlet is located at the northeast end of the reservoir, and is a 16 inch diameter pipe laid in a backfilled cut, which was made through a depression in the hills forming the northern rim of the reservoir. The discharge from the reservoir is controlled by a slide gate at the upstream end of the outlet pipe. The available maximum storage capacity of the reservoir is contained between the contours representing the elevations of the bottom of the outlet and the top of the levee at the inlet end of the dam.

This capacity was computed from a contour survey of the reservoir, made by the Division of Water Rights in August, 1923, and found to be 227.8 acre feet.

The various diversions by the Edson and Foulke Company from Macks Gulch, Willow Creek, House Creek, Kiernan Slough, and McCloud Slough, while receiving their main water supply from the Edson-Foulke Yreka Ditch,

also divert the natural flow of these streams, when such flow is available. For this reason they have been indicated on the maps as diversions, and a description of each ditch is given in this report. The total acreage irrigated under these ditches, however, has been classed as irrigated from the Edson-Foulke Yreka Ditch.

The water diverted by the Edson-Foulke Yreka Ditch is used principally for the irrigation of the lands of the Edson and Foulke Company, F. S. Armstrong, S. Elizabeth Foulke, Lewis M. Foulke, and Leland S. Foulke, the owners of the ditch. However, practically all the lands lying adjacent to and under the ditch receive some irrigation therefrom, either through agreements with or by purchase of water from the owners of the ditch, or through the natural sub-irrigation of lands lying below the ditch.

Acreages and descriptions of the lands irrigated by each user under the ditch are given in the Acreage Table. A summary of these data follows:

Name of User	Acreage Irrigated	Acreage Sub-irrigated	Total Acreage irr. and sub-irr.	Acreage Table Page.
Armstrong, F. S.	101.5		101.5	6
Bagley, H. D.	138.4	28.5	166.9	7,8
Brown, A.		3.8	3.8	27
Cooper, H. T.	21.1		(a) 21.1	42
Duke, W. D.	16.2		(a) 16.2	67
Edson and Foulke Co.	1852.5	146.7	(b)1999.2	71-77
Farraher, J. F.		5.7	5.7	86
Foulke, L. M.	201.5		201.5	93
Foulke, S. E.	225.1		225.1	93,94
Haffner, J. E.	38.8		38.8	109
Harris, M.E.		28.5	28.5	116
Kiernan, B.	187.2	245.1	432.3	140,141
Kiernan, J. N.		10.1	10.1	142
Kiernan, W. T.	14.1	53.2	67.3	144
Rader, Albert	26.7		26.7	206
Vacant Land		18.4	18.4	262
Wells, H. S.	285.2	54.4	339.6	269,270
Wholey, M. A.	5.2		(c) 5.2	275
Wholey, L. E.	4.3		(c) 4.3	272
Workman, L.	223.5		223.5	280
TOTALS	3341.3	594.4	3935.7	

(a) Irrigated with waste water from Edson and Foulke Company Ranch.
(b) Total under Edson-Foulke Yreka Ditch and Edson-Foulke Ditch from Kiernan Slough.
(c) Irrigated with waste water from Wells Ranch.

The total area irrigated under the ditch is 3935.7 acres. This total, however, does not represent the area irrigated in any one year. The latter area is variable, being dependent on the water supply.

The rights to the use of the waters of the Edson-Foulke Yreka Ditch by others than the owners of the ditch are as follows.

The H. T. Cooper Ranch in sections 8 and 9 T 41 N, R 5 W has a deeded right to six Miners Inches measured under a four inch pressure, throughout the year, and is allowed to divert water from the ditch, in addition to the above amount, when the flow of the ditch through the Cooper Ranch is in excess of the amount required to run through to Parks Creek, to keep the ditch to maximum capacity below Parks Creek.

C. S. Hammond has the right by agreement with the Edson and Foulke Company to use the Edson-Foulke Yreka Ditch as part of the Scott Ditch distribution system, but no right to the use of Edson-Foulke Yreka Ditch water. As stated by Mr. Edson Foulke, he is, however, allowed to use water carried by the ditch in excess of that required by the Edson and Foulke Company at their Parks Creek diversion. This use is in common with that of the H. T. Cooper ranch. The Acreage Table, however, does not credit the Hammond Ranch with use from the Edson-Foulke Yreka Ditch, as explained under Diversion 12.

That portion of the J. S. Walker Ranch (H. S. Wells Ranch), formerly owned by S. S. Williams, in sections 30 and 31 T 42 N, R 5 W, has a right by agreement with the Edson and Foulke Company to 10 Miners Inches under a four inch pressure throughout the year, and in addition thereto,

50 Miners Inches under a four inch pressure from the beginning of the irrigating season of each year to and including the 10 day of July of each year, and in the event that the S. S. Williams ranch be cultivated to hay, a right to such additional 50 Miners Inches under a four inch pressure for a period not to exceed 10 days consecutively from and after removal of first crop of hay from field; provided said amount of water shall be available to the Edson-Foulke Yreka Ditch from Parks Creek, and if not, then all thereof. In accordance with a statement by Mr. Edson Foulke, J. S. Walker is also allowed to divert water from the Edson-Foulke Yreka Ditch in addition to the above amount, when the flow of the ditch is in excess of that required to furnish a full head at the limiting section of the ditch below the J. S. Walker ranch.

W. T. Kiernan has a right to 20 Miners Inches under a four inch pressure during the month of May, and stock water from October 15 to December 31 of each year, if water is in the Edson-Foulke Yreka Ditch. This right was granted by the Edson and Foulke Company for right-of-way privileges in the realignment of the ditch.

Mr. Workman and Mr. Haffner are sold water during May and the early part of June, during years when water in excess of that required by the Edson and Foulke Company is available from the Willow Creek diversion.

Three permanent gaging stations were maintained on the Edson-Foulke Yreka Ditch - Gage 15, 1/4 mile below the intake; and Gages 7 and 8 above and below Parks Creek, respectively. A permanent measuring station, Gage 37, was also maintained on the diversion from Willow Creek. The results of measurements obtained at these stations are submitted at the end of this report in Tables 48 to 59, inclusive. Tables 48 to 53, inclusive, and 56 and 57 give the results of direct measurements taken at

the measuring stations. Tables 54 and 55, compiled from the difference between the results of measurements taken at Gages 7 and 8, give the flow diverted into the Edson-Foulke Yreka Ditch from Parks Creek. Tables 58 and 59, compiled from the summation of the results of measurements obtained at Gages 8 and 37, give the total flow diverted by the Edson-Foulke Yreka Ditch below Parks Creek.

Current meter measurements were also taken on the Edson-Foulke Yreka Ditch above and below the C. S. Hammond and J. S. Walker ranches, respectively. A weir measurement was made at the Edson-Foulke division weir. These measurements were taken to determine the maximum capacity of the ditch at limiting sections, controlling the use of Edson-Foulke Yreka Ditch waters by the H. T. Cooper, C. S. Hammond, and J. S. Walker ranches. In accordance with statements by Edson Foulke, who was present when the measurements were made, diversions from the ditch by these ranches are permitted as long as the flow in the ditch is maintained to maximum capacity below the C. S. Hammond and J. S. Walker ranches, respectively. Clifton Walker was also present when measurements 3 and 4 were taken.

The results are shown below:

No. of Meas.	Date	Location of pt. of meas.	Discharge sec. ft.	Remarks
1	June 7,1923	Upper end of C. S. Hammond ranch.	26.2	Ditch running less than maximum capacity. Gaged by H.Smitherum.
2	June 7,1923	Lower end of C. S. Hammond ranch.	23.1	Ditch running considerably below maximum capacity. Gaged by H.Smitherum.
3	June 11,1923	Upper end of J. S. Walker ranch.	37.5	Ditch running full. Also represents maximum capacity at Gage 8 for 1923. Gaged by Smitherum.

(cont.)

No. of Meas.	Date	Location of pt. of meas.	Discharge sec. ft.	Remarks
4	June 11,1923	Lower end of J.S. Walker ranch.	27.8	Ditch running full. Represents maximum delivery to Edson and Foulke Company weir for 1923. Gaged by H. Smitherum.
5	June 23,1922	At Edson-Foulke Co. Division Weir.	30.8	Gaged by P. L. Beck.

Due to insufficient flow the maximum capacity of the ditch above and below the C. S. Hammond ranch could not be determined. However, from measurements secured during 1923 at Gages 15 and 7, showing maximum discharges of 29.2 second feet and 28.5 second feet respectively, it is concluded that the limiting section of the ditch between the head and Parks Creek, is at the intake. Diversions from the ditch by the H. T. Cooper and C. S. Hammond ranches, therefore, tend to decrease the flow below the maximum capacity of the ditch above Parks Creek, requiring greater diversions from Parks Creek to maintain operating heads in the ditch below Parks Creek. Use by the above ranches is, therefore, limited by the flow available for diversion by the Edson-Foulke Yreka Ditch from Parks Creek. The flow available for diversion from Parks Creek by the Edson-Foulke Yreka Ditch is in turn limited to the flow of Parks Creek in excess of 6.0 second feet; the first 6.0 second feet being owned by rights prior to those of the Edson and Foulke Company.

The difference of 3.1 second feet between measurements 1 and 2 represents the diversion from the Edson-Foulke Yreka Ditch by the C. S. Hammond ranch at the time of measurement.

Joint diversions from the Edson-Foulke Yreka Ditch by H. T. Cooper and C. S. Hammond, are shown below by the differences between the

results of measurements obtained at Gages 15 and 7 for 1922 and 1923, respectively. The differences also include the ditch loss between the points of measurement. This is, however, compensated for by inflow to the ditch from irrigation on the Dow and Cooper ranches, below Gage 15, and has been neglected.

1922.

Date	Gage 15 Disch.sec.ft.	Gage 7 Disch.sec.ft.	Diff. sec.ft.	Remarks
May 6	23.8	25.0	+ 1.2	Plus quantities indicate inflow from Scott Ditch greater than diversions from Edson-Foulke Yreka Ditch.
May 8	23.8	25.0	+ 1.2	
May 22	17.3	15.2	- 2.1	Negative quantities indicate use of Edson-Foulke Yreka Ditch Waters.
June 5	28.5	15.2	- 13.3	
June 20	29.8	23.8	- 6.0	

Note:-Discharge at Gages 15 and 7 taken from Tables 48 and 50, respectively.

1923.

Date	Gage 15 Disch.sec.ft.	Gage 7 Disch.sec.ft.	Diff. sec.ft.	Remarks
May 14	29.0	24.5	- 4.5	
May 16	29.2	26.0	- 3.2	Negative quantities represent use of Edson-Foulke Yreka Ditch waters.
May 20	28.5	27.0	- 1.5	
June 5	17.6	15.3	- 2.3	

Note:-Discharges at Gages 15 and 7 taken from Tables 49 and 51, respectively.

Measurements 3 and 4 represent the maximum capacity of the ditch below the Parks Creek diversion and at the lower end of the J. S. Walker ranch, respectively. The difference of 9.7 second feet, however, does not represent the use of Edson-Foulke Yreka Ditch water on this date

by J. S. Walker as approximately 3.0 second feet was being spilled into the ditch from the I. S. Clark Ditch (Diversion 182).

Measurement 5 was taken at the division weir approximately 4 miles below measurement 4. The result, showing a discharge of 30.8 second feet, would indicate that the maximum capacity of the Edson-Foulke Yreka Ditch at the lower end of the J. S. Walker ranch was greater in 1922 than the 27.8 second feet shown by measurement 4 taken in 1923. This variation in the maximum capacity of the ditch is probably due to the ditch being maintained in better shape in 1922 than in 1923.

Sufficient measurements were not obtained on the ditch at the lower end of the J. S. Walker ranch to determine the quantities diverted by the above ranch throughout the seasons of 1922 and 1923; however, an indication of the possible diversions are given by the differences between the results of measurements at Gage 8 (Tables 52 and 53) and the results of measurements 5 and 4, for 1922 and 1923 respectively. Including the 1.2 second feet covered by the agreement as given above, the maximum diversions for 1922 and 1923 are 10.7 second feet and 7.2 second feet, respectively. The mean daily diversion from May 3 to June 30, 1922 and from April 12 to June 30, 1923 were 4.6 second feet and 3.2 second feet, respectively. Measurements taken May 17, 1923 on the seven takeouts between the upper and lower ends of the J. S. Walker ranch, and, as stated by Mr. Meyers, foreman of the Walker Ranch, representing the normal though not continuous diversions from the Edson-Foulke Yreka Ditch, showed a total diversion of 6.3 second feet, or a flow of 5.1 second feet in excess of the flow covered by the agreement.

The results of the above measurements, together with the diversions from the ditch by right through agreements with or through

purchase of water from the Edson and Foulke Company, represent the normal operation of the ditch. Shasta River is the main source of supply. Diversions from Parks Creek are made, when the flow of Parks Creek is in excess of 6.0 second feet, to make up deficiencies of flow below Parks Creek, caused either by lack of sufficient flow in Shasta River, or by diversions from the ditch above Parks Creek. Diversions from the ditch other than those covered by agreements are permitted by the H. T. Cooper and C. S. Hammond ranches above Parks Creek and by the J. S. Walker ranch below Parks Creek, as long as the flow of the ditch is maintained at maximum capacity below the latter ranch. The flow delivered to the diversion weir in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 15 T 42 N, R 6 W is divided, 3/4 part going to the Edson and Foulke Company and 1/4 part to the remaining owners in the ditch through the Webb Ditch. The diversion from Willow Creek is operated as a supplemental supply for the Edson and Foulke Company.

The results of measurements showing the maximum capacity of the ditch at various points are given below.

Date	Location of pt. of measurement.	Discharge sec. ft.	Remarks
June 20,1922	Gage 15,1/4 mile below intake.	29.8	Max. for 1922. Table 48
April 17,1923	do.	29.2	Current meter measurements by H.Smitherum;Ditch running full below station at time of measurement.
May 10, 1923	do.	29.2	
May 15, 1922	Gage 7,above Parks Cr.	28.6	Maximum for 1922.Table 50.
April 12,1923	do.	28.5	Current meter measurement by H. Smitherum.
May 15, 1922	Gage 8, below Parks Cr.	41.5	Maximum for 1922-Table 52.
May 11, 1923	1/4 mile below Parks Creek.	*37.5	Current meter measurement by H.Smitherum. Ditch running full at time of measurement. Also represents max.for Gage 8 during 1923.

(cont.)

Date	Location of pt. of measurement.	Discharge sec. ft.	Remarks
June 11,1923	Lower end of J. S. Walker ranch NE¼ NW¼ Sec.30 T 42 N, R 5 W.	*27.8	Current meter measurement by H.Smitherum. Ditch running full at time of measurement.

*Edson Foulke and Clifton Walker present when measurements were taken.

The results of four measurements taken on the Edson-Foulke Yreka Ditch in 1912, and available through O.E.S. Bulletin 254, are given below:

No. of meas.	Date	Discharge second feet.	Remarks
1	June 5,	27.8	From the information given in Bulletin 254, it is assumed that these measurements were taken near the head of the ditch.Measurement 2, however, appears high for this section of the ditch.
2	June 27,	35.6	
3	July 11,	27.0	
4	July 24,	25.2	

Diversion 19 is that of the Dobkins Ditch, diverting from the west side of Shasta River in the SE¼ SW¼ Sec. 9 T 41 N, R 5 W, just below the intake of the Edson-Foulke Yreka Ditch (see map sheet 5).

The water is conveyed by an earth ditch one half of a mile long, and thence by a small natural channel tributary to Shasta River, to the north boundary of Sec. 9 T 41 N, R 5 W, and is used for the irrigation of 20.2 acres of pasture land (see map sheet 5,and Acreage Table page 53). Water is available for diversion by this ditch only during the period when the flow of Shasta River is in excess of that required by the Edson-Foulke Yreka Ditch.

A current meter measurement was taken on the ditch May 29, 1923.

The resulting discharge of 2.41 second feet represents the flow available at that time. The maximum capacity was computed and found to be 4.91 second feet. This also is the normal irrigating head as the ditch is operated at maximum capacity as long as that amount of water is available, as stated by J. M. Dobkins.

The results of measurements taken in 1912, and available through O.E.S. Bulletin 254, which designates this ditch as Dobkins No. 6, follow:

Date	Discharge in second feet
May 29,	10.09
June 27,	2.07
July 11,	0.22
July 24.	0.22

Diversions 20, 21, and 22 are those of the Dobkins Ditches, diverting from a small unnamed fork of Shasta River, which is fed principally by return flow from irrigation on the I. M. Dow Ranch, in the E½ of Sec. 16 T 41 N, R 5 W. Diversion 20 heads on the east bank of the stream in the NW¼ NE¼ Sec. 16 T 41 N, R 5 W. Diversions 21 and 22 head on the east and west side of the stream, respectively, in the SW¼ SE¼ Sec. 9 T 41 N, R 5 W, their respective points of diversion being about 600 feet apart (see map sheets 3 and 5).

The conduit is in each case a short earth ditch, conveying water for the irrigation of pasture land, as described in the Acreage Table, page 53.

A summary of the data contained in the Acreage Table, follow:

Name of Ditch	Diversion No.	Total Acreage Irrigated.	Map Sheet
Dobkins	20	21.2	3 and 5
Dobkins	21	9.6	5
Dobkins	22	5.7	5

The results of current meter measurements taken on the ditches May 29, 1923, follow:

Name of Ditch	Diversion No.	Discharge, sec.ft.	Remarks
Dobkins	20	1.27	Maximum capacity and also normal irrigating head, as stated by J.M. Dobkins.
Dobkins	21	0.55	Available flow.
Dobkins	21	0.80	Computed maximum capacity.
Dobkins	22		* No measurements taken.

*Ditch not indicated as a diversion by J. M. Dobkins at the time the Dobkins ditches were being measured.

Diversion 23 is that of the Kasshafer East Side Ditch, diverting from the Shasta River in the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 4 T 41 N, R 5 W (see map sheet 7).

The water is conveyed by an earth conduit one fourth of a mile in length, and is used for the irrigation of a narrow strip of pasture land lying between the river and the base of the hills to the east. The area irrigated is 3.1 acres (see map sheet 7, and Acreage Table page 135).

A current meter measurement was taken on the ditch May 23, 1923 and gave a discharge of 0.51 second foot. This flow represents the normal irrigating head as per K. M. Kasshafer, who was present when the measurement was taken. The maximum capacity was computed and found to be 0.87 second foot.

The result of one measurement taken July 24, 1912, and available through O.E.S. Bulletin 254, which designates this ditch as Kasshafer No.2, shows a discharge of 0.83 second foot.

Diversion 24 is that of the Kasshafer West Side Ditch, diverting from Shasta River in the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 4 T 41 N, R 5 W (see map sheet 7).

Diversion is made by means of a low dam, used in common with the Kasshafer East Side Ditch. The water is conveyed by means of an earth conduit and a short flume to a point 100 feet below the intake. From this point it is carried and distributed by an earth ditch running parallel to and some 200 feet distant from the river, or is spilled into a natural channel traversing the Kasshafer ranch, and distributed by numerous ditches diverting from this channel. The ditch serves an irrigated area of 132.7 acres of alfalfa, hay, and meadow lands (see map sheets 7 and 10, and Acreage Table pages 135 to 137, inclusive).

Two current meter measurements were taken on the ditch on May 23, 1923, showing discharges of 9.57 and 11.80 second feet, respectively. The discharge of 9.57 second feet represents the normal irrigating head carried by the ditch, as stated by F. M. Kasshafer. The discharge of 11.80 second feet represents the maximum capacity, as the ditch was running full when the measurement was taken.

The results of four measurements taken during 1912, and available through O.E.S. Bulletin 254, which designates this ditch as Kasshafer No. 1, follow:

Date	Discharge in second feet
June 5,	11.93
June 27,	1.13
July 11,	3.38
July 24.	2.15

Diversion 25 is that of the Gussie Behnke Ditch, diverting from the right bank of Shasta River in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 33 T 42 N, R 5 W (see map sheet 10).

The conduit is an earth ditch 900 feet long. The ditch had not been used for two or three years prior to 1923, and is in a bad state of repair. By appearances it may have been abandoned. Prior to 1920 or 1921 the water diverted by the ditch was used for the irrigation of 1.9 acres of pasture land. This acreage is also under the Gussie Behnke Ditch from Boles Creek, Diversion 64 (see map sheet 10, and Acreage Table page 10).

No measurements were taken on this ditch, as it was not in use during the period of the field investigation.

Diversion 26 is that of the Kasshafer Ditch, diverting from the right bank of a small stream traversing the lower end of the Kasshafer ranch. This stream is fed principally by return water from irrigation above.

The point of diversion of the ditch is located in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 33 T 42 N, R 5 W. From this point the water is conveyed by an earth ditch for a distance of 300 feet, and is used for the irrigation of 8.0 acres (see map sheet 10, and Acreage Table page 137).

A current meter measurement was taken on the ditch May 23, 1923. The ditch was running full at the time the measurement was taken and the resulting discharge of 0.82 second foot represents the maximum capacity of the ditch. This flow also represents the normal irrigating head, in accordance with statements by W. H. King, who was present at the time the measurement was taken. Mr. W. H. King was representing Mrs. C. A. Kasshafer, owner of the ditch.

Diversion 27 is that of the Behnke, Chase, and Cavanaugh Ditch, diverting from the left bank of Shasta River in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 33 T 42 N, R 5 W (see map sheet 10).

Diversion is made by means of a low rock dam. The conduit is an earth ditch about one mile in length, terminating on the west line of the NW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 28 T 42 N, R 5 W. At a point 500 feet below the intake, the ditch crosses a small channel, through which water from a spring rising in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 33 T 42 N, R 5 W, together with return water from irrigation above, enters the ditch. Under normal operating conditions the ditch diverts the flow available from Shasta River up to the maximum capacity of the ditch, and additional water from the spring as required. Water from the spring forms the sustained late summer flow of the ditch. The water is used for the irrigation of 48.5 acres of land, as described in the Acreage Table, under the names of the three owners of the ditch. A summary of the data contained in the Acreage Table follows:

Name of Owner	Acreage Irrigated	Map Sheet	Acreage Table page
Behnke, Gussie	6.4	10	10
Cavanaugh, R. E.	19.9	12	36
Chase, Geo. E.	22.2	10	38

On May 24, 1923 a current meter measurement taken on the ditch below the intake, gave a discharge of 2.52 second feet. The ditch was running full at the time the measurement was made, and the resulting discharge represents the maximum capacity of the ditch. Geo. E. Chase, who was present when the ditch was measured, stated that the maximum flow was also the normal irrigating head, when that quantity of water was available.

The area irrigated from the ditch was formerly contained in one ranch owned by R. E. Cavanaugh. The use of the water by present owners is rotated in accordance with the usage on the old ranch as a whole. Under

these conditions the pasture lands, now owned by Gussie Behnke and irrigated under the ditch, receive water only when the supply is in excess of that required for irrigation on the Chase and Cavanaugh ranches.

Diversion 28 is that of the Kasshafer Ditch, diverting from a branch of the unnamed fork of Shasta River, described under Diversion 29. The point of diversion is on the west side of the stream in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 4 T 41 N, R 5 W (see map sheet 7).

The conduit is an earth ditch one fourth of a mile long. An area of 5.2 acres is irrigated under the ditch (see map sheet 7, and Acreage Table page 137).

A current meter measurement was taken on the ditch May 23, 1923. The resulting discharge of 0.22 second foot represents the normal irrigating head, as stated by F. M. Kasshafer, who was present when the measurement was taken. The maximum capacity of the ditch was computed and found to be 1.52 second feet.

Diversion 29 is that of the Kasshafer Ditch, diverting from a small unnamed fork of Shasta River, which rises in several branches in the SW$\frac{1}{4}$ Sec. 4 and the SE$\frac{1}{4}$ Sec. 5 T 41 N, R 5 W, flows through the Kasshafer and Gussie Behnke ranches and enters the Shasta River at a point within the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 33 T 42 N, R 5 W. The stream is fed principally by return flow from irrigation on the Hammond Ranch. The ditch diverts from the east side of the stream in the NW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 4 T 41 N, R 5 W.

The conduit is an earth ditch 300 feet long and serves an irrigated area of 8.4 acres of meadow hay land (see map sheets 7 and 10, and Acreage Table page 137).

A current meter measurement was taken on the ditch on May 23,1923.

The resulting discharge of 1.23 second feet represents the maximum capacity of the ditch, as the ditch was running full when measured. This flow also represents the normal irrigating head, as stated by F. M. Kasshafer.

Diversion 30 is that of the Kasshafer Ditch diverting from the same stream as described under Diversion 29. The point of diversion is on the east bank of the stream, about 600 feet below Diversions 29, in the NW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 4 T 41 N, R 5 W (see map sheet 7).

The conduit is an earth ditch about 300 feet long. An area of 7.7 acres of pasture land is irrigated under the ditch (see map sheets 7 and 10, and Acreage Table page 137).

A current meter measurement was taken on the ditch May 25, 1923, showing a discharge of 2.01 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by F. M. Kasshafer.

Diversion 31 is that of the Kasshafer Ditch diverting from a branch of the unnamed fork of Shasta River, described under Diversion 29. The ditch diverts from the north side of the stream in the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 32 T 42 N, R 5 W (see map sheet 9).

The conduit is an earth ditch about one fourth of a mile long. An area of 16.5 acres of land is irrigated under the ditch (see map sheets 9 and 10, and Acreage Table page 138).

A current meter measurement was taken on the ditch May 23, 1923, showing a discharge of 1.20 second feet. This discharge represents the maximum capacity of the ditch. The ditch is supplied entirely by waste water from irrigation and has no normal operating head, merely diverting

the water that is available.

Diversions 32 and 33 are those of the Gussie Behnke Upper and Lower Ditches, respectively, diverting from the unnamed fork of Shasta River described under Diversions 29. The points of diversion are within the NW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 33 T 42 N, R 5 W (see map sheet 10).

The conduits are short earth ditches. The water diverted by these ditches is return water from irrigation, and the ditches are dry during the entire low water season. The areas irrigated under Diversions 32 and 33 are 2.1 acres and 1.4 acres, respectively, of wild grass pasture lands (see map sheet 10, and Acreage Table page 11).

No measurements were taken on Diversion 32 as the ditch was not indicated as a diversion when the other Behnke ditches were being measured. A current meter measurement was taken on Diversion 33 May 25, 1923, showing a discharge of 0.63 second foot. This flow represents the normal irrigating head, as stated by W. H. King, representing F. M. Kasshafer, lessee of the Gussie Behnke Ranch. The maximum capacity of the ditch was computed and found to be 1.65 second feet.

Diversion 34 is that of the Chase Ditch, diverting from the west side of the stream described under Diversions 29. The point of diversion is within the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 33 T 42 N, R 5 W (see map sheet 10).

The conduit is an earth ditch 560 feet in length, and serves an irrigated area of 8.6 acres, of which 5.9 acres are owned by Geo. E. Chase, and 2.7 acres are owned by M. L. Frame (see map sheet 10, and Acreage Table pages 38 and 94).

On May 24, 1923 two current meter measurements were taken on the ditch. Measurement 1 gave a discharge of 0.46 second foot and re-

presents the normal irrigating head, as stated by Geo. E. Chase. Measurement 2 was taken with the ditch running full, and the discharge of 0.99 second foot represents the maximum capacity of the ditch.

Diversion 35 is that of the Kellogg and Son Ditch, diverting from the South Fork of Boles Creek in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 23 T 41 N, R 5 W, at a point 300 feet below the spring forming the source of the creek (see map sheet 14).

The conduit is an earth ditch running in a northeasterly direction for a distance of 500 feet, across lands owned by C. S. Hammond, and thence northerly for 1400 feet, on the Geo. A. Kellogg and Son Ranch. The ditch serves an irrigated area of 9.7 acres on the Hammond Ranch and 19.4 acres on the Kellogg and Son Ranch, or a total acreage of 29.1 acres. Of this total area, 4.2 acres on the Hammond Ranch have been classed as sub-irrigated from the ditch (see map sheet 14 and Acreage Table pages 114 and 139).

In the Acreage Table, page 139, an area of 83.8 acres on the Kellogg and Son Ranch, has been described as sub-irrigated from the South Fork of Boles Creek. Underground seepage from the surrounding hills, together with water flowing in the creek channel during the early part of the irrigation season, forms the source of supply for the sub-irrigation of this area.

A volumetric measurement of the flow of the spring was taken July 18, 1923, and found to be 0.107 second foot. A float measurement was taken on the ditch just below the intake, showing a discharge of 0.10 second foot. The ditch was running full at the time of measurement, but could be made to carry more water by cleaning. It was, however, impossible to secure a suitable measurement from which the maximum capacity

could be computed.

Diversion 36 is that of the Weed Lumber Company's Igerna Pipe Line, diverting from the South Fork of Boles Creek, in the NW¼ NW¼ Sec. 13 T 41 N, R 5 W (see map sheet 14).

Diversion is made from a small regulating reservoir, formed by the construction of a dam across the stream. The dam is a log crib filled with dirt and rock, and faced on the up stream side with planking. It is about 10 feet high by 50 feet long on top. The water level in the reservoir is controlled by a spillway provided with flash boards. The conduit is a 10 inch diameter wood stave pipe, 9800 feet in length, conveying water to Weed, where it is used for fire protection purposes, and for the irrigation of lawns and gardens. This water is not used for household purposes (see sheets 14, 15, and 16).

The capacity of the pipe line was computed and found to be 3.6 second feet. In this computation only the main pipe line from the reservoir to its outlet at the mill pond in Weed was considered. The maximum head on the pipe was taken as the difference between the elevation of the top of the flash boards at the spillway on the dam and the elevation of the outlet of the pipe at the mill pond, as determined by the Division of Water Rights in November, 1923.

On September 13, 1923 the flow available for diversion by the pipe line was measured and found to be 0.97 second foot. This flow is the sum of the flows of the South Fork of Boles Creek above the reservoir, a small spring entering the reservoir just above the dam, and a small spring conducted to the reservoir by a short V shaped flume.

Diversion 37 is that of the Kellogg Ditch, diverting from a spring

located at the head of a small unnamed fork of Boles Creek, in the NW¼ NW¼ Sec. 13 T 41 N, R 5 W. The point of diversion is 350 feet, SE of the NW Cor. Sec. 13 T 41 N, R 5 W, and on the east side of the State Highway (see map sheet 14).

The conduit is an earth ditch 400 feet long, running parallel with the State Highway. An area of 0.9 acres of pasture land is irrigated under the ditch (see map sheet 14, and Acreage Table page 139).

A volumetric measurement of the discharge of the ditch when running full, was taken July 10, 1923 and found to be 0.162 second foot. A measurement was also taken to determine the total flow of the spring, and gave a discharge of 0.168 second foot.

Diversion 38 is that of the Kellogg Ditch, diverting from the small unnamed fork of Boles Creek mentioned under Diversion 37. The diversion point is within the NW¼ NW¼ Sec. 13 T 41 N, R 5 W, just below the old county road (see map sheet 14).

Diversion is made by means of a temporary rock and dirt dam. The water is conveyed for a distance of about 400 feet by an earth ditch, and is used for the irrigation of 0.9 acres of pasture land (see map sheet 14, and Acreage Table page 139).

A volumetric measurement, taken on the ditch July 18, 1923, gave a discharge of 0.121 second foot. This discharge represents the normal irrigating head. No determination of the maximum capacity of the ditch was made, for the reason that the first 100 feet of the ditch section is relatively large, and the maximum flow that could be diverted would be out of proportion to the irrigable area under the ditch.

Diversions 39 and 40 are those of the Weed Estate North Ditch and the

Weed Estate South Ditch, respectively, diverting from Black Butte Spring in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 18 T 41 N, R 4 W.

The Weed Estate North Ditch is an earth conduit about 350 feet long, diverting from the north channel of the spring, and serves an irrigated area of 1.6 acres of pasture land (see map sheet 13, and Acreage Table page 266).

The Weed Estate South Ditch is an earth conduit about 400 feet long, diverting from the south channel of the spring, and serves an irrigated area of 2.4 acres of pasture land (see map sheet 13, and Acreage Table page 266).

The ditches are in very poor shape, and little or no attempt is made to divert or use the water available at their intakes. The land lying under the ditches is for the most part sub-irrigated from the spring.

A weir measurement of the total flow of Black Butte Spring was taken September 19, 1923, at a point below the junction of the two spring channels, and a discharge of 0.49 second foot was obtained.

Diversion 41 is that of the Weed Estate Ditch, diverting from Black Butte Creek, just below the Southern Pacific Railroad Crossing, east of Igerna Station. The point of diversion is 300 feet northwest of the center of section 13 T 41 N, R 5 W (see map sheet 14).

The conduit is an earth ditch one half of a mile long, running north from the point of diversion, and terminating in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 12 T 41 N, R 5 W. The ditch is provided with a control gate at the intake. The water diverted by the ditch is used for the irrigation of 3.7 acres of land (see map sheets 14 and 15, and Acreage Table page 266.)

On September 15, 1923 the ditch was diverting the entire flow of the stream. A volumetric measurement was made on the stream above the

head of the ditch, resulting in a discharge of 0.169 second foot. The maximum capacity of the ditch was computed and found to be 0.90 second foot.

Diversion 42 is that of the Kellogg Ditch, diverting from Kellogg Spring in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 13 T 41 N, R 5 W. This spring is the source of the water flowing in the Middle Fork of Boles Creek (see map sheet 14).

A wall has been placed around the spring to raise the water level thereof, and diversion is made direct from the spring by a wooden flume, 1.0 foot wide by 0.9 foot deep. The water is conveyed by the flume for a distance of 350 feet, thence 600 feet by an earth ditch, and is used for the irrigation of 6.1 acres of pasture land (see map sheet 14, and Acreage Table page 140). In the Acreage Table, page 140, 8.2 acres of pasture land have been described as sub-irrigated from the spring.

A float measurement was taken near the intake of the flume July 16, 1923. The ditch was running full below the end of the flume, and the resulting discharge of 0.23 second foot represents the maximum capacity of the ditch, and also the normal irrigating head.

Diversion 43 is that of the Kellogg Flume, diverting from the Middle Fork of Boles Creek, 250 feet below Kellogg Spring. The point of diversion is within the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 13 T 41 N, R 5 W (see map sheet 14).

Diversion is made by means of a wooden sheet piling dam about 2.5 feet high by 10.0 feet long. The conduit is a wooden flume, 1.0 foot wide by 0.9 foot deep and 250 feet long. Construction on the dam and flume was completed in July, 1923. Water was first diverted July 16, 1923 and used to operate a water wheel located at the end of the flume. After passing over the wheel the water is returned to the stream above all

lower diversions. The rights of prior appropriators are in no way affected by this diversion.

On July 16, 1923 a float measurement was taken of the flow in the flume, showing a discharge of 0.23 second foot. This discharge represents the flow diverted by the flume under operating conditions existing at that time. Although additional water was available, a greater diversion could not be made without considerable work on the dam; therefore the maximum capacity of the flume was not measured.

Diversion 44 is that of the Kellogg Ditch, diverting from the Middle Fork of Boles Creek in the NW¼ NW¼ Sec. 13 T 41 N, R 5 W (see map sheet 14).

The conduit is an earth ditch 350 feet long and supplies water for the irrigation of 0.6 acres of pasture land (see map sheet 14, and Acreage Table page 140).

The ditch was not used during 1923, and was in such poor shape that measurements for the computation of the maximum capacity could not be obtained.

Diversion 45 is that of the Dobkins Ditch, diverting from the Middle Fork of Boles Creek, just above the point of confluence of the South Fork. The point of diversion is in the southeast corner of the SW¼ SW¼ Sec. 12 T 41 N, R 5 W (see map sheet 15).

Diversion is made by means of a low rock and dirt dam. The conduit is an earth ditch carried along the west side of Boles Creek to a point where the State Highway crosses the ditch, and thence easterly across a low divide to the upper end of a small draw tributary to Boles Creek. From this point the ditch runs northwesterly, circling the head of the draw, and terminating along the south slopes of the same, in the SE¼ SE¼

Sec. 3 T 41 N, R 5 W. A lateral, diverting from the main ditch at the head of the draw, runs north along the east side of the draw. The length of the main ditch is approximately two miles, and that of the lateral, one fourth of a mile. The ditch serves an irrigated area of 47.5 acres (see map sheets 15, 17, and 18, and Acreage Table page 54).

In operation a considerable portion of the water diverted is lost by seepage through the porous, sandy soil traversed by the ditch between the intake and the first point of use, a distance of one and one half miles. However, more water is delivered at the head of the irrigated area than can be reasonably used thereon, and the excess water collects in the bottom of the draw, forming a swamp. Overflow from the swamp is returned to Boles Creek in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 2 T 41 N, R 5 W (see map sheet 16).

A current meter measurement taken near the head of the ditch July 14, 1923, gave a discharge of 0.62 second foot. J. M. Dobkins, who was present, stated that this flow represented the normal irrigating head, and that for maximum flow the water in the ditch would be 0.10 foot deeper. On this basis the computed maximum flow was found to be 1.19 second feet. During 1924, three measurements were taken on the ditch at the State Highway crossing, the results of which follow:

Date	Discharge in Second Feet	Remarks
June 19,	0.81	Current meter measurement.
August 7,	*0.21	Weir measurement.
August 22.	0.63	Weir measurement.

*Measurement taken after the diversion had been regulated for the co-operative distribution of water under the Shasta River Water Users Agreement.

Diversion 46 is that of the Weed Lumber Company Ditch, diverting from Boles Creek below the junction of the South and Middle Forks. The point of diversion is within the SW¼ SW¼ Sec. 12 T 41 N, R 5 W (see map sheet 15).

The water is conveyed by an earth ditch along the west side of Boles Creek, a distance of approximately one mile, to the S½ SW¼ Sec. 2 T 41 N, R 5 W, where it is used for washing beef in the Weed Lumber Company's slaughter house and for the irrigation of 48.2 acres of pasture land (see map sheet 16 and Acreage Table page 267). A considerable portion of the water diverted by the ditch is lost, between the intake and the point of use, by seepage into the porous, sandy soil traversed by the ditch. In general, more water is delivered to the irrigated land than can be reasonably used thereon. Considerable of this excess water drains into the same swampy area that receives drainage from irrigation under Dobkins Ditch (Diversion 45), and is returned to Boles Creek in the SW¼ NW¼ Sec. 2 T 41 N, R 5 W (see sheet 16).

On July 10, 1923 the water flowing in the ditch was measured giving a discharge of 1.89 second feet. The point of measurement was down stream from the wasteway, located about 400 feet below the head of the ditch. A flume below the measuring section, was running full when the measurement was taken. The discharge represents the maximum capacity of the ditch, and the head carried under normal operating conditions. The following measurements were taken on the ditch just above the State Highway crossing, in 1924:

Date	Discharge in Second Feet	Remarks
June 19,	0.92	Current meter measurement.
July 26,	1.74	Current meter measurement.
August 1,	1.13	Current meter measurement.
August 2,	*0.52	Current meter measurement.
August 7.	*0.56	Weir measurement.

*Measurements taken after the diversion had been regulated, for the co-operative distribution of water under the Shasta River Water Users Agreement.

Diversion 46A is that of the Medici Pipe Line, diverting from a spring in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 11 T 41 N, R 5 W (see map sheet 15).

The conduit is a 1 1/2 inch pipe, 700 feet in length, conveying water to the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 11 T 41 N, R 5 W, where it is used for domestic purposes by B. Medici.

Diversion 47 is that of the Sullivan Ditch, diverting from the east side of Boles Creek in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 11 T 41 N, R 5 W (see map sheet 15).

The conduit is an earth ditch carried along the east side of Boles Creek, and terminating in the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 2 T 41 N, R 5 W. At a point 150 feet below the intake, a lateral from the main ditch crosses Boles Creek on a V shaped flume, and serves an irrigated area on the west side of the creek. The water diverted by the ditch is used for the irrigation of 12.5 acres of pasture land (see map sheets 15 and 16, and Acreage Table page 253). A considerable quantity of the water diverted is returned to the stream from the irrigation of the above lands.

The flow of the ditch was measured by current meter July 18, 1923. The ditch was running full when measured, and the resulting discharge of 1.22 second feet represents the maximum capacity of the ditch. Lawrence Sullivan, lessee, stated that this flow was also the normal irrigating head.

Diversion 48 is that of the Shastina Domestic Pipe Line, diverting from Sullivan Spring in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 11 T 41 N, R 5 W (see map sheet 15). The system is owned and operated by Mrs. G. A. Sullivan.

The spring has been walled in by a concrete box and diversion is made therefrom by a 12 inch diameter wood stave pipe, tapering to 6 inch diameter wood stave pipe at an exposed section at the Boles Creek crossing,

2440 feet from the intake. From this latter point the pipe line consists of 550 feet of 6 inch diameter and 460 feet of 4 inch diameter wood stave pipe. The pipe line is covered from the intake to the Boles Creek crossing, and the lengths of the different sized pipes, used in making the transition from the 12 inch diameter to the 6 inch diameter, could not be obtained. The total length of the main pipe line from the intake at the spring to the northern boundary of the town of Shastina is 3450 feet. The water is used in Shastina for domestic purposes.

The flow of the spring was not measured, but under normal operating conditions is entirely used for the domestic supply of the town of Shastina. For the reasons stated above, sufficient data were not available to permit of the computation of the capacity of the pipe line.

Diversion 49 is that of the Sullivan Ditch, diverting from Sullivan Spring in the SE¼ NE¼ Sec. 11 T 41 N, R 5 W (see map sheet 15).

The conduit is a short earth ditch. An area of 1.6 acres of pasture land is irrigated under the ditch (see map sheet 15, and Acreage Table page 254).

No measurements were taken on the ditch as it was not indicated as a diversion by Lawrence Sullivan, when the other Sullivan ditches were measured.

Diversion 50 is that of the Shastina Domestic Pump, diverting from a spring on the G. A. Sullivan property in the SE¼ SE¼ Sec. 2 T 41 N, R 5 W (see map sheet 16).

The spring has been developed by G. A. Sullivan to supply additional water for domestic use in the town of Shastina. In the summer of 1924, a concrete tank was constructed around the spring, a pump in-

stalled, and the water diverted to the Shastina Domestic Pipe Line (Diversion 48). Prior to that time the flow of the spring was tributary to Boles Creek.

On October 8, 1923, a volumetric measurement of the flow of the spring was taken in the spring channel just below the State Highway, showing a discharge of 0.196 second foot.

A spring 100 feet east of Diversion 50 has also been developed by G. A. Sullivan, but up to September 1, 1924 had not been put to use. Water flowing from the spring enters Boles Creek at Shastina. A volumetric measurement of the flow of the spring was taken November 13, 1923, showing a discharge of 0.042 second foot.

Diversion 51 is that of the Sullivan Ditch, diverting from the north side of the North Fork of Boles Creek in the NE¼ NW¼ Sec. 12 T 41 N, R 5 W (see map sheet 15).

The conduit is an earth ditch one fourth of a mile in length, terminating in the SW¼ SW¼ Sec. 1 T 41 N, R 5 W. The water is used for the irrigation of 5.5 acres of pasture land, of which 3.2 acres are owned by G. A. Sullivan, and 2.3 acres are owned by the Weed Lumber Company (see map sheets 15 and 16, and Acreage Table pages 254 and 267).

A current meter measurement taken on the ditch July 18, 1923, gave a discharge of 0.30 second foot. The ditch was running full when measured, and the resulting discharge represents the maximum capacity of the ditch. Lawrence Sullivan, lessee, stated that this flow also represented the normal irrigating head.

Diversion 52 is that of the Sullivan Ditch, diverting from the south side of the North Fork of Boles Creek in the NE¼ NW¼ Sec. 12 T 41 N, R 5 W,

opposite Diversion 51 (see map sheet 15).

The conduit is an earth ditch approximately one half of a mile long, and serves an irrigated area of 11.4 acres of pasture land, of which 8.7 acres are owned by G. A. Sullivan, and 2.7 acres are owned by the Weed Lumber Company (see map sheet 15 and Acreage Table pages 254 and 267.

On July 18, 1923 a current meter measurement was taken with the ditch running full, showing a discharge of 0.75 second foot. This discharge represents the maximum capacity of the ditch, and also the normal irrigating head, as stated by Lawrence Sullivan, lessee.

Diversion 53 is that of the Sullivan Ditch, diverting from the North Fork of Boles Creek, one fourth of a mile below Diversions 51 and 52. The point of diversion is within the NW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 12 T 41 N, R 5 W (see map sheet 15).

The conduit is an earth ditch one fourth of a mile in length. An area of 13.4 acres of pasture land is irrigated under the ditch (see map sheets 15 and 16, and Acreage Table page 254).

A current meter measurement taken on the ditch July 19, 1923, gave a discharge of 0.19 second foot. This discharge represents the maximum capacity and normal irrigating head of the ditch. The ditch was, however, in poor condition and would carry additional water if cleaned.

Diversion 54 refers to the Sullivan Ranch spring in the NW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 12 T 41 N, R 5 W (see map sheet 15).

The entire surface flow of the spring is tributary to the North Fork of Boles Creek below Diversion 53. While there are no artificial diversions from the spring, an area of 5.2 acres of pasture land has been described in the Acreage Table, page 254, as sub-irrigated from the spring. This area consists of swampy lands, adjacent to the spring and the spring

channel above its confluence with the North Fork of Boles Creek.

A volumetric measurement of the flow of the spring taken September 13, 1923, gave a discharge of 0.098 second foot.

The irrigated areas under Diversions 47, 51, 52, and 53, are steeply sloping or moderately sloping lands lying adjacent to Boles Creek, and the North Fork of Boles Creek. A considerable portion of the water diverted is returned to the streams. In operation, it is the practice to rotate the use of water between the ditches.

Diversions 55, 56, and 57. Diversion 55 is that of the H. Behnke Upper Ditch, diverting from Boles Creek in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 2 T 41 N, R 5 W (see map sheet 16).

Diversion is made by means of a low, loose rock dam, and the water is conveyed by a wooden flume, 1.70 feet wide by 0.9 foot deep, to a point 100 feet below the intake, and thence by an earth ditch westerly across the S$\frac{1}{2}$ of the NE$\frac{1}{4}$ Sec. 3 T 41 N, R 5 W, to the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 3 T 41 N, R 5 W. At a point 100 feet below the intake, a portion of the water is diverted from the main ditch, conveyed across Boles Creek in a wooden flume, and thence by an earth ditch along the north side of Boles Creek to the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 3 T 41 N, R 5 W.

Diversion 56 is that of a spring flowing into the H. Behnke Upper Ditch at a point 600 feet below the head. The water from the spring is used in common with that diverted from Boles Creek.

Diversion 57 is that of a spring in the SW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 3 T 41 N, R 5 W (see map sheet 18), the flow of which is also diverted into the H. Behnke Upper Ditch. During the irrigation season the water is used for irrigation, in common with the water diverted by Diversions 55 and 56. In

the winter season, the water is used for the production of natural ice in a small pond, located on the E. J. Luken ranch in the N½ NW¼ Sec. 3 T 41 N, R 5 W (see map sheet 18).

The combined flow of Diversions 55, 56, and 57 irrigates an area of 52.7 acres, of which 43.6 acres and 9.1 acres are owned by H. Behnke and E. J. Luken, respectively (see map sheets 16 and 18, and Acreage Table pages 12 and 164).

The results of measurements taken on Diversions 55, 56, and 57 during 1923, follow:

Date	Diversion No.	Location of Measuring Pt.	Discharge Second Feet	Remarks
August 16,	55	At head.	(a) 2.54	Current meter measurement.
October 8,	56	In ditch below lowest spring.	(b) 0.21	Weir measurement.
October 8.	57	Above point of confluence with ditch.	(c) 0.087	Volumetric measurement.

(a) Ditch running full at time of measurement. Discharge represents the maximum capacity of the ditch, and also the normal irrigation head as stated by Charles Spencer, irrigator for M. Lauden, lessee.

(b) Total flow of three springs entering ditch.

(c) Flow of spring diverted to ditch.

In operation it is the common practice to keep a continuous flow of water on the irrigated area throughout the irrigation season, except for a short interval during haying. The irrigated areas range from steeply sloping to moderately sloping lands lying adjacent to Boles Creek, and a considerable quantity of the water diverted is returned to the stream, both by surface drainage and through underground percolation.

Diversion 58 is that of the H. Behnke Pipe Line, diverting from a spring

in the SW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 3 T 41 N, R 5 W (see map sheet 18).

The conduit is a 2 inch diameter iron pipe, 600 feet in length, conveying water to the H. Behnke ranch house, in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 3 T 41 N, R 5 W, where it is used for domestic purposes.

Diversion 58A is that of the Luken Pipe Line, diverting from the spring in the SW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 3 T 41 N, R 5 W (see map sheet 18).

The conduit is a 2 inch diameter iron pipe, and conveys water to the E. J. Luken ranch houses in the NW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 3 T 41 N, R 5 W, where it is used for domestic purposes.

Diversion 59 is that of the H. Behnke Lower Ditch, diverting from the south side of Boles Creek in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 2 T 41 N, R 5 W (see map sheet 16).

The water is conveyed by an earth ditch to the E$\frac{1}{2}$ NE$\frac{1}{4}$ Sec. 3 T 41 N, R 5 W, where it is used for the irrigation of 6.1 acres of meadow hay lands (see map sheet 18 and Acreage Table page 12).

On August 22, 1923, the flow of the ditch was measured with a current meter and found to be 0.38 second foot. This discharge represents the normal irrigating head carried by the ditch, and also the maximum capacity of the ditch. The ditch was, however, badly overgrown with watercress and would carry more water if cleaned.

The area irrigated is similar to that described under Diversions 55, 56, and 57, and a considerable quantity of the water diverted is likewise returned to the stream.

Diversion 60 is that of the Luken Upper Ditch, diverting from the south side of Boles Creek in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 3 T 41 N, R 5 W (see map sheet 18).

Water is diverted by means of a temporary rock and board dam, and conveyed 100 feet by a wooden flume, 1.0 foot wide by 0.8 foot deep, and thence by an earth ditch, about one half of a mile long, to the NW¼ NW¼ Sec. 3 T 41 N, R 5 W, where it is used for the irrigation of 5.3 acres (see map sheet 18 and Acreage Table page 165).

On July 18, 1923, the flow of the ditch was measured with a current meter, showing a discharge of 1.62 second feet. The ditch was running full when measured, and the discharge represents the maximum capacity of the ditch, and also the normal irrigating head.

Diversion 61 is that of the Luken Lower Ditch, diverting from the north side of Boles Creek. The point of diversion is within the NE¼ NW¼ Sec. 3 T 41 N, R 5 W, 600 feet below Diversion 60 (see map sheet 18).

Diversion is made by means of a low, loose rock dam. The water is conveyed by a wooden flume, 1.10 feet wide by 0.9 foot deep, to a point 150 feet below the intake, and thence by an earth ditch to the NE¼ NE¼ Sec. 4 T 41 N, R 5 W. An area of 14.0 acres is irrigated under the ditch, 6.5 acres of which are owned by E. J. Luken and 7.5 acres of which are owned by L. Scalise (see map sheet 18 and Acreage Table pages 165 and 212).

A current meter measurement taken on the ditch August 1, 1923, gave a discharge of 0.81 second foot. The diversion flume was running full when the measurement was made, and the resulting discharge represents the maximum capacity of the flume, and also the normal irrigating head, as stated by L. Scalise.

The areas irrigated under Diversions 60 and 61 are steeply sloping lands adjacent to Boles Creek. In operation more water is diverted by the ditches than can be reasonably used on the irrigated land

thereunder, and a considerable quantity of the water diverted is returned to the stream.

Diversion 62 is that of the L. Scalise Ditch, diverting from the north side of Boles Creek in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 4 T 41 N, R 5 W (see map sheet 18).

The conduit is a short earth ditch serving an irrigated area of 0.4 acre (see map sheet 18, and Acreage Table page 213).

No measurements were taken on the ditch as it was not indicated by L. Scalise as a diversion when he was interviewed in this connection in 1923.

Diversion 63 is that of the Behnke, Chase, and Cavanaugh Ditch, diverting from Boles Creek in the NW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 33 T 42 N, R 5 W (see map sheet 10).

Diversion is made by means of a temporary sack and dirt dam. The conduit is an earth ditch about one mile long, running northerly across Sec. 33 and the S$\frac{1}{2}$ of Sec. 28 T 42 N, R 5 W. The water diverted by the ditch is used for the irrigation of 63.0 acres of land as described in the Acreage Table, under the names of the three owners of the ditch. A summary of the data contained in the Acreage Table, follows:

Name of Owner	Acreage Irrigated	Map Sheet	Acreage Table Page
Behnke, Gussie	13.4	10	11
Cavanaugh, R. E.	10.5	12	36
Chase, Geo. E.	39.1	10,12	38,39

On May 22, 1923, a current meter measurement taken on the ditch at a flume section below the intake, gave a discharge of 5.00 second feet. The water surface in the ditch was 0.10 foot below the top of the ditch

berm at a point above the measuring section at the time the measurement was made. Geo. E. Chase and F. M. Kasshafer, lessee of the Behnke Ranch, stated that this flow represented the normal irrigating head carried by the ditch. The maximum capacity of the ditch was computed and found to be 5.45 second feet.

The greater portion of the irrigated area under the ditch is meadow hay and pasture land. It is the common practice to keep these lands continuously wet throughout the irrigation season, except for a short interval during haying time. A considerable amount of the water diverted by the ditch is returned to Boles Creek and Shasta River, both from surface drainage and through underground percolation.

Diversion 64 is that of the Gussie Behnke Ditch, diverting from Boles Creek in the NW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 33 T 42 N, R 5 W, 1000 feet down stream from Diversion 63 (see map sheet 10).

Diversion is made by means of a low, loose rock and dirt dam. The conduit is an earth ditch running northerly along the west side of Boles Creek for a distance of about 8000 feet, and thence southwesterly about 2000 feet, to its termination near the Shasta River, in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 33 T 42 N, R 5 W. An irrigated area of 37.1 acres is served by the ditch (see map sheet 10, and Acreage Table page 11). In addition to the above use, water from the ditch is at times run into Shasta River for re-diversion by and use under the Behnke, Chase, and Cavanaugh Ditch (Diversion 27) from Shasta River. The extent of this latter use is not known, other than that it applies to the use of waste or excess water flowing in the Gussie Behnke Ditch (Diversion 64). The area so irrigated by Boles Creek waters, could not be segregated from the area irrigated

under Diversion 27 by Shasta River waters.

On May 25, 1923, the water flowing in the ditch was measured with a current meter and found to be 2.12 second feet. This flow represents the normal irrigating head carried by the ditch in accordance with a statement by F. M. Kasshafer, lessee. The maximum capacity of the ditch was computed and found to be 3.45 second feet.

Diversion 65 is that of the Cavanaugh Ditch, diverting from Shasta River in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 28 T 42 N, R 5 W (see map sheet 12).

The water is diverted into a small slough, by means of a low loose rock dam constructed across Shasta River, is conveyed a short distance by the slough, and re-diverted therefrom by a dirt and rock dam. From the slough dam the water is carried by a short wooden flume, 2.12 feet wide and 2.0 feet deep, and emptied into an earth ditch, from which it is distributed by two laterals. The total length of the main conduit is about 400 feet. An area of 23.5 acres is irrigated under the ditch (see map sheet 12 and Acreage Table page 37).

A current meter measurement of the flow of the ditch under the normal irrigating head, as turned in by J. J. Wadkins, lessee, gave a discharge of 1.89 second feet. The computed maximum capacity gave a flow of 9.15 second feet.

Diversion 66 is that of the Cavanaugh Slough Ditch, which diverts from a small slough tributary to Shasta River. The diversion point is within the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 33 T 42 N, R 5 W (see map sheet 10).

The conduit is an earth ditch running northwesterly for a distance of approximately one fourth of a mile, to its termination in the Behnke, Chase, and Cavanaugh Ditch (Diversion 27), near the southwest

corner of Sec. 28 T 42 N, R 5 W. The water diverted by the ditch is used for the irrigation of 8.4 acres of pasture land (see map sheet 12 and Acreage Table page 37).

No discharge measurements were made on the ditch, as it was not indicated as a diversion when the Cavanaugh ditches were being measured.

Diversion 67 is that of the Cavanaugh Drain Ditch, heading in a buried concrete pipe, which drains hay lands in the S½ SW¼ Sec. 28 T 42 N, R 5 W (see map sheet 12).

The conduit consists of about 600 feet of 18 inch diameter concrete pipe, and an earth ditch about 100 feet in length, extending from the end of the pipe and terminating at the Cavanaugh Dairy. At this point a portion of the water discharged by the drain is used for domestic purposes; the remainder being returned to Shasta River through a small unnamed tributary.

A current meter measurement was made on the ditch at the end of the concrete pipe on May 24, 1923, showing a discharge of 0.36 second feet. This discharge represents the normal flow of the drain, as stated by R. E. Cavanaugh, who was present when the measurement was made.

Diversion 68 is that of the Cavanaugh Spring Ditch, diverting from a spring in the NW¼ SW¼ Sec. 28 T 42 N, R 5 W (see map sheet 12).

The conduit is an earth ditch about 500 feet long, and serves an irrigated area of 10.4 acres (see map sheet 12, and Acreage Table page 37).

A float measurement was made of the flow of the spring on May 24, 1923, showing a discharge of 0.16 second foot. This discharge represents the normal flow of the spring and also the normal irrigating

head carried by the ditch, as stated by R. E. Cavanaugh.

Diversion 69 is that of the Alexander Ditch, diverting from the west side of Shasta River in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 28, T 42 N, R 5 W (see map sheet 12).

Diversion was formerly made by means of a log dam, about 5 feet high and 25 feet long on top, but in July, 1924, a low concrete dam was constructed to replace the log dam. The conduit is an earth ditch about one and one half miles long, conveying water to the S. Alexander ranch in the SE$\frac{1}{4}$ of Sec. 17, T 42 N, R 5 W, where it is used for the irrigation of 66.5 acres. An area of 3.7 acres on the Mary A. Wholey ranch is also sub-irrigated from the ditch, making the total area of 70.2 acres served by the ditch (see map sheets 11, 73 and 74, and Acreage Table pages 3 and 272).

A current meter measurement was taken on the ditch May 5, 1923, showing a discharge of 2.86 second feet. This discharge represents the normal irrigating head and also the maximum capacity of the ditch, as stated by S. Alexander.

The results of measurements taken on the Alexander Ditch in 1912, and available through O.E.S. Bulletin 254, follow:

Date	Discharge in Second Feet
June 6	3.11
June 28	1.71
July 12	2.37
July 23	2.15

Diversion 70 is that of the Weed Domestic Pipe Line, diverting from Beaughan Spring in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 7, T 41 N, R 4 W (see map sheet 19). The system is owned and operated by the Weed Lumber Company.

A concrete header box has been constructed around one of the

several springs at the head of Beaughan Creek. From this header box the water is conveyed by a 6 inch diameter wood stave pipe, 7090 feet in length, to a point in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 1 T 41 N, R 5 W. From this point the water is distributed by two 4 inch diameter wood stave pipes for domestic use in the town of Weed. Under normal operating conditions during the summer months, the pipe diverts the entire flow of the spring, except for a small amount of leakage around the header box. During periods of sub-normal use the water overflows the header box and is discharged into Beaughan Creek.

The discharge of the pipe was measured July 23, 1924, showing a flow of 1.40 second feet.

Diversion 71 is that of the Weed Lumber Company Mill Ditch, diverting from Beaughan Creek in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 6 T 41 N, R 4 W (see map sheet 19).

Diversion is made by means of a concrete weir constructed across Beaughan Creek below the confluence of the several springs, which form the source of the stream. The weir was built for the purpose of dividing the waters of Beaughan Creek in accordance with an agreement, dated January 21, 1909, between the Weed Lumber Company and the lower users on Beaughan Creek. Under present operating conditions, however, the use of the weir for division purposes has been discontinued. The conduit is an earth ditch, about one and one half miles in length, running northwesterly from the weir to the Weed Lumber Company's log pond in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 1 T 41 N, R 5 W. A lateral, diverting from the ditch at a point near the center of the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 1 T 41 N, R 5 W, runs in a westerly direction and supplies water to two smaller mill ponds, located in sections 1 and 2, T 41 N, R 5 W. The water diverted by the ditch is used by the Weed Lumber

Company for various mill purposes and for the irrigation of 107.7 acres on the Weed Lumber Company ranch (see map sheets 16, 19, and 20, and Acreage Table pages 267 and 268).

A current meter measurement was taken on the ditch July 17, 1923. The resulting discharge of 4.30 second feet represents the normal head carried by the ditch.

Under present operating conditions, it is the practice of the Weed Lumber Company to divert practically the entire flow of Beaughan Creek through the ditch, and to return the lower users share of the water to the stream from the log pond. This return flow enters Beaughan Creek in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 36 T 42 N, R 5 W, above the G. W. Arbaugh ditches (see map sheet 20). Just below this point, there is located a concrete weir, equipped with a Gurley Water Stage Recorder, by means of which the water delivered to the lower users is measured. The weir and water stage recorder were installed by the Weed Lumber Company in July, 1923, under the supervision of the engineer of the Division of Water Rights, in charge of the Shasta River Adjudication field investigation.

Diversion 72 is that of the Weed Lumber Company Ditch, diverting from three springs located in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 6 and the NW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 7, T 41 N, R 4 W (see map sheet 19). These springs have been developed by the Weed Lumber Company.

The conduit is an earth ditch about one fourth of a mile long, which collects the flow of the springs and conveys it to the Weed Lumber Company Mill Ditch (Diversion 71). The water is used in common with that of the Weed Lumber Company Mill Ditch. In addition thereto, an area of 4.9 acres is sub-irrigated from the ditch and springs (see map sheet

19 and Acreage Table page 268).

A volumetric measurement of the flow of the ditch was taken July 11, 1923, showing a discharge of 0.17 second foot. This discharge represents the total flow of the three springs.

Diversion 72A is that of the Italian Town Domestic Pipe Line, diverting from Little Beaughan Spring in the NW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 1 T 41 N, R 5 W (see map sheet 19). The system is owned and operated by the Weed Lumber Company.

The conduit is a 6 inch diameter wood stave pipe, 2340 feet long, terminating in the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 1 T 41 N, R 5 W. From this point the water is distributed in Italian Town, a portion of the town of Weed, for domestic purposes.

Under normal operating conditions during the summer, the entire flow of the spring is diverted by the pipe line.

Diversion 73 is that of the Weed Lumber Company Ditch, diverting from Little Beaughan Spring in the NW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 1 T 41 N, R 5 W (see map sheet 19).

The conduit is an earth ditch, about 250 feet in length, carrying overflow water from Little Beaughan Spring to the Weed Lumber Company Mill Ditch (Diversion 71). The water is used in common with that of the latter ditch.

No measurements were made on the ditch as there was no water available for diversion during the period covered by the field investigation.

Diversion 74 is that of the Weed Lumber Company Ditch, diverting from

Beaughan Creek in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 1 T 41 N, R 5 W (see map sheet 19).

The conduit is an earth ditch, about 600 feet in length, conveying water to a lateral from the Weed Lumber Company Mill Ditch. The water is used for irrigation purposes in common with water carried by the Weed Lumber Company Mill Ditch.

A current meter measurement was taken on the ditch November 12, 1923, showing a discharge of 0.37 second foot. This discharge represents the maximum capacity of the ditch, as the ditch was running full when measured. The ditch has no normal irrigating head as the water diverted thereby is used in common with water diverted by the Weed Lumber Company Mill Ditch.

Diversion 75 is that of the Weed Lumber Company Ditch, diverting from the east side of Beaughan Creek in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 1 T 41 N, R 5 W. The point of diversion is about 500 feet down stream from Diversion 74 (see map sheet 19).

The conduit is an earth ditch, about one half of a mile long, running norhterly from the point of diversion to the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 36 T 42 N, R 5 W. An area of 15.6 acres is irrigated under the ditch (see map sheets 19 and 20 and Acreage Table page 268).

A current meter measurement was taken on a short flume at the head of the ditch July 11, 1923, showing a discharge of 0.84 second foot. This discharge represents the maximum capacity of the flume, as the flume was running full when measured, and also the normal irrigating head, as stated by J. J. Murphy, Lessee.

Diversion 76 is that of the Griffin Ditch, diverting from Beaughan Creek in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 1 T 41 N, R 5 W (see map sheet 19).

The conduit is an earth ditch, about three fourths of a mile long, running northerly to the NW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 36 T 42 N, R 5 W. The ditch serves an irrigated area of 54.6 acres, of which 16.0 acres are owned by Laura Griffin, and 38.6 acres are owned by the Weed Lumber Company (see map sheets 19 and 20, and Acreage Table pages 109 and 269).

A current meter measurement was taken on the ditch July 11,1923. The ditch was running full when the measurement was taken, and the resulting discharge of 0.52 second foot, represents the maximum capacity of the ditch and also the normal irrigating head.

Diversion 77 is that of the Griffin House Ditch, diverting from the west side of Beaughan Creek near the northwest corner of the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 1 T 41 N, R 5 W (see map sheet 19).

The conduit system consists of a short earth ditch, a wooden flume, 1.30 feet wide by 0.50 feet deep by about 250 feet long, and a 4 inch diameter steel pipe 650 feet in length. The water is conveyed by the ditch and flume to a wooden header box, 300 feet below the intake, and thence by the steel pipe to the Griffin ranch house, where it is used for domestic uses, other than drinking purposes.

A current meter measurement was taken on the flume above the header box November 12, 1923, showing a discharge of 0.60 second foot. This discharge represents the maximum capacity of the pipe line, and also the normal head when that amount of water is available for diversion.

Diversion 78 is that of the Weed Lumber Company Mill Pipe Line, diverting from Beaughan Creek in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 1 T 41 N, R 5 W (see map sheet 19).

The conduit is an 8 inch diameter wood stave pipe, 1390 feet long,

conveying water to the Weed Lumber Company Saw Mill. The water is used for the boiler feed supply at the mill.

A measurement of the normal flow of the pipe line was taken November 13, 1923, by means of a submerged orifice installed in the header box at the head of the pipe, showing a discharge of 0.98 second foot.

In addition to the acreage irrigated under the foregoing diversions numbers 71 to 78, inclusive, an area of 1.1 acres owned by the Weed Lumber Company has been described in the Acreage Table as sub-irrigated from Beaughan Creek (see map sheet 20 and Acreage Table page 269).

Diversion 79 is that of the G. W. Arbaugh Ditch diverting from the north side of Beaughan Creek in the NW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 36 T 42 N, R 5 W (see map sheet 20).

The conduit is an earth ditch about one fourth of a mile long, running parallel with, and 200 feet distant, from the creek. An area of 2.2 acres is irrigated under the ditch (see map sheet 20 and Acreage Table page 5).

A current meter measurement was taken on the ditch July 12,1923, showing a discharge of 0.18 second foot. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by G. W. Arbaugh, who was present when the measurement was made. The ditch, however, was in poor shape and would carry more water if cleaned.

Diversion 80 is that of the G. W. Arbaugh Ditch, diverting from the south side of Beaughan Creek in the NW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 36 T 42 N, R 5 W (see map sheet 20).

The conduit is an earth ditch about one fourth of a mile long, and serves an irrigated area of 3.9 acres (see map sheet 20, and Acreage Table page 5).

The results of three current meter measurements taken on the ditch, follow:-

Date	Discharge Second Feet	Remarks
July 7, 1922	0.29	Gaged by P. L. Beck
July 12, 1923	(a) 0.37	Gaged by H. Smitherum
July 12, 1923	(b) 0.60	Gaged by H. Smitherum

(a) Normal irrigating head as stated by G. W. Arbaugh.
(b) Maximum capacity as ditch was running full when measured.

Diversion 81 is that of the G. W. Arbaugh Ditch, diverting from an unnamed fork of Beaughan Creek in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 36 T 42 N, R 5 W (see map sheet 20). The water available for diversion by this ditch is diverted from the channel through which the water from the Weed Lumber Company log pond is returned to Beaughan Creek.

The conduit is an earth ditch about 800 feet in length, and serves an irrigated area of 1.5 acres, of which 0.9 acres are sub-irrigated, (see map sheet 20, and Acreage Table page 5).

Water was not available for diversion by the ditch during the period covered by the field investigation; consequently no discharge measurements were obtained.

Diversion 82 is that of the Cavanaugh Upper Ditch, diverting from Beaughan Creek in the NW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 35 T 42 N, R 5 W (see map sheet 21).

The conduit is an earth ditch running northwesterly along the south side of the creek for a distance of about 1500 feet, and thence

westerly some 3000 feet to a small reservoir in the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 34 T 42 N, R 5 W. At a point 600 feet upstream from the reservoir, a lateral from the main ditch conveys water to the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 34 T, 42 N, R 5 W, where it has been used for the irrigation of 7.7 acres of pasture. This area was last irrigated in 1919 (see map sheets 10 and 21, and Acreage Table page 37).

The maximum capacity of the ditch was computed and found to be 5.25 second feet. The capacity of the reservoir is 15.0 acre feet, as determined by a contour survey made by the Division of Water Rights in 1923.

Diversion 83 is that of the Joe Bell Castro Ditch, diverting from the north side of Beaughan Creek in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 35 T 42 N, R 5 W (see map sheet 21).

The conduit is an earth ditch about three fourths of a mile in length, terminating in the SW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 34 T 42 N, R 5 W. An area of 21.9 acrew is irrigated under the ditch (see map sheet 21 and Acreage Table page 55). The irrigated area is steeply sloping land lying adjacent to Beaughan Creek, and a considerable portion of water used in irrigating is returned to the stream.

A current meter measurement was taken July 13, 1923, with the ditch running full. The resulting discharge of 0.59 second foot represents the maximum capacity of the ditch, and also the normal irrigating head, when that quantity of water is available for diversion.

Diversion 84 is that of the Jackson Ditch, diverting from the north side of Beaughan Creek in the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 28 T 42 N, R 5 W (see map sheet 12).

The conduit is an earth ditch, about one mile in length, running northeasterly across the Middle Fork of Jackson Creek, and thence northwesterly to its termination in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 28 T 42 N, R 5 W. The ditch serves an irrigated area of 90.0 acres, of which 75.3 acres are owned by S. H. Jackson, and 14.7 acres are owned by Alice E. Koppel (see map sheets 12 and 26, and Acreage Table pages 127 and 148).

A current meter measurement was taken on the ditch May 18, 1923, showing a discharge of 2.63 second feet. This discharge represents the normal irrigating head as stated by J. Mackey, irrigator for C. H. Walker, lessee. The maximum capacity of the ditch was computed and found to be 15.8 second feet.

Diversion 85 is that of the Cavanaugh Pipe Line, diverting from Beaughan Creek in the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 28 T 42 N, R 5 W (see map sheet 12).

The conduit is a 6 inch diameter iron pipe, 3960 feet in length, conveying water to the Southern Pacific Railroad water tanks at Edgewood. The water is also used by a few consumers in the town of Edgewood for domestic uses, other than drinking purposes. An area of 7.8 acres on the R. E. Cavanaugh ranch is irrigated under this diversion by overflow water from the Southern Pacific water tanks (see map sheet 12, and Acreage Table page 37).

Diversion 86 is that of the Jackson Ditch, diverting from the south side of Beaughan Creek in the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 28 T 42 N, R 5 W (see map sheet 12).

The conduit consists of a short section of wooden flume, 1.0 foot wide by 0.9 foot deep, at the head of the ditch, and an earth ditch about 1100 feet long, extending from the end of the flume to the Alice E. Koppel ranch. The ditch serves an irrigated area of 17.6 acres (see

map sheet 12, and Acreage Table page 148).

A current meter measurement was taken on the ditch below the intake flume May 18, 1923. The resulting discharge of 1.06 second feet represents the normal irrigating head, as stated by J. Mackey, irrigator for C. H. Walker, lessee. The maximum capacity of the intake flume was computed and found to be 2.0 second feet.

Diversion 87 is that of the Jackson Ditch diverting from the south side of Beaughan Creek in the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 28 T 41 N, R 5 W, about 700 feet down stream from Diversion 86 (see map sheet 12).

The conduit consists of a short diversion flume, and an earth ditch 550 feet in length. The water is conveyed to the Alice E. Koppel ranch, where it is used for the irrigation of 4.4 acres (see map sheet 12, and Acreage Table page 148).

A float measurement was taken on the flume May 19, 1923, showing a discharge of 0.42 second foot. This discharge represents the normal irrigating head, as stated by J. Mackey, irrigator for C. H. Walker, lessee, and also the maximum capacity of the flume. The flume, however, was in poor shape and would carry more water if repaired.

Diversion 88 is that of the Jackson Ditch, diverting from the south side of Beaughan Creek in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 28 T 42 N, R 5 W (see map sheet 12).

The conduit is an earth ditch about 330 feet in length, and serves an irrigated area of 2.4 acres on the Alice E. Koppel ranch (see map sheet 12, and Acreage Table page 148).

A current meter measurement was taken on the ditch May 31, 1923, showing a discharge of 0.26 second foot. This discharge represents the

normal irrigating head, as stated by J. Mackey, irrigator for C. H. Walker, lessee. The maximum capacity of the ditch was computed and found to be 0.78 second foot.

Diversion 89 is that of the Jackson and Wholey Ditch, diverting from the north side of Beaughan Creek in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 28 T 42 N, R 5 W (see map sheet 12).

The conduit is an earth ditch, running northwesterly from the point of diversion to the center of the NW$\frac{1}{4}$ SEc. 28 T 42 N, R 5 W, a distance of one half of a mile. The ditch serves an irrigated area of 27.4 acres, as described in the Acreage Table, under the names of the owners of the land comprising the irrigated area. A summary of the data contained in the Acreage Table, follows:-

Name of Owner	Acreage Irrigated	Map Sheet	Acreage Table Page
Jackson, S. H.	13.1	12	127
Koppel, Alice E.	8.0	12	148
Wholey, Mary A.	6.3	12	272

A float measurement was taken on the ditch May 31, 1923, showing a discharge of 0.12 second foot. This discharge represents the normal irrigating head, as stated by J. Mackey, irrigator for C. H.Walker, lessee. The ditch was badly overgrown with grass, and suitable measurements could not be obtained for the computation of the maximum capacity of the ditch.

Diversion 90 is that of the Cavanaugh Middle Ditch, diverting from the north side of Beaughan Creek at a point 200 feet due north of the

southeast corner of the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 28 T 42 N, R 5 W (see map sheet 12).

The conduit is an earth ditch about one fourth of a mile long, running northwesterly across the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 28 T 42 N, R 5 W. A lateral diverting from the ditch at a point 300 feet below the intake and running north to the south boundary of the town of Edgewood, formerly conveyed water for the irrigation of gardens at six residences in that town. This use, however, has been discontinued for the past several years. The water diverted by the ditch is now used for the irrigation of 10.1 acres on the R. E. Cavanaugh ranch (see map sheet 12 and Acreage Table page 38).

A current meter measurement was taken on the ditch May 22,1923, showing a discharge of 1.07 second feet. This discharge represents the normal irrigating head, as stated by J. Wadkins, lessee. The maximum capacity was computed and found to be 4.55 second feet.

Diversion 91 is that of the Cavanaugh Lower Ditch, diverting from the north side of Beaughan Creek in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 28 T 42 N, R 5 W (see map sheet 12).

The conduit is an earth ditch 350 feet long. An area of 6.2 acres is irrigated under the ditch (see map sheet 12 and Acreage Table page 38).

A current meter measurement was taken on the ditch May 24, 1923. The ditch was running full when the measurement was taken, and the resulting discharge of 0.47 second foot represents the maximum capacity of the ditch and also the normal irrigating head, as stated by R. E. Cavanaugh.

In addition to the areas irrigated under the Cavanaugh Pipe Line, and the Cavanaugh Middle and Lower Ditches, an area of 3.7 acres on the

R. E. Cavanaugh ranch, has been described as sub-irrigated from Beaughan Creek (see map sheet 12, and Acreage Table page 38).

Diversion 92 is that of the Wholey Ditch, diverting from Beaughan Creek in the SW¼ NW¼ Sec. 28 T 42 N, R 5 W (see map sheet 12).

The conduit is an earth ditch about one fourth of a mile long, and serves an irrigated area of 27.1 acres, of which 1.0 acre is sub-irrigated (see map sheet 12 and Acreage Table page 272).

A current meter measurement was taken on the ditch May 31,1923, with the ditch running to capacity, showing a discharge of 2.04 second feet. This discharge also represents the normal irrigating head, as stated by J. Mackey, irrigator for C. H. Walker, lessee.

Diversion 93 is that of the A. Dennis Ditch, diverting from the west side of Shasta River in the NE¼ NE¼ Sec. 29 T 42 N, R 5 W (see map sheet 11).

The conduit is an earth ditch about one fourth of a mile in length, conveying water to the A. Dennis ranch in sections 20 and 21, T 42 N, R 5 W. The ditch serves a total irrigated area of 26.4 acres, as described in the Acreage Table. A summary of the data contained in the Acreage Table, follows:-

Name of Owner	Acreage Irrigated	Acreage Sub-irrigated	Total Acreage Irr. & sub-irr	Map Sheet	Acreage Table page
Dennis, A.	21.1		21.1	29,73	46,47
Enos, J.V.		1.9	1.9	73	84
Wholey, Mary A.		3.4	3.4	11	272
TOTALS	21.1	5.3	26.4		

A current meter measurement was taken on the ditch May 22, 1923, showing a discharge of 2.55 second feet. This discharge represents

the normal irrigating head, as stated by A. Dennis. The maximum capacity of the ditch was computed and found to be 4.50 second feet.

The results of measurements taken on the A. Dennis Ditch in 1912, and available through O.E.S. Bulletin 254, follow:-

Date	Discharge in Second Feet
June 6	4.48
June 28	Dry
July 12	1.79
July 23	Dry

Diversion 94 is that of the Doty Ditch, diverting from the west side of Shasta River in the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 20 T 42 N, R 5 W (see map sheet 73).

The conduit is an earth ditch about one fourth of a mile long, crossing to the east side of Shasta River at a point 800 feet below the intake, and conveying water to the J. W. Doty ranch in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 20 T 42 N, R 5 W. The ditch serves an irrigated area of 7.1 acres on the J. W. Doty ranch and a sub-irrigated area of 1.3 acres on the A. Dennis ranch, making a total irrigated area of 8.4 acres (see map sheets 29 and 73, and Acreage Table pages 48 and 54).

A current meter measurement was taken on the ditch May 22, 1923, showing a discharge of 0.34 second foot. This discharge represents the normal irrigating head, as stated by E. Spada, lessee. The maximum capacity of the ditch was computed and found to be 0.51 second foot.

The results of measurements taken in 1912, and available through O.E.S. Bulletin 254, which designates this ditch as the F. Smith Ditch, follow:-

Date	Discharge in Second Feet
June 6	*3.74
June 28	Dry
July 12	1.08
July 23	1.80

*Water diverted June 6 in excess of ditch capacity.

Diversion 95 is that of the Jackson Ditch, diverting from a spring located in the SE¼ SW¼ Sec. 22 T 42 N, R 5 W (see map sheet 26).

The conduit system consists of two earth ditches, each about 300 feet in length, extending northwesterly and southwesterly, respectively, from the spring. The two ditches have been considered as one diversion as the area irrigated under each ditch could not be segregated. An area of 6.1 acres is irrigated under the two ditches (see map sheet 26 and Acreage Table page 128).

A hydraulic ram supplying water for domestic use at the S. H. Jackson ranch house also diverts from this spring.

For results of discharge measurements see Diversion 97.

Diversion 96 refers to the Jackson Spring, located in the NW¼ NW¼ Sec. 27 T 42 N, R 5 W (see map sheet 26).

An area of 18.8 acres has been described as sub-irrigated from the spring (see map sheets 26 and 29, and Acreage Table page 128).

For results of discharge measurements see Diversion 97.

Diversion 97 is that of the Jackson Ditch, diverting from a spring located in the NW¼ NW¼ Sec. 27 T 42 N, R 5 W, 800 feet south of Diversion 96.

The conduit is an earth ditch, about three fourths of a mile

long, carried along the south side of the North Fork of Jackson Creek, and terminating in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 21 T 42 N, R 5 W. An irrigated area of 26.3 acres, of which 2.1 acres are sub-irrigated, has been described as watered under this diversion (see map sheets 26 and 29, and Acreage Table page 128). The irrigated area of 24.2 acres also receives water from the Jackson Ditch (Diversion 84) from Beaughan Creek, and is partly sub-irrigated from the spring. The areas watered from the different sources, however, could not be segregated.

No measurements were taken on Diversions 95, 96, or 97, for the reason that during the period covered by the field investigation of 1923, very little of the flow of the springs was being diverted. A measurement, however, was taken on the North Fork of Jackson Creek to determine the total flow of the three springs. The measurement was made with a weir on July 21, 1923 at a point below the confluence of the three springs, and showed a discharge of 0.39 second foot.

Diversion 98 is that of the Jackson Ditch, diverting from the North Fork of Jackson Creek in the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 21 T 42 N, R 5 W. The point of diversion is below the confluence of the three springs, described under Diversions 95, 96, and 97, which form the source of the creek (see map sheet 72).

The conduit is an earth ditch about one half of a mile in length, and is used principally for the rediversion and distribution of water brought into the North Fork of Jackson Creek by the Jackson Ditch (Diversion 84), from Beaughan Creek, and the Jackson Upper Ditch (Diversion 138) from Carrick Creek. An area of 43.1 acres has been described as irrigated under the ditch. This area also lies under the Jackson Upper

Ditch (Diversion 138) from Carrick Creek (see map sheets 12 and 29, and Acreage Table pages 128 and 129).

The ditch was considered as a rediversion and no measurements were taken thereon to determine the normal irrigating head or the maximum capacity. The ditch has ample capacity to carry the natural flow of the North Fork of Jackson Creek. This flow was found to be 0.39 second foot as described under Diversion 97.

Diversion 99 is that of the Jackson Ditch, diverting from a spring located at the head of the South Fork of Jackson Creek, in the NE¼ SE¼ Sec. 28 T 42 N. R 5 W (see map sheet 12).

The conduit is an earth ditch, about one half of a mile long, running northwesterly to the southeast corner of the NE¼ NW¼ Sec. 28 T 42 N,R 5 W. The ditch serves an irrigated area of 37.1 acres (see map sheet 12 and Acreage Table page 129).

A current meter measurement was taken on the ditch May 31,1923, and showed a discharge of 0.33 second foot. This discharge represents the normal irrigating head, as stated by J. Mackey, irrigator for C. H. Walker, lessee, and also the total available flow of the spring.

Diversion 100 is that of the Wholey Ditch, diverting from Jackson Creek, in the NE¼ NW¼ Sec. 28 T 42 N, R 5 W (see map sheet 12).

The conduit is an earth ditch, about 1000 feet long, and serves an irrigated area of 6.7 acres, of which, 2;8 acres are owned by S. H. Jackson and 3.9 acres are owned by Mary A. Wholey (see map sheet 12 and Acreage Table pages 129 and 272).

A current meter measurement was taken on the ditch May 31,1923, showing a discharge of 0.28 second foot. This discharge represents the

normal irrigating head, as stated by J. Mackey, irrigator for C. H. Walker, lessee. The maximum capacity was computed and found to be 0.43 second foot.

Diversion 101 is the A. Dennis Upper Ditch, diverting from Jackson Creek in the NW¼ NW¼ Sec. 28 T 42 N, R 5 W (see map sheet 12).

The conduit is an earth ditch, about one half of a mile in length, running north from the point of diversion to the NW¼ SW¼ Sec. 21 T 42 N, R 5 W. The ditch serves an irrigated area of 57.2 acres on the A. Dennis ranch (see map sheet 29 and Acreage Table page 47). An area of 3.7 acres on the A. Dennis ranch, lying above this ditch, has been described in the Acreage Table, page 48, as sub-irrigated from irrigation on the S. H. Jackson ranch.

A current meter measurement was taken on the ditch May 22, 1923, showing a discharge of 0.84 second foot. This discharge represents the normal irrigating head, as stated by A. Dennis. The maximum capacity of the ditch was computed and found to be 1.82 second feet.

Diversion 102 is that of the Wholey Drain Ditch, heading in the SE¼ NW¼ Sec. 28 T 42 N, R 5 W and draining into Jackson Creek at a point within the NW¼ NW¼ Sec. 28 T 42 N, R 5 W. An area of 6.8 acres has been described as sub-irrigated under the ditch (see map sheet 12 and Acreage Table page 273).

The ditch was so badly overgrown with grass, and the amount of water available was so small, as to make discharge measurements impossible.

Diversion 103 is that of the A. Dennis Lower Ditch, diverting from Jackson Creek in the SW¼ SW¼ Sec. 21 T 42 N, R 5 W (see map sheet 29).

The conduit is an earth ditch, about one fourth of a mile in length, running northerly across the W½ of the SW¼ Sec. 21 T 42 N, R 5 W. The ditch serves an irrigated area of 5.7 acres (see map sheets 29 and

73 and Acreage Table page 47).

A current meter measurement was taken on the ditch May 22, 1923, showing a discharge of 0.81 second foot. The ditch was running full when the measurement was made, and the resulting discharge represents the maximum capacity of the ditch. The water available for diversion by the ditch is supplied principally by return flow from irrigation, and the normal irrigating head is, therefore, the available flow up to the maximum capacity of the ditch.

Diversion 104 is that of the McMahon Upper Ditch, diverting from Shasta River in the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 20 T 42 N, R 5 W (see map sheet 73).

The water is conveyed northerly from the point of diversion by a natural slough, for a distance of 600 feet, and thence northeasterly by an earth ditch, 700 feet in length, to the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 21 T 42 N, R 5 W, where it is used for the irrigation of 8.4 acres of grain land on the F. H. McMahon ranch. An area of 0.9 acres on the A. Dennis ranch is subirrigated from the ditch, making a total irrigated area of 9.3 acres under the ditch (see map sheet 29 and Acreage Table pages 47 and 176).

A weir measurement was taken on the ditch at a point just above the county road crossing, on November 14, 1923, showing a discharge of 0.45 second foot. The capacity of the ditch is limited by a 12 inch diameter corrugated iron culvert at the county road crossing. The maximum capacity was computed and found to be 0.78 second foot. The ditch below the culvert, however, was in poor shape, and would carry more water if cleaned.

The results of measurements taken in 1912, and available through O.E.S. Bulletin 254, which designates this ditch as McMahon No. 1, show

a mean daily discharge of 2.10 second feet, and a maximum discharge of 2.89 second feet for the period from June 6 to July 10.

Diversion 105 is that of the Doty Slough Ditch, diverting from an unnamed slough of Shasta River. The point of diversion is within the NE¼ SE¼ Sec. 20 T 42 N, R 5 W (see map sheet 73).

The conduit is an earth ditch about 700 feet long, and serves an irrigated area of 1.0 acre (see map sheet 73, and Acreage Table page 54).

A current meter measurement was taken on the ditch May 22, 1923, showing a discharge of 0.26 second foot. This discharge represents the flow available for diversion at the time the measurement was made. The maximum capacity of the ditch was computed and found to be 1.43 second feet.

Diversion 106 is that of the McMahon Middle Ditch, diverting from Shasta River in the SE¼ NE¼ Sec. 20 T 42 N, R 5 W (see map sheet 73).

The conduit is an earth ditch, about one half of a mile in length, running northerly from the point of diversion to the NE¼ NE¼ Sec. 20 T 24 N, R 5 W. The ditch serves an irrigated area of 3.5 acres on the F. H. McMahon ranch (see map sheet 73 and Acreage Table page 176).

A current meter measurement was taken on the ditch May 21,1923, showing a discharge of 0.94 second foot. A flume below the intake of the ditch was running full when the measurement was taken. The resulting discharge represents the maximum capacity of the conduit, and also the normal irrigating head.

The results of measurements taken in 1912, and available

through O.E.S. Bulletin 254, which designates this ditch as McMahon No.2, show a mean daily discharge of 0.74 second foot and a maximum discharge of 1.57 second feet for the period June 7 to July 10.

Diversion 107 is that of the McMahon Lower Ditch, diverting from Shasta River in the NE¼ NE¼ Sec. 20 T 42 N, R 5 W (see map sheet 73).

The water is diverted into a natural slough, by means of a low, loose rock dam across the Shasta River, is conveyed a distance of 700 feet by the slough, and is rediverted therefrom by a temporary sack dam. From the slough the water is carried by an earth ditch, three fourths of a mile in length, to the NW¼ SW¼ Sec. 16 T 42 N, R 6 W, and is used for the irrigation of 26.2 acres (see map sheets 30 and 73 and Acreage Table page 176). In operation the flow of the ditch is controlled by the dam across the slough at the intake of the artificial ditch. Excess water diverted at the intake of the slough is returned to Shasta River at this point.

A current meter measurement was taken on the ditch below the slough dam, May 21, 1923, showing a discharge of 1.80 second feet. This discharge represents the normal irrigating head, as stated by Ted McMahon, who was present when the measurement was taken. The maximum capacity of the ditch was computed and found to be 2.70 second feet.

The results of measurements taken in 1912, and available through O.E.S. Bulletin 254, which designates this ditch as McMahon No. 3, follow:

Date	Discharge in Second Feet
May 27	6.58
June 28	2.06
July 12	1.95
July 25	0.85

Diversion 108 is that of the Arbaugh Ditch, diverting from Shasta River in the NE¼ NE¼ Sec. 20 T 42 N, R 5 W (see map sheet 73). The ditch is owned by F. H. McMahon, M. F. Mills, and the I. B. Mathews Company.

Diversion is made by means of a low concrete dam constructed across Shasta River at the head of the ditch. The dam was constructed principally as a division weir to divide the flow of Shasta River equally between the Arbaugh Ditch and M. F. Mills and A. E. Rowe, and is provided with a flash board 12 inches high by about 40 feet long, into which two rectangular weir notches, having crest lengths of 6.0 feet, have been cut. The conduit is an earth ditch about six miles in length, terminating on the J. L. Jones ranch in the SE¼ SE¼ Sec. 25 T 43 N, R 5 W. A wooden head gate and a spillway are provided at the intake to control the flow of water into the ditch. The water is used for the irrigation of 679.7 acres as described in the Acreage Table under the names of the various users from the ditch. A summary of these data follows:

Name of Owner	Acreage Irr.	Acreage Sub-irr	Total Acreage Irr & sub-irr.	Map Sheet	Acreage Table Page
*Jones, J. L.	16.0		16.0	34,35	133
McMahon, F. H.	91.7		91.7	30	177
Mills, M. F.	220.4		220.4	28,31,32	180
Mathews, I.B.Co.	350.1	1.5	351.6	32,34	9,10
TOTALS	678.2	1.5	679.7		

*J. L. Jones has a right, through an extension of the Arbaugh Ditch, to the use of water for early spring and late fall irrigation only.

Four current meter measurements were taken on the ditch in 1923, the results of which follow:

Number of Measurement	Date	Discharge in Second Feet
1	May 10	12.80
2	May 23	15.87
3	August 7	1.91
4	August 21	1.89

The discharge of 15.87 second feet obtained by measurement 2, represents the maximum capacity of the ditch and also the normal irrigating head. The ditch was running to capacity when the measurement was taken, and E. Meyers, irrigator for M. F. Mills, stated that the ditch was operated at maximum capacity when that amount of water was available for diversion.

The results of measurements taken on the Arbaugh Ditch in 1912, and available through O.E.S. Bulletin 254, follow:

Date	Discharge in Second Feet
May 27	15.24
June 8	22.10
June 28	9.88
July 12	9.64
July 25	5.21

The areas irrigated under the ditch are for the most part meadow hay or pasture lands. The wild flooding method of irrigation is used, and a considerable portion of the water diverted is returned to Shasta River.

The water diverted by the ditch is divided among the owners, one fourth part to F. H. McMahon, one fourth part to M. F. Mills, and one half part to the I. B. Mathews Company. J. L. Jones receives water from the ditch in the early spring and late fall, when the flow of Shasta River is in excess of that required by diversions below the intake of the

Arbaugh Ditch, and the flow of the ditch is in excess of that required by the owners.

Diversion 109 is that of the Mills House and Reese ditches, diverting from Shasta River in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 16 T 42 N, R 5 W (see map sheet 30).

The water is diverted into a natural slough by means of a low concrete dam constructed across Shasta River. A concrete head gate, provided with wooden flash boards, has been installed at the intake of the slough. During the low water period of each season, rectangular weirs of equal crest lengths are placed in the dam and head gate for the purpose of dividing the flow of Shasta River at this point, between M. F. Mills and A. E. Rowe. At a point in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 16 T 42 N, R 5 W, a timber dam and spillway have been constructed across the slough to redivert a portion of the water carried by the slough into the Mills House Ditch. The remaining water is carried by the slough, and re-diverted therefrom by the Mills Reese Ditch, by means of a timber dam across the slough in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 16 T 42 N, R 5 W, about 600 feet below the intake of the House Ditch. The water diverted by the House Ditch is carried to the S$\frac{1}{2}$ NW$\frac{1}{4}$ Sec. 16 T 42 N, R 5 W, where it is used for the irrigation of 11.6 acres. The Reese Ditch extends northerly from its point of diversion for a distance of about one fourth of a mile, and serves an irrigated area of 59.5 acres (see map sheet 30, and Acreage Table pages 180 and 182).

The results of current meter measurements taken on the Mills House and Mills Reese ditches in 1923, follow:

Date	Name of Ditch	Location of Measuring Point	Discharge Second Feet
May 23	Mills House, and Mills Reese	Head of Slough.	5.25
May 23	Mills House	At Head.	*1.93
May 23	Mills Reese	200 feet below head.	2.32
June 19	Mills Reese	200 feet below head.	*5.70
August 29	Mills Reese	200 feet below head.	0.34

*Measurements represent maximum capacities and also normal irrigating heads of the respective ditches. E. Meyers, irrigator for M. F. Mills, who was present when the measurements were taken, stated that the ditches were operated to maximum capacity when that amount of water was available for diversion.

The results of measurements taken in 1912, and available through O.E.S. Bulletin 254, which designates the slough as Mills No. 1, follow:

Date	Discharge in Second Feet
June 8	10.47
June 28	5.81
July 12	3.37
July 25	4.38

Diversion 110 is that of the Mills Stewart Ditch, diverting from Shasta River in the NE¼ SW¼ Sec. 16 T 42 N, R 5 W (see map sheet 30).

The conduit is an earth ditch, about one and one half miles in length, terminating in the SE¼ NE¼ Sec. 9 T 42 N, R 5 W. In addition to the water diverted from the river, the ditch carries return water from irrigation on the F. H. McMahon ranch under the Arbaugh Ditch. The ditch serves an irrigated area of 92.2 acres (see map sheets 30 and 31, and Acreage Table page 182).

Two current meter measurements were taken on the ditch. The first measurement was taken May 23, 1923, and the resulting discharge of

4.23 second feet, represents the flow available for diversion at that time. The second measurement was taken June 19, 1923, showing a discharge of 8.49 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by E. Meyers, irrigator for M. F. Mills.

The results of measurements taken in 1912, and available through O.E.S. Bulletin 254, which designates this ditch as Mills No. 3, follow:

Date	Discharge in Second Feet
June 7	12.95
June 28	5.22
July 12	4.35
July 23	5.56

Diversion 111 is that of the McMahon Slough Ditch, diverting from an unnamed slough of Shasta River. The point of diversion is within the NE¼ SW¼ Sec. 16 T 42 N, R 5 W (see map sheet 30).

The conduit is an earth ditch running northerly from the slough for a distance of about 450 feet. An area of 6.9 acres of pasture land has been described in the Acreage Table as irrigated under the ditch. This area, however, is principally irrigated by overflow from adjacent sloughs during periods of high water, and receives little or no irrigation during the dry season (see map sheet 30, and Acreage Table page 177).

No discharge measurements were taken on the ditch, as it was not indicated as a diversion at the time the other McMahon ditches were being measured.

Diversion 112 is that of the Mills Beaver Dam Ditch, diverting from Shasta River in the SE¼ NW¼ Sec. 16 T 42 N, R 5 W (see map sheet 30).

The conduit is an earth ditch, about three fourths of a mile long, running north along the west side of the river. The ditch originally terminated in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 9 T 42 N, R 5 W, but prior to the 1924 irrigation season, the ditch was extended to the east side of Shasta River by means of a 20 inch diameter steel pipe, and now supplies water to the lower end of the Mills Stewart Ditch. As used prior to 1924, the ditch served an irrigated area of 13.2 acres (see map sheet 31 and Acreage Table page 183).

Current meter measurements were taken on the ditch on May 24, and June 19, 1923, showing discharges of 3.56 second feet and 5.38 second feet, respectively. The discharge of 5.38 second feet represents the normal irrigating head, as stated by E. Meyers, irrigator for M. F. Mills. The maximum capacity of the ditch was computed and found to be 12.30 second feet.

The results of measurements taken in 1912, and available through O.E.S. Bulletin 254, which designates this ditch as Mills No. 2, follow:

Date	Discharge in Second Feet
June 17	2.15
June 28	2.36
July 12	2.36
July 23	4.06

The areas irrigated under the Mills Reese, Mills Stewart, and Mills Beaver Dam ditches are meadow hay and pasture lands. The wild flooding method of irrigation is used, and a considerable portion of the water diverted is returned to Shasta River. During the period when the available flow is insufficient to supply all the diversions, the use of water is rotated between the ditches.

Diversion 113 is that of the Rowe Upper Ditch, diverting from the east bank of Shasta River in the NE¼ NW¼ Sec. 16 T 42 N, R 5 W (see map sheet 30).

Diversion is made by means of a log crib and rock fill dam. From the dam the water is conveyed by an earth ditch northeasterly across the M. F. Mills ranch, to a point in the NE¼ SE¼ Sec. 9 T 42 N, R 5 W, and thence by two earth ditch laterals to the A. E. Rowe ranch. The main ditch is about one half of a mile in length, and each lateral is about two miles long. The main ditch is provided with a timber control gate at the intake. The water diverted by the ditch is used for the irrigation of 281.2 acres on the A. E. Rowe ranch. An area of 5.7 acres on on the M. F. Mills ranch is sub-irrigated from the ditch, making the total irrigated area 286.9 acres (see map sheets 31 to 34, inclusive, and Acreage Table pages 183, 211, and 212).

Three current meter measurements were taken on the ditch in 1923, the results of which follow:

Number of Measurement	Date	Discharge in Second Feet
1	May 22	5.94
2	June 19	9.41
3	August 7	0.11

The results shown by measurements 1 and 3 represent the flow available for diversion at the time the measurements were taken. The discharge of 9.41 second feet shown by measurement 2, represents the normal irrigating head, as stated by A. E. Rowe. The maximum capacity was computed and found to be 10.20 second feet.

The results of measurements taken in 1912, and available through O.E.S. Bulletin 254, which designates this ditch as A. E. Rowe No. 1, follow:

Date	Discharge in Second Feet
June 17	15.22
June 28	15.63
July 12	4.60
July 23	4.76

The areas irrigated under this ditch are for the most part meadow hay and pasture lands. A considerable amount of water is returned to Shasta River from the irrigated area, both through surface drainage and through underground percolation.

Diversion 114 is that of the Rowe Lower Ditch, diverting from the west bank of Shasta River in the NW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 9 T 42 N, R 5 W (see map sheet 31).

Diversion is made by means of a concrete dam about 10 feet high by 50 feet long. The dam is provided with wooden flash boards to control the flow of water into the ditch. The diversion conduit is a short section of concrete flume, 5.93 feet wide by 1.85 feet deep. From the end of the flume the water is conveyed by an earth ditch, about two and one fourth miles in length, running northeasterly along the west side of the river and terminating in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 3 T 42 N, R 5 W. The ditch serves an irrigated area of 88.9 acres (see map sheets 31, 33, and 34, and Acreage Table page 212).

A current meter measurement was taken on the ditch May 22,1923, showing a discharge of 9.43 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by A. E. Rowe.

The results of measurements taken in 1912, and available through O.E.S. Bulletin 254, which designates this ditch as A. E. Rowe No. 2,follow:

Date	Discharge in Second Feet
June 17	3.43
June 28	2.07
July 12	2.93
July 24	0.38

Diversion 115 is that of the Mills Spring Ditch, diverting from a spring located in the NE¼ SE¼ Sec. 9 T 42 N, R 5 W (see map sheet 31).

The conduit is an earth ditch about 850 feet in length. The ditch diverts the entire flow of the spring, and serves an irrigated area of 12.0 acres (see map sheet 31 and Acreage Table page 183).

On May 23, 1923, a current meter measurement, taken to determine the total flow of the spring, showed a discharge of 0.60 second foot. The spring was noted dry in September 1923.

Diversion 116 is that of the Albee Ditch, diverting from Carrick Creek in the SE¼ NE¼ Sec. 36 T 42 N, R 5 W (see map sheet 22).

The main conduit is an earth ditch, about one and one half miles long, running northerly from the point of diversion to the NW¼ NW¼ Sec. 30 T 42 N, R 4 W. From the main ditch, the water is distributed for irrigation by three laterals, each about three fourths of a mile in length, running northwesterly across the Abbie C. Albee ranch. The most northerly of these laterals also conveys water to a small storage reservoir located in the SW¼ SW¼ Sec. 24 T 42 N, R 5 W. This stored water is used for irrigation on the lower end of the Albee ranch in common with that obtained by direct diversion. The reservoir has a capacity of 14.0 acre feet, as determined by a contour survey made by the Division of Water Rights in July, 1923. The water diverted by the ditch is used for the irrigation of 243.3 acres (see map sheets 22, 24, and 25, and

Acreage Table pages 1 and 2).

The water diverted by the ditch is supplied by Carrick Spring, which apparently has a constant flow. The ditch has a right by court decree to divert 2.20 second feet or 110 miners inches measured under a four inch pressure, of the flow of the spring. As stated by Ralph Albee, this flow represents the normal irrigating head and also the maximum flow intended to be diverted by the ditch during the irrigation season. However, due to lack of a head gate or a measuring device on the ditch, and due to interference with the diversion by persons camping or picknicking near the spring, great difficulty is encountered in keeping the flow of the ditch to the decreed amount.

The results of measurements taken on the ditch, follow:-

Date	Discharge in Second Feet	Hydrographer
July 15, 1922	(a) 2.64	P. L. Beck
June 1,1923	(a) 2.57	H. Smitherum
June 14,1924	(a) 2.00	H. Smitherum
June 17,1924	2.16	H. Smitherum
July 16,1924	(a) 1.87	H. Smitherum
Aug. 16,1924	(b) 1.83	H. Smitherum
Aug. 23,1924	(b) 1.92	H. Smitherum

(a) Ditch regulated to decreed flow after measurements were taken, in accordance with a verbal agreement with Ralph Albee.

(b) Measurements taken after flow of ditch had been regulated for the co-operative distribution of water during the irrigation season of 1924, in accordance with a verbal agreement with Ralph Albee.

Diversion 117 is that of the Carrick Ditch, diverting from Carrick Creek in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 36 T 42 N, R 5 W (see map sheet 22).

The main conduit is an earth ditch, about three fourths of a mile in length, running north from the point of diversion. The water is

distributed from the main ditch by two laterals running northwesterly across the J. B. Carrick ranch. Each lateral is about one mile in length. The water is used for the irrigation of 237.0 acres (see map sheets 22 and 24 and Acreage Table pages 33 and 34).

The ditch diverts from Carrick Creek just below the Albee Ditch (Diversion 116), and has a right by court decree to divert 2.20 second feet of the flow of Carrick Spring. This flow represents the normal irrigating head, and also the maximum flow intended to be diverted by the ditch during the irrigation season. For the same reasons as explained under the Albee Ditch (Diversion 116), difficulty is encountered in keeping the flow of the ditch to the decreed amount.

The results of measurements taken on the ditch, follow:

Date	Discharge Second Feet	Hydrographer
July 15, 1922	2.23	P. L. Beck
June 1, 1923	(a) 2.54	H. Smitherum
June 14, 1924	(a) 3.14	H. Smitherum
June 17, 1924	(a) 2.86	H. Smitherum
July 16, 1924	(a) 2.66	H. Smitherum
August 16, 1924	(b) 1.72	H. Smitherum
August 23, 1924	(b) 2.00	H. Smitherum

(a) Ditch regulated to decreed flow after measurements were taken, in accordance with verbal agreement with John Tradini, lessee of Carrick ranch.

(b) Measurements taken after flow of ditch had been regulated for the co-operative distribution of water during the irrigation season of 1924, in accordance with verbal agreement with John Tradini.

Diversion 118 is that of the W. O. Stone Ditch, diverting from Carrick Creek in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 36 T 42 N, R 5 W (see map sheet 22).

The conduit is an earth ditch, about one and one fourth miles

in length, running west from the point of diversion to the W. O. Stone ranch. The water is used for the irrigation of 18.6 acres, of which, 4.9 acres are owned by F. E. Stone and 13.7 acres are owned by W. O. Stone (see map sheet 22 and Acreage Table pages 250 and 252).

A current meter measurement was taken on the ditch June 27, 1923, showing a discharge of 0.60 second foot. This discharge represents the normal irrigating head, as stated by W. O. Stone, and also filled the ditch to capacity. The ditch, however, had not been cleaned for some time prior to the date of measurement, and was badly overgrown with water cress. On August 13, 1924, a weir measurement was taken on the ditch. The ditch had been cleaned prior to the date of measurement, and the resulting discharge of 1.14 second feet, represents the maximum capacity of the ditch.

Diversion 119 is that of the F. E. Stone Upper Ditch, diverting from Carrick Creek in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 25 T 42 N, R 5 W (see map sheet 22).

The conduit is an earth ditch running northwest across the southwest corner of the Carrick ranch to the F. E. Stone ranch. The ditch is about one half of a mile long, and serves an irrigated area of 36.4 acres, of which 7.2 acres are owned by J. B. Carrick, and 29.2 acres are owned by F. E. Stone (see map sheet 22 and Acreage Table pages 34 and 251).

A current meter measurement was taken on the ditch June 28, 1923, showing a discharge of 0.69 second foot. This discharge represents the normal irrigating head, as stated by F. E. Stone. The maximum capacity of the ditch was computed and found to be 2.6 second feet.

Diversion 120 is that of the Carrick Ditch, diverting from a small spring located in the NW¼ SE¼ Sec. 25 T 42 N, R 5 W (see map sheet 22).

The conduit is an earth ditch one fourth of a mile in length, and serves an irrigated area of 32.9 acres. This area also lies under the Carrick Ditch (Diversion 117), (see map sheets 22 and 24 and Acreage Table page 34).

The ditch diverts the entire flow of the spring. The discharge of the spring as determined by a float measurement, taken June 27, 1923, was 0.12 second foot.

Diversion 121 is that of the F. E. Stone Lower Ditch, diverting from Carrick Creek, in the NW¼ SW¼ Sec. 25 T 42 N, R 5 W (see map sheet 22).

The conduit is an earth ditch about 500 feet in length, and serves an irrigated area of 5.7 acres, of which, 0.3 acre is owned by J. B. Carrick, and 5.4 acres are owned by F. E. Stone (see map sheet 22 and Acreage Tables pages 34 and 251).

A current meter measurement was taken on the ditch June 28, 1923, showing a discharge of 0.24 second foot. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by F. E. Stone.

Diversion 122 is that of the Hoy Brothers Upper Ditch, diverting from Carrick Creek in the NE¼ SE¼ Sec. 26 T 42 N, R 5 W.

The conduit is an earth ditch, about one half of a mile in length, running northerly from the point of diversion to Albee Creek. At a point 1000 feet below the intake, additional water enters the ditch through the Hoy Brothers Ditch (Diversion 126). At Albee Creek the water

is spilled into the channel of that stream, and is rediverted therefrom, together with the natural flow of the creek, by the M. T. Hoy Upper and Lower ditches (Diversions 135 and 136, respectively). Since the principal source of water supply for the above mentioned diversions is water diverted by Diversions 122 and 126, the area served by the combined flow of the several ditches has been described in the Acreage Table as irrigated under Diversions 122 and 126. A summary of the data contained in the Acreage Table, follows:

Name of Owner	Acreage Irrigated	Map Sheet	Acreage Table Page
Carrick, J. B.	(a) 7.1	24	35
Hoy, A. B.	(b) 27.4	24	124
Hoy, M. T.	(c) 49.8	24,26	125
TOTAL	84.3		

(a) Irrigated under Diversion 122.
(b) Irrigated under Diversions 122 and 126.
(c) Irrigated under Diversions 122, 126, 135, and 136.

Two current meter measurements were taken on the Hoy Brothers Upper Ditch (Diversion 122) May 25, 1923, showing discharges of 0.96 second foot and 1.27 second feet. These discharges represent the normal irrigating head and the maximum capacity of the ditch, respectively, as stated by A. B. and M. T. Hoy. The results of discharge measurements on Diversions 126, 135, and 136, are given under the descriptions of those diversions.

Diversion 123 is that of the F. E. Stone Ditch, diverting from a small spring located in the southwest corner of section 25 T 42 N, R 5 W (see map sheet 22).

The conduit system consists of an earth ditch, about 200 feet long, running northeast from the spring, and a drain ditch running northwest from the spring and terminating at the F. E. Stone and A. B. Hoy Ditch (Diversion 124). An area of 7.5 acres is irrigated under the system (see map sheet 22 and Acreage Table page 251).

A volumetric measurement of the flow available for diversion at the ditch intake was taken June 6, 1923, showing a discharge of 0.07 second foot. On the same date, a float measurement was taken on the drain ditch, showing a discharge of 0.12 second foot. This latter discharge represents the total flow of the spring.

Diversion 124 is that of the F. E. Stone and A. B. Hoy Ditch, diverting from Stone Creek in the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 26 T 42 N, R 5 W (see map sheet 22).

The conduit is an earth ditch, about three fourths of a mile in length, running northwesterly across the F. E. Stone and A. B. Hoy ranches and terminating in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 26 T 42 N, R 5 W. The ditch serves an irrigated area of 72.1 acres, of which, 59.4 acres are owned by A. B. Hoy and 12.7 acres are owned by F. E. Stone (see map sheets 22, 24, and 26, and Acreage Table pages 124 and 251). In addition to the above, there is an area of 8.8 acres owned by F. E. Stone, which has been described in the Acreage Table, page 252, as sub-irrigated from Stone Creek.

Current meter measurements were taken on the ditch on July 15, 1922, and on June 1, 1923, showing discharges of 1.18 second feet and 1.23 second feet, respectively. During the irrigation season the ditch diverts the entire flow of Stone Creek, which rises in a constant flow spring located one fourth of a mile above the intake of the ditch, and the above discharges represent the normal irrigating head and the total flow available for diversion by the ditch.

Diversion 125 is that of the F. E. Stone House Spring, located in the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 26 T 42 N, R 5 W (see map sheet 22).

The water is used for domestic purposes.

A volumetric measurement to determine the flow of the spring was taken June 28, 1923. The resulting discharge was 0.023 second foot.

Diversion 126 is that of the Hoy Brothers Ditch, diverting from a spring located in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 25 T 42 N, R 5 W (see map sheet 24).

The conduit is an earth ditch, about one fourth of a mile long, terminating in the Hoy Brothers Upper Ditch (Diversion 122). The use of the water diverted by this ditch on the A. B. and M. T. Hoy ranches is described under Diversion 122. In addition to that use the ditch serves andarea of 17.5 acres on the J. B. Carrick ranch (see map sheet 24 and Acreage Table page 35).

A float measurement was taken on the ditch May 25, 1923, showing a discharge of 0.15 second foot. This discharge represents the normal flow of the spring as stated by A. B. and M. T. Hoy.

Diversion 126A is that of the A. B. Hoy Domestic Pipe Line, diverting from a spring in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 25 T 42 N, R 5 W (see map sheet 24).

The conduit is a 2 inch diameter iron pipe, 2500 feet in length, conveying water to the A. B. Hoy ranch house in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 26 T 42 N, R 5 W, where it is used for domestic purposes and for the irrigation of 0.6 acre of garden (see map sheet 24 and Acreage Table page 124).

Diversion 127 is that of the Hoy Brothers Lower Ditch, diverting from Carrick Creek in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 26 T 42 N, R 5 W (see map sheet 24).

The conduit is an earth ditch running northerly across the A. B. Hoy ranch, a distance of 700 ~~feet,~~ and thence westerly, 800 feet, on the M. T. Hoy ranch. The ditch serves an irrigated area of 8.5 acres, of which, 3.5 acres are owned by A. B. Hoy and 5.0 acres are owned by M. T. Hoy (see map sheets 24 and 26 and Acreage Table pages 124 and 126).

Two current meter measurements were taken on the ditch June 1, 1923, showing discharges of 0.35 and 0.41 second foot, respectively. The discharge, of 0.35 second foot, represents the normal irrigating head, as stated by A. B. and M. T. Hoy. The discharge, of 0.41 second foot, represents the flow available for diversion at the time the measurement was taken. The maximum capacity was computed and found to be 0.70 second foot.

Diversion 128 is that of the M. T. Hoy Ditch, diverting from Carrick Creek in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 23 T 42 N, R 5 W (see map sheet 26).

The diversion conduit is a wooden flume, 1.0 foot wide by 0.9 foot deep and 150 feet long. From the end of the flume, the water is conveyed by an earth ditch about one half of a mile in length, and is used for the irrigation of 7.8 acres (see map sheet 26 and Acreage Table page 126).

A float measurement was taken on the flume June 1, 1923, showing a discharge of 0.37 second foot. This discharge represents the normal irrigating head, as stated by M. T. Hoy. The maximum capacity of the flume was computed and found to be 1.0 second foot.

Diversion 128A is that of the M. T. Hoy Domestic Pipe Line, diverting from a spring located in the NW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 26 T 42 N, R 5 W (see map sheet 26).

The conduit is a 2 inch-diameter iron pipe, 800 feet in length, conveying water to the M. T. Hoy ranch houses, where it is used for domestic purposes.

No measurements were taken to determine the discharge of the pipe, as it was not indicated as a diversion at the time the other M. T. Hoy diversions were being measured.

Diversion 129 is that of the Stone Brothers West Ditch, diverting from a spring located in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 35 T 42 N, R 5 W (see map sheet 22).

The conduit is an earth ditch running west from the spring a distance of three fourths of a mile, and thence northeast one fourth of a mile to its termination in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 26 T 42 N, R 5 W. The ditch serves an irrigated area of 74.3 acres, of which, 20.4 acres are owned by F. E. Stone and 53.9 acres are owned by W. O. Stone (see map sheets 22 and 23 and Acreage Table pages 252 and 253).

The water available for diversion by the ditch is supplied by a constant flow spring. A current meter measurement taken June 27, 1923, to determine the flow of the spring, showed a discharge of 0.87 second foot. This discharge represents the normal irrigating head and the maximum flow diverted by the ditch.

Diversion 129A is that of the Stone Brothers East Ditch, diverting from the spring described under Diversion 129 (see map sheet 22).

The conduit is an earth ditch, about one half of a mile in length, running north from the spring and traversing the W. O. Stone and F. E. Stone ranches. The water diverted by the ditch is used for the irrigation of 45.2 acres, of which, 7.7 acres are owned by F. E. Stone,

and 37.5 acres ~~are owned by W. O. Stone (see map sheet~~ 22 and Acreage Table pages 152 and 153).

The ditch is ~~of ample capacity~~ to carry the entire flow of the spring, and the discharge of 0.87 ~~se~~cond foot, the measured flow of the spring as described under Diversion 129, represents the normal irrigating head and the maximum flow diverted by the ditch.

Diversion 130 is that of the W. O. Stone Domestic Pipe Line, diverting from a spring located in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 35 T 42 N, R 5 W (see map sheet 22).

The conduit is a 2 inch diameter iron pipe, 1450 feet long, conveying water to the W. O. Stone house, in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 35 T 42 N, R 5 W, where it is used for domestic purposes (see map sheet 23).

A volumetric measurement of the total flow of the spring was taken June 27, 1923, showing a discharge of 0.028 second foot.

Diversion 131 is that of the A. B. Hoy Ditch, diverting from Hoy Creek in the NW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 26 T 42 N, R 5 W (see map sheet 22). Hoy Creek is a small creek which rises on the W. O. Stone ranch and flows north across the W. O. and F. E. Stone and A. B. Hoy ranches to its junction with Carrick Creek, at a point in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 23 T 42 N, R 5 W. The water available for diversion by the ditch is return flow from irrigation on the F. E. and W. O. Stone ranches.

The conduit is an earth ditch about 1100 feet in length, and serves an irrigated area of 6.7 acres on the A. B. Hoy ranch, (see map sheets 22, 24, and 26, and Acreage Table pages 125.

No measurements were taken on the ditch, as it was not indicated as a diversion at the time the other Hoy ditches were measured.

Diversion 132 is that of the Hoy Brothers Ditch, diverting from Hoy Creek in the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 26 T 42 N, R 5 W (see map sheet 26). Like Diversion 131, the ditch is supplied principally by return flow from irrigation on the F. E. and W. O. Stone ranches.

The conduit is an earth ditch, about three fourths of a mile in length, running westerly from the point of diversion, and terminating near the northeast corner of section 27 T 42 N, R 5 W. The ditch serves an irrigated area of 44.1 acres, of which, 24.4 acres are owned by A. B. Hoy and 19.7 acres are owned by M. T. Hoy. Of the 19.7 acres on the M. T. Hoy ranch, 7.3 acres have been described as sub-irrigated from the ditch, (see map sheet 26 and Acreage Table page 125).

A current meter measurement was taken on the ditch June 1,1923, showing a discharge of 0.35 second foot. This discharge represents the flow available for diversion at the time the measurement was taken. The maximum capacity of the ditch was computed and found to be 1.0 second foot. A. B. and M. T. Hoy stated that the maximum capacity of the ditch was also the normal irrigating head.

Diversion 133 refers to the Albee Spring, located in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 25 T 42 N, R 5 W (see map sheet 24).

A short drain ditch conveys water from the spring to a lateral of the Albee Ditch (Diversion 116). An area of 2.3 acres has been described as irrigated from the spring. This area also lies under the Albee Ditch (see map sheet 24 and Acreage Table page 2).

A volumetric measurement taken June 27, 1923, to determine the total flow of the spring, resulted in a discharge of 0.014 second foot.

Diversion 133A refers to the Albee Domestic Spring, located in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 25 T 42 N, R 5 W, 100 feet west of Albee Spring, described under Diversion 133 (see map sheet 24).

A 2 inch diameter iron pipe, 500 feet in length, conveys water from the spring to the Albee ranch house. The water is used for domestic purposes.

No discharge measurements were taken on the pipe line, as it was not indicated as a diversion when the other Albee diversions were being measured.

Diversion 134 refers to the Albee Spring, located in the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 25 T 42 N, R 5 W (see map sheet 24).

The spring serves an irrigated area of 17.6 acres, of which, 4.5 acres have been described as sub-irrigated. The area irrigated from the spring also lies under the Albee Ditch (see map sheet 24 and Acreage Table page 2).

A volumetric measurement taken June 27, 1923, to determine the total flow of the spring, resulted in a discharge of 0.015 second foot.

Diversion 135 is that of the M. T. Hoy Upper Ditch, diverting from Albee Creek in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 26 T 42 N, R 5 W (see map sheet 24). Albee Creek is a small stream, which rises on the Albee ranch, in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 25 T 42 N, R 5 W, and flows westerly to its junction with Carrick Creek, at a point in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 23 T 42 N, R 5 W. The

stream is fed by return water from irrigation on the Albee ranch.

The conduit is an earth ditch, running northwesterly on the M. T. Hoy ranch, for a distance of one half of a mile. As operated, the ditch is in reality an extension of the Hoy Brothers Upper Ditch (Diversion 122), but has been here indicated as a diversion, due to the fact that it also diverts water from Albee Creek. The area irrigated from the ditch has been given in the summary under Diversion 122.

A current meter measurement was taken on the ditch June 1,1923, showing a discharge of 0.50 second foot. This discharge represents the normal irrigating head and also the maximum flow used in the ditch, as stated by M. T. Hoy.

Diversion 136 is that of the M. T. Hoy Middle Ditch, diverting from Albee Creek in the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 23 T 42 N, R 5 W (see map sheet 24).

The conduit is an earth ditch, about one half of a mile in length, running westerly on the M. T. Hoy ranch. Under operating conditions the ditch is used for the rediversion of water spilled into Albee Creek from the Hoy Brothers Upper Ditch (Diversion 122). The ditch also diverts water from Albee Creek when such flow is available. The area irrigated from the ditch has been given in the summary under Diversion 122.

A current meter measurement was taken on the ditch June 1,1923, showing a discharge of 0.82 second foot. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by M. T. Hoy.

Diversion 137 is that of the M. T. Hoy Lower Ditch, diverting from Albee Creek in the SE¼ SW¼ Sec. 23 T 42 N, R 5 W (see map sheet 26).

The conduit is an earth ditch, about three fourths of a mile in length, running north westerly across the M. T. Hoy ranch. The ditch serves an irrigated area of 21.9 acres (see map sheet 26 and Acreage Table page 126).

A current meter measurement was taken on the ditch June 1,1923, showing a discharge of 0.25 second foot. This discharge represents the flow available for diversion by the ditch when the measurement was taken. The maximum capacity of the ditch was computed and found to be 0.80 second foot. This computed discharge also represents the normal irrigating head, as stated by M. T. Hoy.

Diversion 138 is that of the Jackson Upper Ditch, diverting from Carrick Creek in the SE¼ SE¼ Sec. 22 T 42 N, R 5 W (see map sheet 26).

The main conduit is an earth ditch, about one half of a mile in length, conveying water west along the south bank of Carrick Creek to the SE¼ SW¼ Sec. 22 T 42 N, R 5 W. From this point the water is conveyed north and west from the main ditch by two laterals. The north lateral is about three fourths of a mile long, and terminates in the NW¼ NW¼ Sec. 22 T 42 N, R 5 W. The west lateral is about one mile in length, and terminates in the SE¼ SW¼ Sec. 21 T 42 N, R 5 W. The ditch serves an irrigated area of 114.1 acres, (see map sheets 26, 27, and 29, and Acreage Table page 130).

A current meter measurement was taken on the ditch May 14,1923, showing a discharge of 1.42 second feet. The maximum capacity of the

ditch was computed and found to be 2.20 second feet. The Jackson ranch has a right, by court decree, to divert 1.2 second feet of the flow of Carrick Creek. This decreed flow is considered to be the normal irrigating head used under this ditch, as stated by C. H. Walker, lessee.

Diversion 139 is that of the Jackson Middle Ditch, diverting from Carrick Creek in the NE¼ SW¼ Sec. 22 T 42 N, R 5 W (see map sheet 26).

The conduit is an earth ditch about three fourths of a mile long, and conveys water north along the east side of Carrick Creek to the SW¼ Sec. 15 T 42 N, R 5 W. The ditch serves an irrigated area of 32.3 acres (see map sheet 27 and Acreage Table page 130).

A current meter measurement was taken on the ditch May 14,1923, showing a discharge of 0.48 second foot. This discharge represents the normal irrigating head, as stated by C. H. Walker, lessee. The maximum capacity was computed and found to be 1.80 second feet.

Diversion 140 is that of the Jackson Lower Ditch, diverting from Carrick Creek in the NE¼ NW¼ Sec. 22 T 42 N, R 5 W (see map sheet 27).

The conduit is an earth ditch about one half of a mile in length, and serves an irrigated area of 23.3 acres (see map sheet 27 and Acreage Table page 131).

A current meter measurement was taken on the ditch May 14,1923, showing a discharge of 0.43 second foot. This discharge represents the normal irrigating head, as stated by C. H. Walker, lessee. The maximum capacity was computed and found to be 0.82 second foot.

As stated under Diversion 138, the Jackson ranch has a right by court decree to 1.2 second feet of the flow of Carrick Creek. The use of

this water is rotated between the Jackson Upper, Middle, and Lower ditches diverting from Carrick Creek. During the irrigation season, the maximum flow diverted by any one ditch rarely, if ever, exceeds the decreed flow of 1.20 second feet. The combined diversions of the three ditches, however, may be greater than this amount, as return water from the Jackson Upper Ditch enters the stream above the two lower ditches.

Diversion 141 is that of the Jackson Ditch, diverting from a spring located in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 22 T 42 N, R 5 W (see map sheet 27).

The conduit is an earth ditch, about one fourth of a mile in length, running north from the spring. The water is used for the irrigation of 11.2 acres. This area also lies under the Jackson Middle Ditch (see map sheet 27 and Acreage Table page 131).

A volumetric measurement was taken on the ditch September 4, 1923, showing a discharge of 0.10 second foot. This discharge represents the normal irrigating head carried by the ditch, and also the total flow of the spring.

Diversion 142 is that of the Ellison Upper Ditch, diverting from a spring located in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 22 T 42 N, R 5 W (see map sheet 27). This spring has been developed by an earth cut and tunnel run into the hill at the spring.

The water is conveyed north from the spring to the southeast corner of section 15 T 42 N, R 5 W, by a short earth ditch, and thence northwesterly across the south one half of that section, by two earth ditch laterals. The water is used for domestic purposes, and for the irrigation of 13.3 acres (see map sheet 27 and Acreage Table page 83).

A volumetric measurement was taken August 11, 1923, to determine the flow of the spring, and gave a discharge of 0.142 second foot. This discharge also represents the normal irrigating head carried by the ditch.

Diversion 143 is that of the Ellison Middle Ditch, diverting from a spring located in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 15 T 42 N, R 5 W (see map sheet 27).

The conduit is an earth ditch, about 700 feet in length, running east from the spring. The ditch serves an irrigated area of 3.3 acres (see map sheet 27 and Acreage Table page 83).

A volumetric measurement was taken on the ditch August 11,1923, showing a discharge of 0.028 second foot. This discharge represents the normal irrigating head and also the total available flow that could be forced through the ditch.

Diversion 144 is that of the Ellison Lower Ditch, diverting from the spring described under Diversion 143 (see map sheet 27).

The conduit is an earth ditch, about 800 feet in length, running northeast from the spring, and serves an irrigated area of 4.4 acres (see map sheet 27 and Acreage Table page 83).

A volumetric measurement was taken on the ditch September 4, 1923, showing a discharge of 0.034 second foot. This discharge represents the normal irrigating head and also the total flow of the spring.

Diversion 145 is that of the Mills Ditch, diverting from the west bank of Carrick Creek in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 15 T 42 N, R 5 W (see map sheet 27).

The conduit is an earth ditch about 800 feet in length, and

serves an irrigated area of 13.0 acres (see map sheet 28 and Acreage Table page 183).

A current meter measurement was taken on the ditch November 12, 1923, showing a discharge of 1.44 second feet. The maximum capacity of the ditch was computed and found to be 4.0 second feet. The maximum capacity of the ditch also represents the normal irrigating head, as stated by Frank Mills.

Diversion 146 is that of the Mills Ditch, diverting from the east bank of Carrick Creek in the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 15 T 42 N, R 5 W (see map sheet 28).

The conduit is an earth ditch about 2000 feet in length, and serves an irrigated area of 20.7 acres (see map sheet 28 and Acreage Table page 183).

A current meter measurement was taken on the ditch November 12, 1923, showing a discharge of 1.86 second feet. The maximum capacity of the ditch was computed, and found to be 3.5 second feet. The maximum capacity also represents the normal irrigating head, as stated by Frank Mills.

Diversion 147 is that of the Mills Ditch, diverting from the west bank of Carrick Creek in the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 15 T 42 N, R 5 W (see map sheet 28).

The conduit is a plow furrow ditch about 400 feet in length. An area of 2.0 acres is irrigated under the ditch, (see map sheet 28 and Acreage Table page 184).

The ditch was so overgrown with weeds as to make discharge measurements impossible.

Diversion 148 is that of the Mills Ditch, diverting from the east bank of Carrick Creek in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 15 T 42 N, R 5 W (see map sheet 28).

The conduit is an earth ditch about 400 feet in length. The area irrigated under this ditch also lies under a lateral of the Arbaugh Ditch, and has been described as irrigated from the Arbaugh Ditch (see map sheets 28, 31, and 32 and Acreage Table pages 180 and 182).

A current meter measurement was taken on the ditch November 6, 1923, showing a discharge of 1.43 second feet. This discharge represents the maximum capacity of the ditch, as the ditch was running full when the measurement was taken. It also represents the normal irrigating head.

Carrick Creek, over its course through the Mills ranch, is a narrow, shallow, channel choked with tullies. During the early spring when water is plentiful, a considerable portion of the area served under Diversions 145 to 148, inclusive, is irrigated by overflow of the creek banks. In operation it is the practice to divert the entire available flow of the creek, the creek channel being used as a main ditch and the diversions therefrom being used as laterals.

Diversion 149 is that of the Jones Main Ditch, diverting from Shasta River in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 2 T 42 N, R 5 W (see map sheet 34).

Diversion is made by means of a loose rock and brush dam. From the dam, the water is conveyed by an earth ditch, along the west side of Shasta River to the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 35 T 43 N, R 5 W; thence to the east side of the river, by means of a 20 inch diameter steel pipe line, 300 feet in length, and thence by an earth ditch, along the east side of the river to the J. L. Jones ranch, in the W$\frac{1}{2}$ Sec. 25 T 43 N, R 5 W. The

ditch has a total length of about three miles. and serves an irrigated area of 105.7 acres on the J. L. Jones ranch. An area of 0.4 acre on the M. F. Mills ranch, in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 35 T 43 N, R 5 W, is sub-irrigated from the ditch, making a total area of 106.1 acres under the ditch (see map sheets 35 to 37, inclusive, and Acreage Table pages 132 and 184).

A current meter measurement was taken on the ditch May 18,1923, showing a discharge of 5.12 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by J. L. Jones.

The results of measurements taken on the Jones Main Ditch in 1912, and available through O.E.S. Bulletin 254, follows:

Date	Discharge in Second Feet
June 17	2.68
June 28	1.26
July 12	Dry
July 25	2.59
August 6	2.60

Diversion 150 is that of the I. B. Mathews Company Ditch, diverting from the upper Elting Spring, which is located in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 2 T 42 N, R 5 W (see map sheet 34).

Diversion is made by means of a wooden dam, constructed across the spring channel, just below the spring. From the dam, the water is conveyed by an earth ditch, running northeasterly across the lower end of the I. B. Mathews Company ranch, and is used for the irrigation of 107.4 acres, (see map sheet 34 and Acreage Table page 10).

A current meter measurement was taken on the ditch August 30, 1922, showing a discharge of 1.56 second feet. This discharge represents

the total flow of the spring and the normal irrigating head diverted by the ditch.

Diversion 151 is that of the Jones Spring Ditch, diverting from the lower Elting Spring, which is located in the NE¼ NW¼ Sec. 2 T 42 N, R 5 W (see map sheet 34).

The conduit is an earth ditch, about three fourths of a mile in length, and serves irrigated areas of 71.0 acres and 5.3 acres, owned by J. L. Jones and the I. B. Mathews Company, respectively, and a sub-irrigated area of 0.6 acre, owned by F. M. Mills, making a total area of 76.9 acres (see map sheets 34 and 35 and Acreage Table pages 10,132, and 184).

A current meter measurement was taken on the ditch May 24, 1923, showing a discharge of 0.90 second foot. This discharge represents the total flow of the spring, and the normal irrigating head diverted by the ditch.

Diversion 152 is that of the Jones Pumping Plant, in the NW¼ SE¼ Sec. 35 T 43 N, R 5 W (see map sheet 35). The plant is located on a slough, tributary to Shasta River, which carries water from the Elting springs.

As stated by J. L. Jones, the pump was never used after being installed, due to protests from prior lower appropriators on the Shasta River. The irrigable area under the pump is served by the Jones extension of the Arbaugh Ditch, and is irrigated from that source, when water is available (see summary of acreage irrigated under Diversion 108).

For the above reasons no data were obtained on the discharge of the plant.

Diversion 153 is that of the McKee Ditch, also known as the Williams or Nichols Ditch, diverting from Shasta River in the NW¼ SE¼ Sec. 35

T 43 N, R 5 W (see map sheet 35).

Diversion is made by means of a timber dam, about 5 feet in height and 50 feet long on top. The diversion conduit is a metal flume, 3.8 feet in diameter and about 600 feet in length. The flume is provided with a wooden control gate at the intake. From the end of the flume the water is conveyed by an earth ditch running northerly along the east side of Shasta River to the NW¼ Sec. 10 T 43 N, R 5 W. The ditch has a total length of about four and one half miles, and traverses the J. L. Jones, W. P. Dunlap, McKee Company, and E. Stallcup and Sons Company ranches. That portion of the ditch traversing the Stallcup ranch is an extension to the main ditch, and was constructed for the purpose of picking up waste water from the McKee ranch for use on the Stallcup ranch. The areas irrigated from the ditch are given in the Acreage Table under the names of the above mentioned property owners. A summary of these data follows:

Name of Owner	Acreage Irr.	Acreage sub-irr.	Total Acreage Irr. & sub-irr.	Map Sheet	Acreage Table Page
Dunlap, W. P.	9.8		9.8	37,38	68
Jones, J.L.		6.8	6.8	37	133
McKee Co.	139.7		139.7	40,41	173,174
Stallcup & Sons Co.	13.2		13.2	88	249
TOTALS	162.7	6.8	169.5		

A current meter measurement was taken on the ditch May 17, 1923, showing a discharge of 4.57 second feet. The maximum capacity of the flume was computed and found to be 7.2 second feet. The normal irrigating head is the flow available for diversion up to the maximum

capacity of the diversion flume.

The results of measurements taken on the McKee Ditch in 1912 and available through O.E.S. Bulletin 254, follow:

Date	Discharge in Second Feet
June 17	5.34
June 28	Dry
July 12	3.05
July 25	5.25
August 6	3.00

Diversion 154 is that of the Miller and Dunlap Ditch, diverting from Shasta River in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 35 T 43 N, R 5 W (see map sheet 35). The ditch is owned jointly by W. P. Dunlap and the McKee Company.

Water is diverted by means of a low, loose rock dam, into an earth ditch heading on the west bank of the river, and is conveyed northeasterly along the river to a point one mile below the intake. From this point the water is carried to the east side of the river by a 20 inch diameter steel pipe, 250 feet in length, and thence northerly, by an earth ditch, to the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 23 T 43 N, R 5 W. The ditch has a total length of about three miles, and traverses the J. L. Jones, W. P. Dunlap, and the McKee Company (Miller) ranches. The water diverted by the ditch is used for irrigation on the W. P. Dunlap and the McKee Company ranches. A small area on the J. L. Jones ranch is sub-irrigated from the ditch. The areas irrigated from the ditch are given in the Acreage Table under the names of the above mentioned property owners. A summary of these data follows:

Name of Owner	Acreage Irr.	Acreage Sub-irr.	Total Acreage Irr. & sub-irr	Map Sheet	Acreage Table Page
Dunlap, W. P.	60.1		60.1	37,38,40	68
Jones, J. L.		12.9	12.9	37	133
McKee Company	46.6		46.6	40	174
TOTALS	106.7	12.9	119.6		

A current meter measurement was taken on the ditch May 17,1923, showing a discharge of 8.78 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by C. Fesler, foreman of the McKee Company ranch.

The results of measurements taken on the Miller and Dunlap Ditch in 1912, and available through O.E.S. Bulletin 254, follow:

Date	Discharge in Second Feet
June 17	3.36
June 28	4.05
July 12	1.58
July 25	3.26

Diversion 155 is that of the Jones Power Ditch, diverting from Shasta River in the NW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 25 T 43 N, R 5 W (see map sheet 37).

Diversion is made by means of a low, loose rock dam. The conduit is an earth ditch, conveying water along the east side of the river to a point about 600 feet below the intake. The water is used to operate a water wheel. After passing over the wheel the water is returned to the river above all lower diversions. An area of 0.6 acre is sub-irrigated by the ditch, (see map sheet 37 and Acreage Table page 133).

A current meter measurement was taken on the ditch December 5, 1923, showing a discharge of 3.35 second feet. This discharge, when

available, represents the normal flow used to operate the wheel, as stated by J. L. Jones. The maximum capacity of the ditch was computed and found to be 5.0 second feet.

Diversion 156 is that of the Soule Ditch, diverting from Shasta River in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 25 T 43 N, R 5 W (see map sheet 37).

Diversion is made by means of a low rock dam. The conduit is an earth ditch, about two and one half miles in length, conveying water along the west side of Shasta River to the J. Soule ranch. The ditch serves an irrigated area of 136.9 acres, of which, 2.6 acres have been described as sub-irrigated land (see map sheet 39 and Acreage Table pages 245 and 246).

A current meter measurement was taken on the ditch May 18,1923, showing a discharge of 5.26 second feet. This discharge represents the normal irrigating head, as stated by J. Soule. The maximum capacity of the ditch was computed and found to be 7.60 second feet.

The results of measurements taken in 1912, and available through O. E. S. Bulletin 254, which designates this ditch as the Nelson Dennis Ditch, follow:

Date	Discharge in Second Feet
June 18	3.71
June 28	3.67
July 12	2.02
July 25	Dry

Diversion 157 is that of the Old Williams Ditch, diverting from Shasta River in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 26 T 43 N, R 5 W (see map sheet 39).

The water is diverted by means of a low rock dam into an earth ditch, and is conveyed along the north side of Shasta River to the J.Soule

ranch. The ditch was originally constructed to carry water to the McKee Company (Williams) ranch, but that portion of the ditch north of the Soule ranch has evidently been abandoned, as evidenced by the ditch being filled in at the Dennis ranch road crossing. That portion of the ditch in use at present, is about one half of a mile long, and serves an irrigated area of 29.8 acres (see map sheet 39 and Acreage Table page 247).

A current meter measurement was taken on the ditch May 21,1923, showing a discharge of 0.57 second foot. This discharge represents the flow that could be forced into the ditch at that time. The ditch and dam were not in proper repair to divert either the maximum or normal flow of the ditch.

Diversion 158 is that of the J. W. Dennis Upper Ditch, diverting from Shasta River in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 26 T 43 N, R 5 W (see map sheet 39).

Diversion is made by means of a low, loose rock and log dam. The conduit is an earth ditch, conveying water along the north side of Shasta River to the J. W. Dennis ranch. The ditch is about two miles in length, and serves an irrigated area of 150.7 acres, (see map sheets 39 and 40 and Acreage Table pages 48 and 49).

A current meter measurement was taken on the ditch May 18,1923, showing a discharge of 9.73 second feet. This discharge represents the normal irrigating head, as stated by J. W. Dennis. The maximum capacity of the ditch was computed and found to be 13.0 second feet.

The results of measurements taken in 1912, and available through O.W.S. Bulletin 254, which designates this ditch as the Hannah Dennis Ditch, follow:

Date	Discharge in Second Feet
June 18	13.02
June 28	10.23
July 12	3.07
July 25	7.20

Diversion 159 is that of the Soule Slough Ditch, diverting from a slough of Shasta River. The point of diversion is within the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 26 T 43 N, R 5 W (see map sheet 39).

The conduit is an earth ditch about 500 feet in length, and serves an irrigated area of 6.3 acres (see map sheet 39 and Acreage Table page 247).

No discharge measurements were taken on the ditch as it was not indicated as a diversion at the time the Soule ditches were being measured.

Diversions 160 and 161 are those of the J. W. Dennis Spring ditches, diverting from two springs located in the N$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 26 T 43 N, R 5 W (see map sheet 39).

An area of 13.3 acres is served by water diverted from the two springs (see map sheets 39 and 40, and Acreage Table page 49).

A volumetric measurement taken on Diversion 160, May 18, 1923, showed a discharge of 0.32 second foot. A current meter measurement taken on Diversion 161 on the same date, showed a discharge of 0.11 second foot. The sum of the results of the two measurements, 0.43 second foot, represents the normal irrigating head for the two ditches, and also the total flow of the springs.

Diversion 162 is that of the McKee Spring Ditch, diverting from a spring located on the McKee ranch in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 23 T 43 N, R 5 W (see map sheet 40). The spring was developed by the prededessors of the McKee Company.

Prior to September, 1923, the water was conveyed from the spring by a gravity ditch running north across the NE$\frac{1}{4}$ of section 23 and the E$\frac{1}{2}$ section 14, and terminating at the north line of section 14, all in T 43 N, R 5 W. At a point in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 23 T 43 N, R 5 W, a short lateral running west from the ditch connects with a lateral of the McKee Ditch (Diversion 153) from Shasta River. Due to an interchange of water between the two ditches through this lateral, it was impossible to make an exact segregation of the acreage irrigated under each ditch, however, an area of 243.0 acres has been described in the Acreage Table as irrigated under the McKee Spring Ditch (see map sheets 40 and 41 and Acreage Table page 175).

In September, 1923, a motor driven pump was installed at the spring, and the water was discharged into a newly constructed ditch, running northwesterly from the spring and connecting with the McKee Ditch from Shasta River (Diversion 153), at a point above all the distribution laterals of that ditch. By this arrangement water diverted from the spring was made available for use on portions of the McKee (Williams) ranch, formerly only irrigable under the McKee Ditch from Shasta River. Also, the flow of the spring was considerably increased by pumping.

The results of four current meter measurements taken on the ditch, follow:

Number of Measurement	Date	Discharge in Second Feet
1	May 8, 1923	1.51
2	June 22, 1923	4.50
3	Sept. 20, 1923	3.85
4	August 18, 1924	2.42

Measurement 1 was taken on the gravity ditch and represents the normal flow of the spring.

Measurement 2 was taken on the gravity ditch, during a time when a temporary pumping installation was in operation, and represents a flow that can be pumped from the spring for a short period only.

Measurement 3 was taken on the new ditch after the motor driven pump had been installed. Joe Gorman, foreman on the McKee Ranch, stated that this flow could be pumped for about 14 hours each day.

Measurement 4 represents the continuous flow pumped from the spring during the irrigation season of 1924.

Diversion 163 is that of the McKee Tunnel Spring Ditch, diverting the entire flow of a spring located in the SW¼ NE¼ Sec. 23 T 43 N, R 5 W (see map sheet 40).

The water is conveyed through a short tunnel and an earth ditch to the SE¼ NW¼ Sec. 23 T 43 N, R 5 W, where it is used for the irrigation of 17.7 acres (see map sheet 40 and Acreage Table page 176).

Float measurements were taken on the ditch at the tunnel outlet on September 27, 1922, and May 18, 1923, showing discharges of 0.29 and 0.30 second foot, respectively. These discharges represent the normal flow of the spring.

Diversion 164 is that of the J. W. Dennis Lower Ditch, diverting from

Shasta River in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 23 T 43 N, R 5 W (see map sheet 40).

The conduit is an earth ditch, conveying water along the east side of Shasta River to a point about one fourth of a mile below the intake of the ditch. From this point the water is carried across the river and thence northwest to the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 22 T 43 N, R 5 W. The ditch is about one mile long, and serves an irrigated area of 22.8 acres. Of this area 5.3 acres have been described as sub-irrigated land (see map sheet 40 and Acreage Table page 50).

A current meter measurement was taken on the ditch May 18, 1923, showing a discharge of 2.33 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by J. W. Dennis.

Diversion 165 is that of the E. D. Terwilliger Upper Ditch, diverting from Shasta River in the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 22 T 43 N, R 5 W (see map sheet 83).

Diversion is made by means of a low concrete dam. The conduit is an earth ditch, running west along the north side of the river, to a point one half of a mile below the intake, and thence northerly, for a distance of three fourths of a mile, to the center of the E$\frac{1}{2}$ section 16, T 43 N, R 5 W. The ditch serves an irrigated area of 24.8 acres, (see map sheets 83 and 86, and Acreage Table page 257).

The results of current meter measurements taken on the ditch, follow:

Number of Measurement	Date	Discharge in Second Feet	Hydrographer
1	Nov.13,1922	1.32	P. L. Beck
2	May 28,1923	2.51	H.Smitherum
3	May 26,1923	0.68	H.Smitherum

The discharge, of 2.51 second feet, shown by measurement 2, represents the maximum capacity of the ditch and also the normal irrigating head, as stated by E. D. Terwilliger.

Measurement 3 was taken at the request of E. D. Terwilliger to determine the amount of water flowing in the ditch at the Terwilliger ranch house.

Diversion 166 is that of the E. D. Terwilliger Lower Ditch, diverting from Shasta River in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 21 T 43 N, R 5 W (see map sheet 83).

The water is diverted by means of a low concrete dam, and is conveyed therefrom by an earth ditch running northerly along the west side of the river, for a distance of about three fourths of a mile, and thence westerly, one half of a mile, to the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 17 T 43 N, R 5 W. The ditch serves an irrigated area of 124.3 acres (see map sheets 85 and 86, and Acreage Table page 257).

A current meter measurement was taken on the ditch November 4, 1923, showing a discharge of 2.51 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by C. Hoyt, irrigator for E. D. Terwilliger.

The results of measurements taken in 1912, and available through O.E.S. Bulletin 254, which designates this ditch as the E. D. Terwilliger Ditch, follow:

Date	Discharge in Second Feet
June 18	2.50
June 10	1.66
July 13	1.19
July 25	1.39

Diversions 167 to 172, inclusive, are those of the Louie Brothers ditches diverting from Hole-in-the-Ground Creek, which has its source in a swampy area in the S½ of Section 15 T 43 N, R 5 W. The creek runs northwesterly across sections 15, 16, and 9, to its junction with the Shasta River at a point in the SE¼ SW¼ Sec. 9, all in T 43 N, R 5 W. The entire flow of the stream is diverted by the above numbered ditches for irrigation on the A. J. Louie and John Louie ranches.

Diversion 167 is an earth ditch, about 1000 feet in length, diverting from the right side of the creek in the NW¼ NW¼ Sec. 15 T 43 N, R 5 W (see map sheet 86). An area of 30.9 acres is irrigated under the ditch (see map sheet 87 and Acreage Table page 158). A current meter measurement was taken on the ditch September 27, 1922, showing a discharge of 1.22 second feet. This discharge represents the normal irrigating head. The maximum capacity of the ditch was computed and found to be 1.70 second feet.

Diversion 168 is an earth ditch, diverting from the left side of the creek in the SE¼ SE¼ Sec. 9 T 43 N, R 5 W (see map sheet 87). The ditch is about three fourths of a mile in length, and serves an irrigated area of 91.6 acres, of which, 7.3 acres are owned by A. J. Louie, and 84.3 acres are owned by John Louie. Of the 84.3 acres owned by John Louie, 2.3 acres are sub-irrigated (see map sheet 87 and Acreage Table pages 155 and 159). The normal irrigating head used in the ditch is limited to the total normal flow of the creek. This flow was determined by a current meter measurement taken on the creek above the highest diversion on September 27, 1922, and found to be 2.09 second feet. A

current meter measurement was taken on the ditch October 4, 1923, showing a discharge of 2.36 second feet. The flow of the creek, however, had been slightly increased due to rain October 2 and 3. The maximum capacity of the ditch was computed, and found to be 4.80 second feet.

Diversion 169 is a short earth ditch diverting from the left side of the creek in the SW¼ SE¼ Sec. 9 T 43 N, R 5 W (see map sheet 87). The ditch serves an irrigated area of 0.6 acre on the John Louie ranch (see map sheet 87 and Acreage Table page 159).

Diversion 170 is an earth ditch, about 300 feet in length, diverting from the left side of the creek. The point of diversion is within the SW¼ SE¼ Sec. 9 T 43 N, R 5 W, 500 feet down stream from Diversion 169. The ditch serves an irrigated area of 1.3 acres on the John Louie ranch (see map sheet 87 and Acreage Table page 159).

Diversion 171 is an earth ditch, diverting from the right side of the creek in the SW¼ SE¼ Sec. 9 T 43 N, R 5 W (see map sheet 87). The ditch is about 500 feet long, and serves an irrigated area of 0.5 acre on the John Louie ranch (see map sheet 87 and Acreage Table page 159).

Diversion 172 is an earth ditch about 150 feet in length, diverting from the right bank of the creek. The point of diversion is within the SW¼ SE¼ Sec. 9 T 43 N, R 5 W, and about 500 feet down stream from Diversion 171. The ditch serves an irrigated area of 0.1 acre (see map sheet 87 and Acreage Table page 159).

In addition to the areas irrigated from Hole-in-the-Ground Creek by the Louie Brothers ditches (Diversions 167 to 172, inclusive),

there is a considerable acreage lying adjacent to the spring and creek, which is sub-irrigated therefrom. This area is described in the Acreage Table under the names of the several owners. A summary of the data contained in the Acreage Table, follows:

Name of Owner	Acreage sub-irr.	Map Sheet	Acreage Table Page
Louie, John	26.2	87	162
Stallcup, E. & Sons Co.	*83.7	86,87	250
Terwilliger, E. D.	128.4	40,41,86	259,260
Total	238.3		

*This is one half of the acreage, on the E. Stallcup and Sons Company ranch, described as sub-irrigated from Hole-in-the-Ground Spring and Little Spring. Remaining one half included under Little Spring (see page 186 of this report).

Diversion 173 is that of the P. H. Clark Ditch, diverting from Parks Creek in the SW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 2 T 41 N, R 6 W (see map sheet 42).

The conduit is an earth ditch, about one half of a mile in length, running northeast across the NE$\frac{1}{4}$ Sec. 2 T 41 N, R 6 W. The water diverted by the ditch is used for the irrigation of 33.7 acres and 4.4 acres, owned by P. H. Clark and L. Dennis, respectively, or a total area of 38.1 acres (see map sheets 42 and 43 and Acreage Table pages 41, 42, and 51).

A current meter measurement was taken on the ditch May 21, 1923, showing a discharge of 4.37 second feet. This flow represents the maximum capacity of the ditch and also the normal irrigating head, as stated by Mr. Clark. A considerable portion of the water diverted was returned to Parks Creek, as surface drainage from irrigation under the ditch.

Diversion 174 is that of the L. Dennis Ditch, diverting from Parks Creek in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 2 T 41 N, R 6 W (see map sheet 42).

The conduit is an earth ditch, about 800 feet in length, running northeast from the point of diversion and terminating in the L. Dennis Ditch(Diversion 175)at a point in the NW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 1 T 41 N, R 6 W. The use of water is described under Diversion 175.

A current meter measurement was taken on the ditch May 18,1923, showing a discharge of 1.40 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by L. Dennis.

Diversion 175 is that of the L. Dennis Ditch, diverting from the east side of Parks Creek in the NW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 1 T 41 N, R 6 W (see map sheet 43).

The conduit is an earth ditch, about one mile in length, running east across the N$\frac{1}{2}$ Sec. 1 T 41 N, R 6 W. At a point 200 feet below the intake, the water conveyed by Diversion 174 is discharged into the ditch. The combined flow of the two ditches is used for the irrigation of 43.3 acres (see map sheet 43 and Acreage Table page 51).

A current meter measurement was taken on the ditch below the confluence of Diversion 174 on May 18, 1923, showing a discharge of 3.55 second feet. This discharge represents the normal irrigating head. The maximum capacity of the ditch was computed, and found to be 8.70 second feet.

Diversions 176 and 177 are those of the L. Dennis ditches, diverting from an unnamed fork of Parks Creek, and are supplied principally by return water from irrigation on the P. H. Clark ranch. The points of diversion are within the NW$\frac{1}{4}$ NW$\frac{1}{4}$ and the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 1 T 41 N, R 6 W,

respectively (see map sheet 43).

The conduits are short earth ditches, conveying water for the irrigation of pasture lands. Each ditch serves an irrigated area of 1.0 acre, making a total area of 2.0 acres under the two ditches (see map sheet 43 and Acreage Table page 51).

A float measurement was taken on Diversion 176, May 18,1923, showing a discharge of 0.19 second foot. The maximum capacity of the ditch was computed and found to be 1.10 second feet. The maximum capacity also represents the normal irrigating head, as stated by L. Dennis.

A current meter measurement was taken on Diversion 177, May 18, 1923, showing a discharge of 0.66 second foot. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by L. Dennis.

Diversion 178 is that of the L. Dennis Ditch, diverting from Parks Creek in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 1 T 41 N, R 6 W (see map sheet 43).

The conduit is a short earth ditch, and serves an irrigated area of 0.3 acre (see map sheet 43 and Acreage Table page 51).

A float measurement was taken on the ditch May 18, 1923, showing a discharge of 0.74 second foot. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by L. Dennis.

Diversion 179 is that of the L. Dennis Ditch, diverting from Parks Creek in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 1 T 41 N, R 6 W (see map sheet 43).

The conduit is an earth ditch, about one fourth of a mile in length, and serves an irrigated area of 2.6 acres (see map sheet 43

and Acreage Table page 51).

Two current meter measurements were taken on the ditch May 18, 1923, showing discharges of 0.66 second foot and 0.88 second foot, respectively. The discharge of 0.66 second foot represents the normal irrigating head, as stated by L. Dennis. The discharge of 0.88 second foot, represents the maximum capacity of the ditch.

Diversion 180 is that of the L. Dennis hydraulic ram, diverting from a small spring located in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 1 T 41 N, R 6 W. The ram supplies water for domestic use at the L. Dennis ranch house (see map sheet 43).

Diversion 181 is the L. Dennis Ditch, diverting from an unnamed fork of Parks Creek. The point of diversion is within the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 1 T 41 N, R 6 W (see map sheet 43).

The conduit is a short earth ditch, and serves an irrigated area of 0.2 acre (see map sheet 43 and Acreage Table page 51).

No measurements were taken on the ditch, as it was not indicated as a diversion at the time the other L. Dennis ditches were being measured.

Diversion 182 is that of the I. S. Clark Ditch, locally known as the Colwell Ditch, diverting from Parks Creek in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 1 T 41 N, R 6 W (see map sheet 43).

Water is diverted by means of a low, loose rock dam, and is conveyed by an earth ditch, running northeasterly along the north side of Parks Creek, to the Edson-Foulke Yreka Ditch in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 31

T 42 N, R 5 W. From this point the water is carried across the Edson-Foulke Yreka Ditch by a short flume, 2.75 feet wide by 0.55 foot deep, and thence northeasterly, parallel to the Edson-Foulke Yreka Ditch, to the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 31 T 41 N, R 5 W. The ditch is about one mile in length, and serves an irrigated area of 140.6 acres on the I. S. Clark ranch. Of this area 7.7 acres have been described as sub-irrigated land. In addition to the above acreage, an area of 69.2 acres on the Mary A. Wholey ranch, has been described in the Acreage Table as irrigated by waste water from the I. S. Clark ranch. Since the principal source of supply for this waste water is the I. S. Clark Ditch (Diversion 182), this acreage has been herein alloted to that ditch, making a total irrigated area of 209.9 acres under the ditch (see map sheets 9, 11, and 44, and Acreage Table pages 40, 41, 274, and 275).

The results of six current meter measurements taken on the ditch, follow:

Number of Measurement	Date	Discharge in Second Feet	Hydrographer
1	June 23,1922	4.99	P. L. Beck
2	June 23,1922	5.23	P. L. Beck
3	June 23,1922	5.55	P. L. Beck
4	May 16,1923	8.26	F. F. Burrows
5	May 16,1923	3.50	F. F. Burrows
6	July 20,1923	1.48	H. Smitherum

Measurements 1 to 3, inclusive, were taken at the head of the ditch. The flow of the ditch was increased between measurements to obtain the maximum capacity of the ditch, which is shown by the results of Measurement 3. This discharge also represents the normal irrigating head, when that amount of water is available.

Measurement 4 was taken at the head of the ditch. The resulting discharge, however, is in excess of the maximum capacity of the ditch,

as water was overflowing the ditch banks and returning to Parks Creek at several places below the point of measurement.

Measurement 5 was taken at a point above the first lateral from the ditch. Water was being diverted by the lateral, and the flume across the Edson-Foulke Yreka Ditch was running full. The resulting discharge of 3.50 second feet represents the maximum flow that could be delivered to the I. S. Clark ranch. The difference, of 4.76 second feet, between the discharges obtained by Measurements 4 and 5, represents the flow that was wasting from the ditch above the Clark ranch.

Measurement 6 was taken at the head of the ditch. The discharge obtained represents the flow available when the measurement was taken.

Diversion 183 is that of the Edson-Foulke Parks Creek Ditch, diverting from Parks Creek in the NW¼ NW¼ Sec. 6 T 41 N, R 5 W (see map sheet 43).

The diversion conduit is a short wooden flume heading on the north bank of the creek. The intake of the flume is on a level with the stream channel, and during the high water period no diversion dam is necessary. As the flow of the creek decreases, a few rocks placed across the channel serve to divert the water. From the end of the flume the water is conveyed by an earth ditch to the Edson-Foulke Yreka Ditch, and is used in common with water diverted by that ditch from Shasta River (see description of Diversion 18).

The results of measurements showing the water diverted to the Edson-Foulke Yreka Ditch are given in Tables 54 and 55, submitted at the end of this report.

Diversion 184 is that of the Bagley Domestic Pipe Line, diverting from a spring in an unnamed gulch. The point of diversion is within the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 36 T 42 N, R 6 W (see map sheet 44).

The conduit is a one inch diameter iron pipe, about 4000 feet in length, conveying water to the Bagley ranch house, in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 30 T 42 N, R 5 W, where it is used for domestic purposes (see map sheet 45).

No measurements were made to determine the discharge of the pipe, as it was not in use during the period covered by the field investigation.

Diversion 185 is that of the Bagley Ditch, diverting from the same unnamed gulch mentioned under Diversion 184. The point of diversion is within the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 36 T 42 N, R 6 W, about 600 feet downstream from Diversion 184.

The conduit is an earth ditch, about one fourth of a mile long, running northeast from the point of diversion and terminating in the Edson-Foulke Yreka Ditch at a point near the southwest corner of section 30 T 42 N, R 5 W. The irrigable lands under the ditch would be served by rediversion from the Edson-Foulke Yreka Ditch. However, the ditch was not in use during the period covered by the field investigation and was not indicated as a diversion by the Walker interests, present owners of the Bagley ranch, and, therefore, no acreage is given as irrigated by the ditch.

No discharge measurements were taken on the ditch for the reasons given above.

Diversion 186 is that of the Hammond Domestic Pipe Line, diverting from a spring located in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 5 T 41 N, R 5 W (see map sheet 8).

The conduit is a one inch diameter iron pipe, about 1000 feet in length. The water is used for domestic purposes at the Hammond ranch houses, located in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 5 T 41 N, R 5 W.

No measurements were taken to determine the discharge of the pipe, as it was not indicated as a diversion at the time the other Hammond ditches were being measured.

Diversion 187 is that of the Hammond Domestic Pipe Line, diverting from a spring located in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 5 T 41 N, R 5 W (see map sheet 8).

The conduit is a one inch diameter iron pipe, about 800 feet in length, conveying water to the Hammond ranch house in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 5 T 41 N, R 5 W, where it is used for domestic purposes.

No measurements were taken to determine the discharge of the pipe, for reasons as stated under Diversion 186.

Diversion 188 is that of the I. S. Clark Ditch, diverting from the east bank of Parks Creek in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 31 T 42 N, R 5 W (see map sheet 9).

The conduit is an earth ditch, about three fourths of a mile in length, running east from the point of diversion and terminating in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 32 T 42 N, R 5 W. The ditch serves an irrigated area of 39.3 acres (see map sheet 9 and Acreage Table page 40).

A current meter measurement was taken on the ditch May 16, 1923, showing a discharge of 2.12 second feet. This discharge represents the normal irrigating head, as stated by J. Kempton, irrigator for

C. H. Walker, lessee. The maximum capacity was computed and found to be 3.50 second feet.

Diversion 189 is that of the I. S. Clark Ditch, diverting from the west side of Parks Creek in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 31 T 42 N, R 5 W (see map sheet 9).

The conduit is an earth ditch, about 1000 feet in length, emptying into an unnamed channel of Parks Creek. The water is then conveyed by this natural channel for a distance of one fourth of a mile, and is rediverted therefrom and distributed for irrigation by the I. S. Clark Ditch (Diversion 191). An area of 6.1 acres is irrigated under the system. (see map sheet 9 and Acreage Table page 40).

A current meter measurement was taken on Diversion 189 on May 17, 1923, showing a discharge of 1.63 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head as stated by J. Kempton, irrigator for C. H. Walker, lessee.

Diversion 190 is that of the I. S. Clark Ditch, diverting from the east side of Parks Creek in the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 31 T 42 N, R 5 W (see map sheet 9).

The conduit is an earth ditch, about one half of a mile in length, running east from the point of diversion to the NW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 32 T 42 N, R 5 W. The ditch serves an irrigated area of 179.7 acres (see map sheet 9 and Acreage Table pages 40 and 41).

A current meter measurement was taken on the ditch May 16,1923, showing a discharge of 3.96 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as

stated by C. H. Walker, lessee.

Diversion 191 is that of the I. S. Clark Ditch, diverting from an unnamed channel of Parks Creek. The point of diversion is within the NW¼ SW¼ Sec. 32 T 42 N, R 5 W (see map sheet 9).

The conduit is an earth ditch about 900 feet in length. The use of water is described under Diversion 189.

Current meter measurements were taken on the ditch May 14 and May 16, 1923, showing discharges of 0.49 and 1.55 second feet, respectively. The discharge, of 0.49 second foot, represents the normal irrigating head, as stated by C. H. Walker, lessee. The discharge, of 1.55 second feet, represents the maximum capacity of the ditch.

Diversion 192 is that of the I. S. Clark Ditch, diverting from an unnamed fork of Parks Creek. The point of diversion is within the SW¼ NW¼ Sec. 32 T 42 N, R 5 W (see map sheet 9).

The conduit is an earth ditch about 1200 feet in length, and serves an irrigated area of 2.7 acres (see map sheet 9 and Acreage Table page 41).

Current meter measurements were taken on the ditch May 14 and May 16, 1923, showing discharges of 0.49 and 0.69 second foot, respectively. The discharge, of 0.49 second foot, represents the normal irrigating head, as stated by C. H. Walker, lessee. The discharge, of 0.69 second foot, represents the maximum capacity of the ditch.

Diversion 193 is that of the Wholey Ditch, diverting from an unnamed

fork of Spring Creek. The point of diversion is within the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 32 T 42 N, R 5 W (see map sheet 9). The water available for diversion by the ditch is supplied from Parks Creek, either through overflow from the main channel of Parks Creek, or through return flow from higher diversions.

The conduit is a short earth ditch. The water diverted by the ditch is used in common with water diverted from Spring Creek by the Wholey Ditch (Diversion 196),(see map sheet 9 and Acreage Table page 273).

No measurements were taken on the ditch, as it was not indicated as a diversion at the time the other Wholey ditches were being measured.

Diversion 194 is that of the Wholey Ditch, diverting from an unnamed fork of Parks Creek. The point of diversion is within the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec.32 T 42 N, R 5 W (see map sheet 9).

The conduit is a short earth ditch diverting from the north side of the stream. The water is conveyed northerly a distance of about 150 feet, and spilled into Spring Creek for rediversion by the Wholey ditches, Diversions 195 to 196, inclusive, and 201 to 204, inclusive, and its use is described thereunder. In addition, an area of 1.7 acres on the I. S. Clark ranch is served directly from the ditch (see map sheet 9 and Acreage Table page 41).

A current meter measurement was taken on the ditch May 17,1923, showing a discharge of 0.77 second foot. This discharge represents the flow available when the measurement was taken. The maximum capacity of the ditch was computed and found to be 3.0 second feet.

Diversion 195 is that of the Wholey Ditch, diverting from Spring Creek.

The point of diversion is within the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 32 T 42 N, R 5 W, and below the confluence of Diversion 194 (see map sheet 9). Spring Creek is a small stream, which rises in several springs in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 32 T 42 N, R 5 W, and flows northeasterly to its confluence with Parks Creek in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 29 T 42 N, R 5 W (see map sheets 9 and 11). The creek is supplied by water from Diversion 194, by a small flow from the spring and by return water from irrigation above.

The conduit is an earth ditch, about one fourth of a mile in length, diverting from the east bank of the creek. The ditch serves an irrigated area of 17.8 acres, of which, 1.1 acres are owned by I. S. Clark, and 16.7 acres are owned by Mary A. Wholey (see map sheets 9 and 11 and Acreage Table pages 41 and 273).

A current meter measurement was taken on the ditch May 21,1923, showing a discharge of 1.02 second feet. This discharge represents the normal irrigating head, as stated by J. Kempton, irrigator for C. H. Walker, lessee. The ditch had not been cleaned during 1923, and the maximum cross section was rather indefinite. The maximum capacity of the ditch was therefore not computed.

Diversion 196 is that of the Wholey Ditch, diverting from Spring Creek in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 32 T 42 N, R 5 W. The point of diversion is on the east bank of the creek, about 50 feet down stream from Diversion 195 (see map sheet 9).

The conduit is an earth ditch about 350 feet in length, and irrigates an area of 8.5 acres in common with Diversion 193 (see map sheet 9 and Acreage Table page 273).

No discharge measurements were taken on the ditch, as it was not indicated as a diversion when the other Wholey Ditches were being measured.

Diversion 197 is that of the Wholey Ditch, diverting from an unnamed fork of Spring Creek. The point of diversion is within the NW¼ NW¼ Sec. 32 T 42 N, R 5 W, about 800 feet down stream from Diversion 193 (see map sheet 9).

The conduit is an earth ditch, 1100 feet in length, and terminates in the SE¼ SW¼ Sec. 29 T 42 N, R 5 W. The ditch serves an irrigated area of 7.4 acres (see map sheets 9 and 11 and Acreage Table page 273).

No discharge measurements were taken on the ditch, as it was not indicated as a diversion at the time the other Wholey ditches were being measured.

Diversion 198 is that of the Wholey Ditch, diverting from an unnamed fork of Parks Creek. The point of diversion is within the NE¼ NW¼ Sec. 32 T 42 N, R 5 W (see map sheet 9).

The conduit is a short earth ditch, and serves an irrigated area of 2.3 acres (see map sheet 9 and Acreage Table page 274).

A current meter measurement was taken on the ditch May 21, 1923, showing a discharge of 0.25 second foot. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by J. Kempton, irrigator for C. H. Walker, lessee.

Diversions 199 and 200 are those of the Kasshafer ditches, diverting from a small channel carrying return flow from irrigation on the I.S.Clark,

ranch. This stream is in the Parks Creek watershed.

Diversion 199 is an earth ditch diverting from the stream at a culvert crossing the State Highway in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 32 T 42 N, R 5 W. The ditch is about one fourth of a mile in length.

Diversion 200 is an earth ditch diverting from the stream at a second culvert crossing the State Highway in the SW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 32 T 42 N, R 5 W. The ditch is about 500 feet in length.

The combined flow of the two ditches is used for the irrigation of 26.3 acres, of which, 2.4 acres are owned by Geo. E. Chase, and 23.9 acres are owned by Mrs. C. A. Kasshafer (see map sheet 9 and Acreage Table pages 39 and 138).

A current meter measurement was taken on Diversion 199, and a float measurement was taken on Diversion 200, on May 23, 1923, showing discharges of 2.03 second feet and 0.49 second foot, respectively. These discharges represent the maximum capacities of the respective ditches. The normal irrigating head for each ditch is the amount of water available for diversion up to the maximum capacity of the ditch.

Diversion 201 is that of the Wholey Ditch, diverting from the west bank of Spring Creek in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 29 T 42 N, R 5 W (see map sheet 11).

The conduit is an earth ditch about 850 feet in length, and serves an irrigated area of 10.2 acres (see map sheet 11 and Acreage Table page 274).

A float measurement was taken on the ditch May 21, 1923, showing a discharge of 0.53 second foot. This discharge represents the

maximum capacity of the ditch and also the normal irrigating head, as stated by J. Kempton, irrigator for C. H. Walker, lessee.

Diversions 202, 203, and 205 are those of the Wholey ditches. Diversions 202 and 203 divert from the east bank of Spring Creek in the SE¼ SW¼ Sec. 29 T 42 N, R 5 W, the points of diversion being about 350 feet apart. Diversion 205 diverts from an unnamed fork of Parks Creek in the SE¼ SW¼ Sec. 29 T 42 N, R 5 W (see map sheet 11).

The conduits are short earth ditches. Water diverted by Diversion 205 is spilled into Diversion 202 and also into Spring Creek for rediversion by Diversion 203. The combined flow of the three ditches is used for the irrigation of 7.2 acres (see map sheet 11 and Acreage Table page 274). In addition to the above use a portion of the water spilled into Spring Creek from Diversion 205 is used under the Wholey Ditch (Diversion 204). This latter use is described under Diversion 204 below.

The results of current meter measurements taken on the ditches on May 21, 1923, follow:

Diversion Number	Discharge Second Feet	Remarks
202	0.41	Normal irrigating head.
202	0.87	Maximum capacity.
203	No measurements.	Ditch considered a re-diversion.
205	3.60	Available flow.
205	9.40	Computed max. capacity

Diversion 204 is that of the Wholey Ditch, diverting from Spring Creek in the SE¼ SW¼ Sec. 29 T 42 N, R 5 W (see map sheet 11).

The conduit is an earth ditch, about one mile in length, running northerly from the point of diversion to a point near the northeast corner of section 30 T 42 N, R 5 W. The water diverted by the ditch is supplied by the Wholey ditches (Diversions 194 and 205), and by return flow from irrigation on the I. S. Clark and Mary A. Wholey ranches, which enters Spring Creek above the head of the ditch. The ditch also intercepts numerous channels, carrying return flow from irrigation on the H.S. Wells ranch. An area of 89.4 acres is irrigated under the ditch. Of this area, 46.2 acres are owned by L. E. Wholey, and 43.2 acres are owned by Mary A. Wholey (see map sheet 11 and Acreage Table pages 271 and 274).

A current meter measurement was taken on the ditch May 21, 1923, showing a discharge of 1.69 second feet. This discharge represents the flow available for diversion when the measurement was taken. The ditch was originally constructed to carry water to the Kiernan ranch in sections 19 and 24 T 42 N, R 5 W, but was never used for that purpose. The maximum capacity of the ditch is greatly in excess of that required for the present use, and no measurements were taken to determine the flow the ditch could carry. The maximum capacity, however, was estimated to be about 25.0 second feet. The ditch normally diverts all the water available at its intake.

<u>Diversion 206</u> is that of the J. V. Enos Upper Ditch, diverting from the west bank of Parks Creek in the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 29 T 42 N, R 5 W (see map sheet 11).

The conduit is an earth ditch running northwesterly, a distance

of one fourth of a mile, across the L. E. Wholey ranch and thence north, one half of a mile, across the J. V. Enos ranch. The ditch serves an irrigated area of 23.1 acres, of which, 18.0 acres are owned by J. V.Enos and 5.1 acres are owned by L. E. Wholey. The 5.1 acres on the L. E. Wholey ranch are sub-irrigated under the ditch (see map sheets 9 and 73 and Acreage Table pages 84 and 272).

A current meter measurement was taken on the ditch May 11,1923, showing a discharge of 3.14 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by J. V. Enos.

Diversions 207 and 207A are those of the W. T. Kiernan ditches, diverting from Walker Slough in the NW¼ NE¼ Sec. 30 and the SW¼ SE¼ Sec. 19 T 42 N, R 5 W, respectively (see map sheets 11 and 73). Walker Slough is a small stream, which rises on the J. S. Walker (Wells) ranch, flows northerly across the W. T. Kiernan and J. A. Lemos ranches, and joined by several small streams which rise on the W. T. Kiernan ranch, enters Parks Creek at a point in the NE¼ SW¼ Sec. 18 T 42 N, R 5 W.

The conduits are earth ditches running northwesterly from their respective points of diversion and terminating in the SW¼ and the NE¼ of the NE¼ section 24 T 42 N, R 5 W, respectively. Each ditch is about one and one half miles in length. The water available for diversion by the two ditches is supplied principally from return flow from irrigation on the J. S. Walker (Wells) ranch. Return water from Diversion 207 is picked up and used under Diversion 207A. An area of 162.3 acres is irrigated under the two diversions. Of this area, 26.9 acres have been described as sub-irrigated (see map sheets 72 and 73 and

Acreage Table pages 142 and 143).

In addition to the above acreage, there is an area of 11.0 acres on the W. T. Kiernan ranch, which is sub-irrigated from Walker Slough (see map sheet 73 and Acreage Table page 143).

Current meter measurements were taken on the ditches on May 14, 1923, showing discharges of 0.35 second foot and 0.32 second foot, respectively. These discharges represent the normal irrigating heads of the respective ditches, as stated by W. T. Kiernan. The maximum capacities of the ditches were computed and found to be 2.5 second feet for each ditch

The total acreage irrigated under Diversions 207 and 207A is large in comparison to the normal flow of the two ditches. This area, however, also lies under the Edson-Foulke Yreka Ditch, and undoubtedly receives some sub-irrigation therefrom.

Diversion 208 is that of the J. V. Enos Lower Ditch, diverting from the east bank of Parks Creek in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 20 T 42 N, R 5 W (see map sheet 73).

The conduit is an earth ditch, about three fourths of a mile in length, running northerly across the J. V. Enos ranch and terminating in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 19 T 42 N, R 5 W, on the J. A. Lemos ranch. The ditch serves an irrigated area of 37.6 acres, of which, 31.1 acres are owned by J. V. Enos, and 6.5 acres are owned by J. A. Lemos, (see map sheet 73 and Acreage Table pages 85 and 152).

Two current meter measurements were taken on the ditch May 11, 1923, showing discharges of 5.69 and 6.28 second feet, respectively. The

discharge, of 5.69 second feet, represents the normal irrigating head, as stated by J. V. Enos. The discharge, of 6.28 second feet, represents the maximum capacity of the ditch.

Diversion 209 is that of the J. A. Lemos Ditch, diverting from Parks Creek in the NW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 20 T 42 N, R 5 W (see map sheet 73).

The conduit is an earth ditch running northwest from the point of diversion to a point 400 feet north of the quarter section corner common to sections 18 and 19 T 42 N, R 5 W, and thence west for a distance of one fourth of a mile, to its termination in an unnamed fork of Parks Creek. That portion of the ditch west of the center line of section 18, however, has not been used for several years past. The ditch is about one mile in length, and serves an irrigated area of 41.8 acres, of which 35.4 acres are owned by J. A. Lemos and 6.4 acres are owned by G. V. Nelson (see map sheets 73 to 75, inclusive, and Acreage Table pages 152, 153, and 186).

A current meter measurement was taken on the ditch May 10, 1923, showing a discharge of 6.09 second feet. This discharge represents the maximum capacity of the ditch, and also the normal irrigating head, as stated by J. A. Lemos.

Diversion 210 is that of the G. V. Nelson Upper Ditch, diverting from the west bank of Parks Creek in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 19 T 42 N, R 5 W (see map sheet 73).

The conduit is an earth ditch, about three fourths of a mile in length, running northwest from the point of diversion and terminating at Stone Creek in the NW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 18 T 42 N, R 5 W. The ditch serves

an irrigated area of 33.3 acres, of which, 10.2 acres are owned by C. Nelson and 23.1 acres are owned by G. V. Nelson (see map sheet 75 and Acreage Table pages 185 to 187, inclusive).

Two current meter measurements were taken on the ditch on May 10, 1923, showing discharges of 1.28 second feet and 2.74 second feet, respectively. The discharge, of 1.28 second feet, represents the normal irrigating head, as stated by J. A. Lemos, lessee. The discharge, of 2.74 second feet, represents the maximum capacity of the ditch.

Diversion 211 is that of the G. V. Nelson Lower Ditch, diverting from the east bank of Parks Creek in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 18 T 42 N, R 5 W (see map sheet 74).

The conduit is an earth ditch about one fourth of a mile long, and serves an irrigated area of 5.5 acres (see map sheet 74 and Acreage Table page 187).

No discharge measurements were taken on the ditch, as it was not indicated as a diversion at the time the other G. V. Nelson ditches were being measured.

Diversion 212 is that of the C. Nelson Ditch, diverting from the west bank of Parks Creek in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 18 T 42 N, R 5 W (see map sheet 74).

The conduit is an earth ditch, about three fourths of a mile in length, running northerly from the point of diversion to the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 18 T 42 N, R 5 W. At a point 700 feet below the head, water from the C. Nelson Ditch (Diversion 216) enters the ditch. The combined flow of the two ditches serve an irrigated area of 31.7 acres, of which,

31.6 acres are owned by C. Nelson and 0.1 acre is owned by G. V. Nelson (see map sheets 74 and 75 and Acreage Table pages 185 and 187).

A current meter measurement was taken on the ditch May 10, 1923, showing a discharge of 3.38 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by the lessee.

Diversion 213 is that of the C. Nelson Ditch, diverting from the east bank of Parks Creek in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 18 T 42 N, R 5 W (see map sheet 75).

The conduit is an earth ditch, about one half of a mile in length, running northerly from the point of diversion to the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 18 T 42 N, R 5 W. The water is used for the irrigation of 8.0 acres, and for power purposes on the C. Nelson ranch (see map sheet 75 and Acreage Table page 185). The latter use, however, has been discontinued for several years past, as stated by the lessee. Under operating conditions, the water used for power purposes, is conveyed from a header box at the end of the ditch by means of a steel pipe line, 150 feet in length, to a water wheel located over the C. Nelson Ditch (Diversion 219). From the wheel the wateris spilled into the above ditch. The water diverted by the C. Nelson Ditch (Diversion 213) in excess of that used for irrigation and power purposes, is spilled from the end of the ditch into a natural channel, and is returned to Parks Creek at a point in the NW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 7 T 42 N, R 5 W.

A current meter measurement was taken on the ditch May 10,1923, showing a discharge of 4.44 second feet. This discharge represents the

maximum capacity of the ditch and also the head normally carried by the ditch, as stated by the lessee.

Diversion 214 is that of the G. V. Nelson Ditch, diverting from an unnamed fork of Parks Creek. This stream rises in several branches on the Walker and Kiernan ranches, and its main source of water supply is return flow from irrigation on those ranches. The ditch heads on the west bank of the stream in the SW¼ SW¼ Sec. 18 T 42 N, R 5 W (see map sheet 75).

The conduit is an earth ditch, one fourth of a mile in length, and serves an irrigated area of 4.0 acres (see map sheet 75 and Acreage Table page 187).

A float measurement was taken on the ditch May 10, 1923, showing a discharge of 0.06 second foot. This discharge represents the flow available when the measurement was taken. The maximum capacity of the ditch was estimated to be 1.0 second foot.

Diversion 215 is that of the C. Nelson Ditch, diverting from the unnamed fork of Parks Creek described under Diversion 214. The point of diversion is within the SE¼ SW¼ Sec. 18 T 42 N, R 5 W (see map sheet 75).

The conduit is an earth ditch, about one fourth of a mile in length, and serves an irrigated area of 4.8 acres (see map sheet 75 and Acreage Table page 185).

No discharge measurements were taken on the ditch, as it was not indicated as a diversion at the time the other C. Nelson ditches were being measured.

Diversion 216 is that of the C. Nelson Ditch, diverting from the unnamed fork of Parks Creek described under Diversion 214. The point of diversion is in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 18 T 42 N, R 5 W, about 200 feet down stream from Diversion 215 (see map sheet 75).

The conduit is a short earth ditch, conveying water to the C. Nelson Ditch (Diversion 212). The water diverted by the ditch is used as described under Diversion 212.

No discharge measurements were taken on the ditch, as it was not indicated as a diversion at the time the other C. Nelson ditches were being measured.

Diversion 217 is that of the Kiernan Ditch, diverting from Stone Creek in the NW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 24 T 42 N, R 6 W (see map sheet 72). The water available for diversion by the ditch comprises the natural flow of Stone Creek and the water turned into Stone Creek from the Edson-Foulke Yreka Ditch (Diversion 18), in accordance with an agreement, discussed under Diversion 18, between the Edson and Foulke Company and the B. Kiernan Estate.

The conduit is an earth ditch,about one mile in length, and conveys water to the B. Kiernan Estate ranch in section 14 T 42 N, R 6 W. The water is used for the irrigation of 13.7 acres (see map sheet 56 and Acreage Table page 142).

A current meter measurement was taken on the ditch May 14,1923, showing a discharge of 0.64 second feet. This discharge represents the total flow available for diversion at the time the measurement was taken, and was composed of 0.51 second foot from Edson-Foulke Yreka Ditch and

0.13 second foot natural flow of Stone Creek. It also represents the normal irrigating head, as stated by W. T. Kiernan. The maximum capacity of the ditch was computed and found to be 1.16 second feet.

Diversion 218 is that of the J. N. Kiernan Ditch, diverting from a spring located above the Edson-Foulke Yreka Ditch, in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 23 T 42 N, R 6 W (see map sheet 71).

The water is conveyed from the spring, across the Edson-Foulke Yreka Ditch by an 8 inch diameter corrugated iron culvert and thence, by an earth ditch, to the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 23 T 42 N, R 6 W. No land has been irrigated under the ditch, as stated by J. N. Kiernan.

On May 14, 1923, the flow of the spring was estimated to be 0.025 second foot.

Diversion 219 is that of the C. Nelson Ditch, diverting from Parks Creek at the C. Nelson ranch house in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 18 T 42 N, R 5 W (see map sheet 75).

The conduit is an earth ditch running northeasterly along Parks Creek to the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 7 T 42 N, R 5 W. The ditch is about one mile in length, and serves an irrigated area of 22.1 acres (see map sheets 75 to 77, inclusive, and Acreage Table page 186).

A current meter measurement was taken on the ditch May 10,1923, showing a discharge of 5.66 second feet. This discharge represents the maximum capacity of the ditch, and also the normal irrigating head, as stated by the lessee.

Diversion 220 is that of the C. Nelson Ditch, diverting from the west

bank of Parks Creek in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 18 T 42 N, R 5 W (see map sheet 75).

The conduit is an earth ditch, about one fourth of a mile long, and serves an irrigated area of 2.9 acres (see map sheets 75 and 77, and Acreage Table page 186).

A current meter measurement was taken on the ditch May 10, 1923, showing a discharge of 3.7 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by the lessee.

Diversion 221 is that of the Duke Ditch, diverting from the east bank of Parks Creek in the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 7 T 42 N, R 5 W (see map sheet 76).

The conduit is an earth ditch running northeasterly across lands owned by M. F. Mills, and enters the W. D. Duke ranch at a point about 500 feet below the intake. From this point the water is distributed for irrigation through a system of laterals. The ditch serves an irrigated area of 178.5 acres, of which, 177.4 acres are owned by W. D. Duke and 1.1 acres are owned by M. F. Mills. The 1.1 acres owned by M. F. Mills and 0.9 acres of the area on the Duke ranch, or a total area of 2.0 acres, have been described as sub-irrigated under the ditch (see map sheets 76 and 78 and Acreage Table pages 56, 57, and 184).

A current meter measurement was taken on the ditch May 8, 1923, showing a discharge of 7.85 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head as stated by E. H. Day, foreman of the Duke ranch.

Diversion 222 is that of the Duke Ditch, diverting from the west bank

of Parks Creek in the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 7 T 42 N, R 5 W, 100 feet down stream from the Duke Ditch (Diversion 221) (see map sheet 76).

The main conduit is an earth ditch, about one half of a mile in length, running northerly from the point of diversion. From the main ditch the water is distributed for irrigation on the W. D. Duke ranch by a system of laterals, which traverse sections 6, 7, and 8, T 42 N, R 5 W. The ditch serves an irrigated area of 231.6 acres (see map sheets 76 and 78 and Acreage Table pages 57 and 58).

A current meter measurement was taken on the ditch May 8, 1923, showing a discharge of 3.19 second feet. This discharge represents the normal irrigating head, as stated by E. H. Day, and also the maximum capacity of the ditch in its present condition. The ditch, however, had not been cleaned prior to the beginning of the 1923 irrigation season.

Diversion 223 is that of the Duke Ditch, diverting from a spring located in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 8 T 42 N, R 5 W (see map sheet 76).

The conduit system consists of the spring channel, and two earth ditch laterals, which divert from the channel and run north and northwest, respectively, across the E$\frac{1}{4}$ of the SW$\frac{1}{4}$ Sec. 8 T 42 N, R 5 W. The northwest lateral empties into the Duke Ditch (Diversion 221). The entire flow of the spring is diverted by the system, and the water may be distributed for irrigation directly from the laterals or it may be conveyed to the Duke Ditch (Diversion 221), and used in common with the waters of that ditch. Exclusive of the use under the Duke Ditch (Diversion 221), which could not be segregated, the water diverted from the spring serves an irrigated area of 15.2 acres on the Duke ranch. In

addition to the above, an area of 14.9 acres on the Duke ranch and an area of 4.2 acres on the M. F. Mills ranch are sub-irrigated from the spring, making a total of 34.3 acres irrigated under the system (see map sheets 74 and 76 and Acreage Table pages 58 and 184).

A weir measurement was taken on the spring channel on May 8, 1923, showing a discharge of 0.58 second feet. This discharge represents the total flow of the spring.

Diversion 224 is that of the Duke Ditch, diverting from the west bank of Parks Creek in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 8 T 42 N, R 5 W (see map sheet 76).

The diversion conduit is a buried steel pipe line, about 500 feet in length. From the end of the pipe, the water is distributed by a system of laterals for the irrigation of 130.0 acres, of which 9.2 acres have been described as sub-irrigated. This sub-irrigated area lies adjacent to a small lake, located in the S$\frac{1}{2}$ of the SW$\frac{1}{4}$ Sec. 5 T 42 N, R 5 W, and along a stream draining the lake, and is sub-irrigated in part by springs rising in the lake, (see map sheets 76 and 78, and Acreage Table page 59).

A current meter measurement was taken on the ditch, at a point just below the end of the pipe line, on May 8, 1923, showing a discharge of 1.28 second feet. This discharge represents the maximum capacity of the diversion conduit and also the normal irrigating head, as stated by E. H. Day.

Diversion 225 is that of the Duke Ditch, diverting from the west bank of Parks Creek in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 5 T 42 N, R 5 W (see map sheet 78).

Diversion is made by means of a timber dam. The conduit consists

of a short section of wooden flume, 5.0 feet wide by 2.0 feet deep, and an earth ditch running north from the end of the flume to the SE¼ SE¼ Sec. 32 T 43 N, R 5 W. The conduit has a total length of one and one fourth miles, and serves an irrigated area of 170.8 acres, of which 164.9 acres are owned by W. D. Duke and 5.9 acres are owned by J. B. Carrick. Of the total irrigated area, 1.4 acres on the Duke ranch and 5.9 acres on the Carrick ranch, or a total of 7.3 acres, have been described as sub-irrigated (see map sheets 33 and 78 to 80, inclusive, and Acreage Table pages 35, 59, and 60).

A current meter measurement was taken on the intake flume on May 8, 1923, showing a discharge of 16.02 second feet. This discharge represents the normal irrigating head. The maximum capacity of the conduit was not measured as the flow diverted never exceeds the above discharge, as stated by E. H. Day.

Diversion 226 is that of the Duke Ditch, diverting from the east side of Parks Creek in the SW¼ SE¼ Sec. 5 T 42 N, R 5 W. The point of diversion is directly opposite the intake of the Duke Ditch (Diversion 225) (see map sheet 78).

Diversion is made by means of the dam that is described under Diversion 225. From the dam the water is conveyed a short distance by a wooden flume, 5.0 feet wide by 2.0 feet deep, and thence by an earth ditch to a point about 1000 feet northeast of the dam. At this point the water is spilled into a slough, which runs northeasterly across the Duke ranch, and is distributed therefrom for irrigation. The acreage irrigated under the ditch could not be segregated, due to the commingling

of the water with that diverted by the Duke ditches (Diversions 228, 229, and 232). The area served by the several ditches, therefore, has been combined, and described as irrigated under Diversions 226, 228, 229, and 232. An area of 469.3 acres is irrigated under the above numbered diversions. Of this area 8.1 acres have been described as sub-irrigated (see map sheets 33, 78, and 80 and Acreage Table pages 60 and 61).

A current meter measurement was taken on the ditch May 8, 1923, showing a discharge of 14.9 second feet. This discharge represents the normal irrigating head. The maximum capacity of the ditch was not measured, as the flow diverted by the ditch never exceeds the normal irrigating head, as stated by E. H. Day.

In addition to the acreage described under the Duke ditches, Diversions 226, 228, 229, and 232, inclusive, there is an area of 59.3 acres on the Duke ranch which is sub-irrigated by natural underground drainage from adjacent hills and from a slough, rising on the M. F. Mills property in the N½ SW¼ Sec. 34 T 43 N, R 5 W. This area lies above the flow lines of the foregoing diversions and could not be alloted to any ditch (see map sheets 80 and 82 and Acreage Table page 61). An area of 44.6 acres on the above described M. F. Mills property is also sub-irrigated from the slough (see Acreage Table page 184).

<u>Diversion 227</u> is that of the Duke Ditch, diverting from the west bank of Parks Creek in the NW¼ NW¼ Sec. 4 T 42 N, R 5 W (see map sheet 33).

The water is diverted by means of a temporary dam, and is conveyed by an earth ditch along the west bank of Parks Creek to a point in the SW¼ SW¼ Sec. 33 T 43 N, R 5 W, where it is spilled into the Duke Ditch (Diversion 230). The use of water is described under the latter ditch.

A current meter measurement was taken on the ditch May 7, 1923,

showing a discharge of 3.38 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by E. H. Day.

Diversion 228 is that of the Duke Ditch, diverting from the east bank of Parks Creek in the NW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 4 T 42 N, R 5 W. The point of diversion is directly opposite the intake of the Duke Ditch (Diversion 227) (see map sheet 33).

The conduit is an earth ditch, about one half of a mile in length, running along the east bank of Parks Creek and terminating in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 33 T 43 N, R 5 W. The use of water under the ditch is described under Diversion 226 (see map sheets 33 and Acreage Table pages 60 and 61).

A current meter measurement was taken on the ditch May 7,1923, showing a discharge of 4.25 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by E. H. Day.

Diversion 229 is that of the Duke Spring, located in the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 4 T 42 N, R 5 W (see map sheet 33).

A small earth dam has been constructed around the spring by means of which the flow of the spring is stored, to be diverted in flush heads when needed. The water is discharged from the reservoir through a wooden culvert, 0.7 foot wide by 1.0 foot deep, placed through the dam, and is used in common with the waters diverted by the other Duke ditches, as described under Diversions 226 (see map sheets 33 and 80 and Acreage Table pages 60 and 61).

On October 9, 1923, the flow of the spring was estimated to be 0.4 second foot.

Diversion 230 is that of the Duke Ditch, diverting from the west bank of Parks Creek in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 33 T 43 N, R 5 W (see map sheet 80).

The conduit is an earth ditch, about two and one fourth miles in length, running northwest from the point of diversion to the Duke ranch buildings in the SW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 32 T 43 N, R 5 W, and thence northerly to the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 20 T 43 N, R 5 W. At a point just below the intake, water diverted from Parks Creek by the Duke Ditch (Diversion 227), enters the ditch. Return water from irrigation under the Duke ditches (Diversion 224 and 225), and water rising from springs at the lake and along the stream channel described under Diversion 224, also enters the ditch below the intake. The water from the above sources is used in common with that diverted from Parks Creek by the ditch, and serves an irrigated area of 150.9 acres, of which, 30.3 acres are owned by J. B. Carrick and 120.6 acres are owned by W. D. Duke. Of the total irrigated area, 8.3 acres have been described as sub-irrigated (see map sheets 79 to 81, inclusive, and 84, and Acreage Table pages 35 and 62).

A current meter measurement was taken on the ditch May 12,1923, showing a discharge of 4.11 second feet. This discharge represents the maximum capacity of the ditch. The normal irrigating head was computed and found to be 1.9 second feet.

Diversion 231 is that of the Duke Ditch, diverting from Parks Creek in the NW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 33 T 43 N, R 5 W (see map sheet 80).

Diversion is made by means of an earth dam, or levee, constructed across Parks Creek. This dam also serves to divert the flow of Parks

Creek into a drainage ditch, which runs northerly across the E$\frac{1}{4}$ of Sec. 33 T 43 N, R 5 W, and which, under present operating conditions, serves as the channel of Parks Creek below the dam. The Duke Ditch (Diversion 231) is an earth conduit heading on the west side of the dam, and has a total length of about 1000 feet. The ditch serves an irrigated area of 82.6 acres (see map sheets 79 and 80 and Acreage Table page 62). This area also receives some irrigation from the drainage ditch.

A current meter measurement was taken on the ditch May 7,1923, showing a discharge of 1.45 second feet. This discharge represents the normal irrigating head, as stated by E. H. Day. The maximum capacity of the ditch was computed and found to be 2.7 second feet.

Diversion 232 is that of the Duke Ditch, diverting from a spring located in the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 33 T 43 N, R 5 W (see map sheet 80).

The conduit is an earth ditch, about one fourth of a mile in length, running northwest from the spring to its junction with a slough at a point in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 33 T 43 N, R 5 W. The ditch diverts the entire flow of the spring. The use of water is explained under Diversion 226, (see map sheet 80 and Acreage Table pages 60 and 61).

A weir measurement was taken on the ditch October 9,1923, showing a discharge of 0.24 second foot. This discharge represents the total flow of the spring.

Diversion 233 is that of the Duke Ditch, diverting from the east bank of Parks Creek in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 32 T 43 N, R 5 W (see map sheet 79).

Diversion is made by means of a low rock dam. From the dam the water is conveyed northerly by an earth ditch, for a distance of

1000 feet, and thence by a slough, for a distance of about one fourth of a mile, to a point in the NW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 29 T 43 N, R 5 W. At this point, the water is re-diverted from the slough by an earth ditch, and is distributed therefrom by a system of laterals, which traverse sections 20, 28, and 29 T 43 N, R 5 W. The ditch serves an irrigated area of 77.5 acres. Of this area 17.4 acres have been described as sub-irrigated (see map sheets 79 and 81 to 84, inclusive, and Acreage Table page 63).

A current meter measurement was taken on the ditch on May 12, 1923, showing a discharge of 3.39 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by E. H. Day.

Diversion 234 refers to the Duke Spring, located in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 32 T 43 N, R 5 W (see map sheet 79).

The water is conveyed through a channel leading from the spring, and is emptied into the Duke Ditch (Diversion 230) at a point in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 29 T 43 N, R 5 W. The spring serves an irrigated area of 5.2 acres. lying above the point of confluence with the above ditch (see map sheet 81 and Acreage Table page 63).

No discharge measurements were taken on the spring, as it was not indicated as a diversion at the time the other Duke ditches were being measured.

Diversion 234A refers to a spring and swamp, located on the Duke ranch, in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 28 T 43 N, R 5 W (see map sheet 82). The flow of the spring, together with water rising in the swamp, is conveyed by a small slough, which runs northwesterly across sections 28, 21 and 20,

T 43 N, R 5 W, and is discharged into Parks Creek at a point in the SW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 20 T 43 N, R 5 W. There are no diversions from the spring or slough, but an area of 114.8 acres, lying adjacent thereto, has been described as sub-irrigated. Of this total area, 22.7 acres is partially sub-irrigated from Parks Creek (see map sheets 82 to 84, inclusive, and Acreage Table pages 63 and 64).

No discharge measurements were taken to determine the flow of the spring or slough, as there were no diversions therefrom.

Diversion 235 is that of the E. D. Terwilliger Ditch, diverting from Parks Creek in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 17 T 43 N, R 5 W (see map sheet 85).

The conduit is an earth ditch about one half of a mile long, and serves an irrigated area of 23.4 acres. In addition to the above, an area of 31.4 acres on the E. D. Terwilliger ranch is sub-irrigated from Parks Creek (see map sheets 84 and 85 and Acreage Table page 258).

The ditch was not in use during the period covered by the field investigation, consequently, no discharge measurements were taken. The maximum capacity of the ditch, however, was computed and found to be 2.4 second feet.

Diversion 235A is that of the Kirkendall Pumping Plant, diverting from Parks Creek in the SW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 17 T 43 N, R 5 W (see map sheet 85).

The pump is a 6 inch Byron Jackson centrifugal pump, driven by a gasoline engine. No data could be obtained on the make or horsepower of the engine as the name plate had been removed. The discharge pipe is a 6 inch diameter steel pipe, about 50 feet in length, and discharges into an earth ditch, through a lift of about 30 feet. The

ditch leading from the end of the discharge pipe is about three fourths of a mile in length, and traverses the NW¼ section 17 T 43 N, R 5 W. The plant was installed in 1920 or 1921, but only operated for a short time. Prior to the engineers visit on December 5, 1923, the plant had been partly dismantled. There is no land irrigated under the system.

For reasons given above, no discharge measurements were obtained.

Diversion 236 is that of the Silva Upper Ditch, diverting from Parks Creek in the NW¼ NE¼ Sec. 17 T 43 N, R 5 W (see map sheet 85).

The conduit is an earth ditch, about one half of a mile in length, and serves an irrigated area of 8.1 acres (see map sheets 87 and 92 and Acreage Table page 232).

A current meter measurement was taken on the ditch May 7, 1923, showing a discharge of 0.50 second foot. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by M. A. Silva.

Diversion 237 is that of the Silva Middle Ditch, diverting from the west bank of Parks Creek in the SE¼ SE¼ Sec. 8 T 43 N, R 5 W (see map sheet 92).

The water is diverted by means of an earth and rock dam, constructed across Parks Creek, and is conveyed northeasterly across the W½ SW¼ Sec. 9 T 43 N, R 5 W. At a point 400 feet below the dam, a lateral from the main ditch conveys water to a pumping plant, located near the northeast corner of the SW¼ SW¼ Sec. 9 T 43 N, R 5 W.

The plant consists of an 8 inch Byron Jackson centrifugal

pump, direct connected to a 15 horsepower General Electric motor. The suction pipe is an 8 inch diameter steel pipe, 8 feet in length. The discharge pipe is 150 feet in length, and consists of 66 feet of 10 inch and 84 feet of 8 inch riveted steel pipe. The water is pumped through lifts of 19 feet and 45 feet to the first and second lift ditches, respectively, and is distributed therefrom for irrigation on the M. A. Silva ranch.

The water diverted by the ditch is used for the irrigation of 119.2 acres, of which, 17.9 acres are irrigated under the gravity ditch and 101.3 acres are irrigated under the pump (see map sheets 87 and 92 and Acreage Table pages 132 and 133).

A current meter measurement was taken on the ditch on May 4, 1923, showing a discharge of 7.01 second feet. This discharge represents the maximum capacity of the ditch and also the normal flow diverted when that quantity of water is available, as stated by M. A. Silva. Much of this flow, however, is returned to Parks Creek.

Diversion 238 is that of the Silva Lower Ditch, diverting from the east bank of Parks Creek in the southeast corner of section 9 T 43 N, R 5 W (see map sheet 87).

Diversion is made by means of the dam described under Diversion 237. The conduit is an earth ditch about 550 feet in length, and serves an irrigated area of 2.2 acres (see map sheet 87 and Acreage Table page 233).

A current meter measurement was taken on the ditch on May 4, 1923, showing a discharge of 0.21 second foot. This discharge represents the maximum capacity of the ditch and also the normal irrigating head,

as stated by M. A. Silva.

Diversion 239 is that of the E. Stallcup and Sons Company Pumping Plant, diverting from Big Spring. The point of diversion is located within the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 3 T 43 N, R 5 W (see map sheet 89).

The plant consists of a 10 inch centrifugal pump, direct connected to a 40 horsepower motor. The suction pipe is a 12 inch diameter steel pipe 10 feet long. The discharge pipe is a steel pipe, 14 inches in diameter and 172 feet long, which rises vertically to a height of about 20 feet above the pump and then extends horizontally to a point 152 feet east of the plant. The pump operates under a static head of about 25.4 feet. From the end of the discharge pipe the water is conveyed by a wooden flume, 3.2 feet wide by 1.5 feet deep, and 350 feet long, to an earth ditch, which runs northerly across the Stallcup ranch. The plant serves an irrigated area of 336.6 acres (see map sheets 88, 89, 94, and 95, and Acreage Table pages 248 and 249).

In addition to the above acreage, an area of 29.3 acres on the E. Stallcup and Sons Company ranch is sub-irrigated from Big Spring, (see map sheet 89 and Acreage Table page 249).

The results of current meter measurements taken to determine the discharge of the pump under normal operating conditions, follow:

Date	Discharge Second Feet	Hydrographer
June 6,1922	7.38	P. L. Beck
Sept. 27,1922	7.23	P. L. Beck
May 7,1923	7.24	H. Smitherum

The results of measurements taken on June 18 and August 6,1912,

and available through O.E.S. Bulletin 254, show discharges of 7.69 and 7.73 second feet, respectively.

Diversion 240 is that of the Big Springs Water Company Pumping Plant, diverting from Big Spring in the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 3 T 43 N, R 5 W (see map sheet 89). The exact status of the ownership of the plant was not learned. It, however, is operated and maintained by the Big Springs Water Users Association, an association composed of the water users under the system.

The plant consists of a 30 inch Byron Jackson double suction centrifugal pump, direct connected to a 450 horsepower General Electric motor. There are two 24 inch diameter suction pipes, 18 feet in length. The discharge pipe is a 44 inch diameter wood stave pipe, 1468 feet long. The pump operates under a static head of 55.5 feet. From the end of the discharge pipe the water is conveyed easterly for a distance of 650 feet by a wooden flume, 5.0 feet wide by 3.0 feet deep, and thence northerly by an earth and rock cut ditch, to a point in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 2 T 43 N, R 5 W. From this point, approximately one half of the water is conveyed northerly, and is distributed for irrigation from the first lift ditch. The remaining half of the water is pumped to the second lift ditch which roughly parallels the first lift ditch, and is distributed therefrom for irrigation. The first and second lift ditches are each about five miles in length.

The water diverted by the plant is used for the irrigation of 2276.3 acres (see map sheets 89, 94 to 96, inclusive, 99 and 100 and Acreage Table pages 13 to 24, inclusive). Of this area 6.1 acres, owned by the Western Group Securities Company, has been described as sub-irrigated.

Excepting 3.6 acres owned by the Big Springs Association and 4.3 acres owned by E. Stallcup and Sons, which are irrigated by leakage from the first lift discharge pipe and flume, and 4.4 acres owned by A. J. Louie, which are irrigated by waste or return water from the system, the remaining irrigated area, of 2264.0 acres, is held in separate tracts under the ownership of the forty-five water users, who comprise the Big Springs Water Users Association. The irrigated portions of these tracts range from 6 to 142 acres, the average irrigated tract being about 50 acres. Alfalfa is the principal irrigated crop.

The use of water is rotated between the members of the Association, and each user receives his pro rata share of the water, in turn, during successive irrigations throughout the season. The water is pro rated on the basis of the users acreage under the system.

The results of current meter measurements taken on the first and second lift ditches in 1922 and 1923, follow:

Date	First Lift. Discharge Second Feet	Second Lift. Discharge Second Feet	Hydrographer
June 6, 1922	28.2		P. L. Beck
June 21, 1922	28.1		P. L. Beck
August 25, 1922	31.0	15.1	P. L. Beck
April 21, 1923	26.9		H. Smitherum
May 3, 1923	31.8	11.6	H. Smitherum
June 14, 1923	28.9	14.2	H. Smitherum
August 2, 1923	32.3		H. Smitherum

Note:-Measurements taken on flume below first and second lift discharge pipes, reppectively.

A permanent measuring station, indicated as Gage 35, was maintained on the flume below the first lift discharge pipe during the irrigation season of 1923. The results of measurements obtained at this station, showing the mean daily discharge of the first lift pump for the period from April 12 to September 20, 1923, are submitted at the end of this report in Table 60. A hydrograph plotted from this table is shown on Plate XLVIII.

Records of the total diversions by the plant, in terms of acre feet, for the irrigation seasons of 1922 and 1923, are submitted at the end of this report in Table 71.

Diversion 241 is that of the Louie Brothers Main Canal, diverting from Big Spring in the southeast corner of the NE¼ SW¼ Sec. 3 T 43 N, R 5 W (see map sheet 90).

Diversion is made by means of a timber and dirt dam constructed across the outlet of Big Spring. The main conduit is an earth ditch, about one mile in length, running northwesterly from the dam to a point in the NE¼ NE¼ Sec. 4 T 43 N, R 5 W. At a point, about one half of a mile below the dam, a lateral diverts from the main ditch and runs north a distance of about 100 feet to the Louie Brothers Pumping Plant, which discharges through 164.5 feet of 20 inch diameter riveted steel pipe to a high line ditch. The water is distributed for irrigation on the A. J. and John Louie ranches by a system of laterals diverting from the main and high line ditches. The system serves an irrigated area of 388.5 acres, of which, 168.7 acres are owned by A. J. Louie and 219.8 acres are owned by John Louie (see map sheets 90, 91, and 94 and Acreage

Table pages 156 and 160).

A permanent measuring station, indicated as Gage 40, was maintained on the ditch. The results of measurements obtained at this station during 1922 and 1923, are submitted at the end of this report in Tables 61 and 62, respectively. A hydrograph plotted from Table 61 is shown on Plate XLIX.

On July 2, 1922, a current meter measurement was taken on the high line ditch, at a point 125 feet below the end of the discharge pipe, to determine the flow discharged by the pump. A discharge of 6.48 second feet was obtained.

The results of measurements taken in 1912, and available through O.E.S. Bulletin 254, which designates this ditch as the Louie and Rose Ditch, follow :-

Date	Discharge in Second Feet
June 19	12.43
June 28	6.48
July 13	9.26
July 26	7.35

Diversion 242 is that of the Louie Brothers Small Ditch, diverting from Big Spring at the dam, described under Diversions 241. The point of diversion is located in the southeast corner of the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 3 T 43 N, R 5 W (see map sheet 90).

The conduit is an earth ditch, about one half of a mile in length, running northwesterly from the dam and terminating at a point in the NW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 3 T 43 N, R 5 W. At a point about 600 feet below the dam, a lateral from the ditch crosses Big Spring Creek, and runs

southwesterly to its termination near the southeast corner of Sec. 4 T 43 N, R 5 W. The ditch serves an irrigated area of 63.4 acres, of which, 43.3 acres are owned by A. J. Louie and 20.1 acres are owned by John Louie (see map sheet 90 and Acreage Table pages 157 and 161).

Current meter measurements were taken on the ditch on June 6 and 21, 1922, showing discharges of 2.02 and 2.75 second feet, respectively. The discharge, of 2.75 second feet, represents the maximum capacity of the ditch, and also the normal irrigating head.

The results of a measurement taken on the ditch June 19, 1912, and available through O.E.S. Bulletin 254, show a discharge of 4.17 second feet. On June 28, July 13, and July 26, 1912, the ditch was noted dry.

In addition to the areas described above as irrigated from Big Spring by the Louie Brothers Main Canal and the Louie Brothers Small Ditch (Diversions 241 and 242), an area of 20.9 acres on the A. J. Louie ranch and an area of 13.9 acres on the John Louie ranch, have been described as sub-irrigated from Big Spring Creek (see map sheet 90 and Acreage Table pages 158 and 162).

<u>Diversion 243</u> is that of the Louie Brothers Ditch, diverting from Little Spring. The point of diversion is located in the southwest corner of the NW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 10 T 43 N, R 5 W (see map sheet 87).

Diversion is made direct from Little Spring. The conduit is an earth ditch, about three fourths of a mile in length, running south from the spring for a distance of about one half of a mile, and thence southeasterly to its termination in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 9 T 43 N, R 5 W. The

ditch serves an irrigated area of 110.7 acres, of which, 5.7 acres are owned by A. J. Louie, and 105.0 acres are owned by John Louie (see map sheet 87 and Acreage Table pages 157 and 161).

A current meter measurement was taken on the ditch on September 27, 1922, showing a discharge of 5.14 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head.

The results of Measurements taken in 1912, and available through O.E.S. Bulletin 254, which designates this ditch as the James Dennis Ditch, follow:

Date	Discharge in Second Feet
June 19	4.06
June 29	4.73
July 13	4.58
July 26	5.18

Diversion 244 is that of the Louie Brothers Ditch, diverting from Little Spring Creek in the NW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 9 T 43 N, R 5 W (see map sheet 87).

The conduit is an earth ditch, about one fourth of a mile in length, diverting from the south bank of the creek and running northwesterly from the point of diversion to a point in the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 9 T 43 N, R 5 W, where it joins the Louie Brothers Ditch (Diversion 246). The ditch serves an irrigated area of 16.7 acres, of which, 11.8 acres are owned by A. J. Louie, and 4.9 acres are owned by John Louie (see map sheet 87 and Acreage Table pages 157 and 161).

A current meter measurement was taken on the ditch on September 27, 1922, showing a discharge of 2.23 second feet. This discharge re-

presents the maximum capacity of the ditch and also the normal irrigating head.

Diversion 245 is that of the Louie Brothers Ditch, diverting from Little Spring Creek in the SW¼ NE¼ Sec. 9 T 43 N, R 5 W (see map sheet 87).

The conduit is an earth ditch, diverting from the north bank of the creek at a point directly opposite the intake of Diversion 244. The two ditches use the same dam in common. From the dam, the ditch runs northerly for a distance of about one fourth of a mile to its termination in the NW¼ NE¼ Sec. 9 T 43 N, R 5 W. The ditch originally extended about one fourth of a mile north of this point, but from appearances this section of the ditch has been in disuse for some time. The ditch serves an irrigated area of 49.3 acres, of which, 22.2 acres are owned by A. J. Louie and 27.1 acres are owned by John Louie (see map sheet 87 and Acreage Table pages 157, and 161).

A current meter measurement was taken on the ditch September 30, 1922, showing a discharge of 2.77 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head.

The results of measurements taken in 1912, and available through O.E.S. Bulletin 254, which designates this ditch as the J. Dennis and Louie Brothers Ditch, show discharges of 2.13 and 2.31 second feet for July 13 and July 26, respectively.

Diversion 246 is that of the Louie Brothers Ditch, diverting from Little Spring Creek in the SW¼ NE¼ Sec. 9 T 43 N, R 5 W. The point of diversion is about 900 feet down stream from Diversions 244 and 245 (see map sheet 87).

The conduit is an earth ditch, running west to a point 600 feet from the dam. From this point, the water is distributed for irrigation by a system of laterals, which run northwesterly across the NW$\frac{1}{4}$ of section 9 and terminate in sections 4 and 8, all in T 43 N, R 5 W. The ditch serves an irrigated area of 76.8 acres, of which, 76.0 acres are owned by A. J. Louie and 0.8 acre is owned by John Louie (see map sheets 87, 90, and 92 and Acreage Table pages 157, 158, and 162).

A current meter measurement was taken on the ditch October 4, 1922, showing a discharge of 1.95 second feet. This discharge represents the flow of the ditch on that date. The maximum capacity of the ditch was computed and found to be 3.4 second feet.

The results of measurements taken in 1912, and available through O.E.S. Bulletin 254, which designate this ditch as Louie Brothers Ditch from Little Spring Creek, follow:-

Date	Discharge in Second Feet
June 19	4.37
June 29	0.92
July 13	1.69
July 26	1.61

In addition to the areas described above as irrigated from Little Spring and Little Spring Creek, by the Louie Brothers ditches (Diversions 243 to 246, inclusive), there is a considerable area of land on the A. J. Louie, John Louie, and E. Stallcup and Sons Company ranches, lying adjacent to the spring and creek, which is sub-irrigated therefrom. This area is described in the Acreage Table under the names of the above mentioned owners. A summary of the data contained in the Acreage Table, follows:-

Name of Owner	Acreage Sub-irrigated	Map Sheet	Acreage Table Page
Louie, A. J.	10.9	87	158
Louie, John	71.5	87	162
Stallcup, E & Sons Co.	*83.7	86,87	250
TOTAL	166.1		

*This is one half of the acreage on the E. Stallcup and Sons Company ranch described as sub-irrigated from Hole-in-the-Ground Spring and Little Spring, the remaining one half being included under Hole in the Ground Spring (see page 141 of this report).

Diversion 247 is that of the Buscombe Pumping Plant, formerly owned by Frank Roberts, diverting from Shasta River in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 5 T 43 N, R 5 W (see map sheet 91).

The plant consists of a 6 inch Byron Jackson centrifugal pump, direct connected to a motor (horsepower not obtained). The discharge pipe is a 10 inch diameter steel pipe, 200 feet in length, and has a lift of about 56 feet. From the end of the discharge pipe, the water is conveyed by an earth ditch to the E. H. Buscombe ranch, where it is used for the irrigation of 34.5 acres. In addition to this acreage there is an area of 20.3 acres, lying adjacent to a small lake on the Buscombe ranch, which has been described as sub-irrigated (see map sheet 93 and Acreage Table page 32).

A current meter measurement was taken on the ditch below the end of the discharge pipe on June 23, 1924, showing a discharge of 2.04 second feet. This discharge represents the capacity of the pump under normal operating conditions.

Diversion 248 is that of the Western Group Securities Company Ditch, diverting from Shasta River in the NW¼ NW¼ Sec. 5 T 43 N, R 5 W (see map sheet 91).

Diversion is made by means of a rock and sack dam constructed across Shasta River. The dam also serves to back the water up for the Buscombe Pump. The diversion conduit is a wooden flume, 2.0 feet wide by 1.9 feet deep, running westerly along the north bank of the river to a point about 300 feet from the dam. From this point, the water is conveyed by an earth ditch, about one mile in length, to the Western Group Securities Company and Orr Brothers properties in the W½ of section 31 T 44 N, R 5 W. The ditch serves an irrigated area of 73.5 acres, of which, 5.2 acres, 4.5 acres, and 63.8 acres, are owned by the Grenada Irrigation District, Orr Brothers, and the Western Group Securities Company, respectively. The 5.2 acres owned by the Grenada Irrigation District and 4.7 acres of the 63.8 owned by the Western Group Securities Company, or a total of 9.9 acres, have been described as sub-irrigated under the ditch (see map sheets 111 and 114 and Acreage Table pages 109, 193, and 271).

A current meter measurement was taken on the flume on November 17, 1923, showing a discharge of 1.7 second feet. This discharge represents the maximum flow that could be forced into the ditch at that time, due to the poor condition of the diversion dam. The ditch was not in use during the period covered by the field investigation and no data were obtained as to the normal irrigating head. The maximum capacity of

the flume was computed, and found to be 2.6 second feet.

The results of measurements available through O.E.S. Bulletin 254, which designates this ditch as the Mary Dennis Ditch, show discharges of 2.72 second feet and 3.03 second feet, for July 9 and July 26, 1912, respectively.

Diversion 249 is that of the Grenada Irrigation District Pumping Plant, diverting from Shasta River. The diversion dam is located in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 6 T 43 N, R 5 W. The pumping plant is located in the NW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 6 T 43 N, R 5 W, at a concrete lined sump on the diversion canal, which leads from the dam (see map sheet 111).

The diversion dam is a rock fill dam, about 110 feet long on top and about 10 feet high. A concrete headgate, provided with two openings, 6 feet wide by 11 feet deep, is located at the south end of the dam. The south opening is provided with an Armco Iron Radial gate, 5 feet high, operated by a hand winch. The north opening is closed by 4 inch flash boards. The diversion canal is about 20 feet wide on top by about 5 feet deep, and about 1000 feet in length, and runs along the south bank of the river to the concrete lined sump, where the first lift pumping plant is located. The water diverted through the canal supplies the pumping plant, and also the Edson-Foulke Grenada Ditch (Diversion 250), which takes out of the sump just below the plant. Water, in excess of that required for the two diversions, is returned to Shasta River over a concrete spillway at the sump.

Water is pumped from the sump by the first lift plant, and is discharged through 651.5 feet of 44 inch diameter wood stave pipe, with

a lift of about 69 feet, into the main canal. It is then conveyed by the main canal for a distance of some five miles to the second lift plant, located at a point in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 3 T 43 N, R 6 W. From this point a portion of the water is distributed for irrigation by a lateral from the main canal, which runs northerly for a distance of about three miles, to the north boundary of the District. The remaining portion of the water is pumped by the second lift plant, through 660 feet of 36 inch diameter wood stave pipe with a lift of about 40 feet, to the second lift lateral. The second lift lateral extends north and south from the end of the discharge pipe, for equal distances of about three miles, to the respective boundaries of the District, and supplies water for irrigation and to the third lift plant. The third lift pump in turn discharges, through 938 feet of 24 inch riveted steel pipe, with a lift of about 46 feet, into the third lift lateral. This lateral is about two and one half miles in length, runs south from the end of the discharge pipe, and terminates at the southern boundary of the District.

The first lift plant consists of two 18 inch Yuba double suction pumps, direct connected to a 350 horsepower Westinghouse induction motor and a 250 horsepower General Electric induction motor, respectively. The discharge pipes of both pumps unite and connect with the 44 inch wood stave pipe. The plant operates under an average static head of about 69 feet.

The second lift plant has two units. The first unit is a 15 inch Yuba double suction centrifugal pump, direct connected to a 150 horsepower Westinghouse induction motor. The second unit is an

18 inch Byron Jackson centrifugal pump, direct connected to a 150 horsepower General Electric induction motor. The discharge pipes of both pumps unite and discharge through the 36 inch wood stave pipe.

The third lift plant consists of a 14 inch Yuba double suction centrifugal pump, direct connected to a 150 horsepower Westinghouse induction motor.

The system serves an irrigated area of 2379.5 acres, within the boundaries of the Grenada Irrigation District (see map sheets 104 to 113, inclusive, and Acreage Table pages 95 to 108, inclusive).

Of the total irrigated area, 605.5 acres are owned by the Western Groups Securities Company, which is the holding company for the unsold lands in the District. The remaining 1774 acres are held under the ownership of fifty individual land holders in the District. The individually owned tracts range in size from a fraction of an acre to a maximum of 110.7 acres, the average tract being about 35 acres. Alfalfa is the principal irrigated crop.

The use of water is rotated between the land holders in the District, each user receiving his pro rata share of the water, in turn, during successive irrigations throughout the season. The water is pro rated on the basis of the users irrigated area.

The right to the use of Shasta River waters by the Grenada Irrigation District, is based on Application 448 on which Permit 501 has been issued, allowing 40 second feet for the irrigation of 3917 acres of land.

The results of current meter measurements taken on the main canal at the end of the first lift pump discharge pipe during 1922 and 1923, follow:

Date	Discharge in Second Feet	Hydrographer	Remarks
May 29,1922	43.5	P. L. Beck	Pumps 1 and 2
May 29,1922	19.1	P. L. Beck	Pump 1
May 29,1922	24.1	P. L. Beck	Pump 2
May 30,1922	24.5	P. L. Beck	Pump 2
July 17,1922	23.6	P. L. Beck	Pump 1
July 22,1922	17.0	P. L. Beck	Pump 2
August 23,1922	23.3	P. L. Beck	Pump 1 (runner blocked)
April 21,1923	40.2	H.Smitherum	Pumps 1 and 2

A permanent measuring station, indicated as Gage 39, was maintained on the main canal at the end of the first lift discharge pipe during the irrigation seasons of 1922 and 1923. The results of measurements obtained at this station, showing the mean daily discharge of the first lift plant for the periods from May 24 to September 30, 1922, and from April 10 to September 27, 1923, are submitted at the end of this report in Tables 63 and 64, respectively. Hydrographs plotted from the records contained in these tables are shown on Plates L and LI.

Records of the total diversions by the plant, in terms of acre feet, for the irrigation seasons of 1922 and 1923, are submitted at the end of this report in Table 71.

Diversion 250 is that of the Edson-Foulke Grenada Ditch, diverting from Shasta River in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 6 T 43 N, R 5 W (see map sheet 111).

Diversion is made by means of the headworks described under the Grenada Irrigation District Pumping Plant (Diversion 249). The conduit is an earth ditch heading at the lower end of the concrete sump at the Grenada Irrigation District Plant. From the sump, the ditch runs northwesterly along the west side of Shasta River, across the Orr Brothers property, to a point on the north line of the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 26 T 44 N, R 6 W, where the ditch enters the Edson and Foulke Company Grenada Ranch.

From this point the ditch runs northerly for a distance of some three miles, across the above named ranch, where the water is distributed for irrigation. That portion of the ditch traversing the Orr Brothers' property is constructed through a lava formation and the ditch suffers a considerable loss of water between the intake and the point of first use. An excessive loss of water is also suffered over this portion of the ditch, whenever operated at maximum capacity, due to leakage through numerous rock filled breaks and overflow at many low places, in the ditch berm. The water so lost is partly returned to Shasta River and is partly absorbed in the sub-irrigation of the land lying between the ditch and the river. Including this sub-irrigated land, the ditch serves an irrigated area of 781.1 acres, as described in the Acreage Table under the names of the respective owners. A summary of these data, follows:

Name of Owner	Acreage Irrigated: Irr	sub-irr	Total	Map Sheet	Acreage Table Page
Edson & Foulke Co.	488.5	43.3	531.8	115,117,119 120 to 123	78-80
Enos, Joe	1.0		1.0	122	83
Orr Brothers		242.5	242.5	114,115,117	194
Western Group Securities Co.		5.8	5.8	114	271
TOTALS	489.5	291.6	781.1		

During 1924, two wood stave siphons, running north from the ditch and crossing to the east side of Shasta River, were constructed. The intake of the upper siphon is located in the SE¼ NW¼ Sec. 25 T 44 N, R 6 W, about two miles below the head of the ditch, while the lower siphon heads in the NW¼ NW¼ Sec. 14 T 44 N, R 6 W, about five miles below the head of the ditch. It is proposed to put a considerable

acreage of new land, on the east side of the river, under irrigation. The location of the upper siphon and the proposed ditches leading therefrom, are shown on map sheets 115 and 119. The lower siphon, together with proposed ditches, are shown on map sheets 122 and 123.

A permanent measuring station, indicated as Gage 23, was maintained on the ditch during the irrigation seasons of 1922 and 1923. The station was located just below a concrete spillway and about one fourth of a mile below the Grenada Irrigation District Pumping Plant. The results of measurements secured at this station are submitted at the end of this report in Tables 65 and 66. Hydrographs plotted from the records contained in these tables are shown on Plates LII and LIII.

Diversions 251 to 254, inclusive, are those of the Edson and Foulke Company ditches, diverting from McCloud Slough. McCloud Slough is a stream which rises in section 35 T 43 N, R 6 W, on the Edson and Foulke Company Gazelle Ranch, and flows northerly for a distance of about six miles to its confluence with Shasta River at a point in the SW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 36 T 44 N, R 6 W. The water available for diversion from this stream is supplied principally from the Edson-Foulke Yreka Ditch System (see Diversion 18). The above numbered diversions, therefore, have been considered as part of that system and the acreage served by the ditches has been included thereunder. Otherwise the ditches have been treated as diversions, due to the fact that they also divert the natural flow of McCloud Slough when such flow is available.

A summary showing the location of the diversion point of each ditch follows:

Diversion No.	Location of Point of Diversion	Map Sheet Number
251	SE¼ NE¼ Sec. 26 T 43 N, R 6 W	64
252	SE¼ NE¼ Sec. 26 T 43 N, R 6 W	64
253	NW¼ NW¼ Sec. 25 T 43 N, R 6 W	63
254	NW¼ NW¼ Sec. 25 T 43 N, R 6 W	63

The amount of water available for diversion by the ditches during the period covered by the field investigation, was very small, consequently no discharge measurements were taken. However, sufficient data were obtained in the field during 1923 from which the maximum capacity of each ditch was computed. A summary of the results obtained follow:

Diversion Number	Maximum Capacity-Second Feet
251	6.9
252	2.1
253	7.5
254	2.1

Diversions 255 to 258, inclusive, are those of the A. Brown ditches, diverting from McCloud Slough. The water available for diversion by these ditches is return flow from irrigation on the Edson and Foulke Company Gazelle Ranch.

Diversion 255 heads on the east side of the stream in the SW¼ SW¼ Sec. 24 T 43 N, R 6 W (see map sheet 66). The conduit is an earth ditch, about one mile in length, and serves an irrigated area of 42.0 acres, of which, 34.3 acres are owned by A. A. Brown, 3.5 acres are owned by M. L. Brown, and 4.2 acres are owned by the Edson and Foulke Company (see map sheets 66 and 67 and Acreage Table pages 26 and 28 and 77).

Diversion 256 heads on the east side of the stream in the NE¼ SW¼ Sec. 24 T 43 N, R 6 W (see map sheet 66). The conduit is an earth

ditch, about 250 feet in length, and serves an irrigated area of 3.1 acres on the A. A. Brown ranch and 3.3 acres on the Edson-Foulke Company ranch, making a total area of 6.4 acres (see map sheet 66 and Acreage Table pages 27 and 77).

Diversion 257 heads on the east side of a branch of McCloud Slough in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 24 T 43 N, R 6 W (see map sheet 66). The conduit system consists of three earth ditches, which run northerly from the point of diversion and serve an irrigated area of 18.2 acres on the A. A. Brown ranch (see map sheet 66 and Acreage Table page 27).

Diversion 258 heads on the east side of the branch of McCloud Slough, mentioned under Diversion 257. The point of diversion is within the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 24 T 43 N, R 6 W (see map sheet 66). The main conduit is a gravity ditch about 1800 feet in length, which runs northerly from the point of diversion across the W$\frac{1}{2}$ of the NW$\frac{1}{4}$ Sec. 24 T 43 N, R 6 W, and serves an irrigated area of 0.8 acres (see map sheet 66 and Acreage Table page 27). A short lateral running east from the point of diversion at one time supplied a small pumping plant, by means of which water was pumped to a high line ditch and distributed therefrom for irrigation on lands, not served by the other A. A. Brown ditches, in the E$\frac{1}{2}$ of the W$\frac{1}{2}$ Sec. 24 T 43 N, R 6 W. This plant has, however, been discontinued for some time.

The amount of water available for diversion by the above numbered ditches, Diversion 255 to 258, inclusive, during the period covered by the field investigation, was very small; consequently no discharge measurements were taken. Sufficient data, however, were obtained in the field during 1923 from which the maximum capacities of the several ditches have been computed. A summary of the results

obtained, follow:

Diversion Number	Maximum Capacity in Second Feet
255	3.0
256	3.3
257	3.2
258	0.6

Diversion 259 is that of the M. L. Brown Ditch, diverting from McCloud Slough in the SW¼ NW¼ Sec. 24 T 43 N, R 6 W (see map sheet 66).

Diversion is made into a natural slough by means of a rock dam placed across McCloud Slough. The water is distributed from this slough by the wild flooding method and serves an irrigated area of 126.6 acres, as described in the Acreage Table under the names of the respective owners. A summary of the data contained in the Acreage Table follows:

Name of Owner	Acreage Irrigated Irr.	sub-irr.	Total	Map Sheet	Acreage Table Page
Brown, M. L.	33.8	54.2	88.0	67	28
Brown, O.A.		6.0	6.0	67	28
Duke, W. D.		32.6	32.6	67	64
TOTALS	33.8	92.8	126.6		

The irrigated area of 33.8 acres and 10.6 acres of the sub-irrigated area on the M. L. Brown ranch, also lie under the A. A. Brown Ditch (Diversion 255). The remaining sub-irrigated area is naturally sub-irrigated from the slough.

No measurements were taken on the slough, as it was not indicated as a diversion when the other Brown ditches were being measured.

Diversion 260 is that of the Duke Ditch, diverting from McCloud Slough

in the NW¼ SW¼ Sec. 13 T 43 N, R 6 W (see map sheet 67).

The conduit is an earth ditch, about one half of a mile in length, and serves an irrigated area of 44.3 acres, of which 23.5 acres have been described as sub-irrigated (see map sheets 67 to 69, inclusive, and Acreage Table page 64).

No discharge measurements were taken on the ditch as it was not indicated as a diversion at the time the other Duke ditches were being measured.

Diversions 261 and 262 are those of the Nevada County Bank ditches, diverting from McCloud Slough in the SW¼ SW¼ Sec. 12 T 43 N, R 6 W (see map sheet 69).

The conduits are earth ditches, each of which is about one half of a mile in length, running along the west and east side of the stream, respectively. The combined flow diverted by the two ditches serve an irrigated area of 17.2 acres (see map sheet 69 and Acreage Table page 188).

No discharge measurements were taken on the ditches, as they were not indicated as diversions when the other ditches on McCloud Slough were being measured.

Diversion 263 is that of the Orr Brothers Ditch, diverting from McCloud Slough in the SE¼ NW¼ Sec. 36 T 44 N, R 6 W (see map sheet 114).

The conduit is an earth ditch, about 1000 feet in length, running east from the point of diversion, and terminating at the Edson-Foulke Grenada Ditch. The ditch serves an irrigated area of 1.2 acres

(see map sheet 114 and Acreage Table page 194).

No discharge measurements were taken on the ditch, as it was not indicated as a diversion when the other Orr Brothers' ditches were being measured.

In addition to the acreage described as irrigated or sub-irrigated under the foregoing ditches (Diversions 251 to 263, inclusive), diverting from McCloud Slough, there is a sub-irrigated area of 73.7 acres on the Orr Brothers' ranch that can not be alloted to any ditch. This area has therefore been described as sub-irrigated from McCloud Slough (see map sheets 70 and 110 and Acreage Table page 198).

Diversion 264 refers to a spring at the head of Kiernan Slough in the NE¼ SW¼ Sec. 11 T 42 N, R 6 W (see map sheet 57). There are no diversions from the spring but a considerable acreage on the Kiernan ranch, lying adjacent to the spring and slough, is sub-irrigated therefrom. However, since the principal source of water supply for this area is from the Edson-Foulke Yreka Ditch, this acreage has been included under that ditch (see Diversion 18).

Diversion 265 is that of the Edson-Foulke Ditch, diverting from Kiernan Slough in the SE¼ SW¼ Sec. 2 T 42 N, R 6 W (see map sheet 58).

The conduit is an earth ditch, about three fourths of a mile in length, and serves an irrigated area of 60.6 acres. A sub-irrigated area of 46.6 acres has also been described under this ditch (see map sheet 58 and Acreage Table pages 77 and 78). However, since the water available for diversion from the slough is supplied principally from the Edson-Foulke Yreka Ditch, this total area of 107.2 acres has been

included in the summary showing the use of water under that ditch (see Diversion 18).

A current meter measurement was taken on the slough above the head of the ditch on May 9, 1923, showing a discharge of 0.61 second feet. This discharge represents the natural flow of the slough, as stated by Lewis Foulke.

Diversions 266 to 280, inclusive, are those of the Arthur P. Williams ditches, diverting from Willow Creek and several small branches thereof. Excepting Diversion 274, which is a small pipe line supplying water for domestic use at the Williams ranch house, the conduits are short earth ditches, supplying water for irrigation on the Arthur P. Williams ranch in section 26 T 42 N, R 7 W (see map sheet 46 and Acreage Table pages 277 to 279, inclusive).

A summary of the data contained in the Acreage Table, follows:

Diversion Number.	Stream Diverted From	Location of Point of Diversion	Acreage Irrigated
266	Willow Creek	NW¼ SW¼ Sec. 26 T 42 N, R 7 W	1.4
267	Willow Creek	NW¼ SW¼ Sec. 26 T 42 N, R 7 W	0.9
268	Willow Creek	NW¼ SW¼ Sec. 26 T 42 N, R 7 W	2.2
269	Hulett Gulch	SE¼ SW¼ Sec. 26 T 42 N, R 7 W	2.6
270	Hulett Gulch	NE¼ SW¼ Sec. 26 T 42 N, R 7 W	1.3
271	Timber Gulch	NW¼ SE¼ Sec. 26 T 42 N, R 7 W	0.6
272	Willow Creek	NE¼ SW¼ Sec. 26 T 42 N, R 7 W	2.2
273	Willow Creek	SW¼ NE¼ Sec. 26 T 42 N, R 7 W	14.0
274	Willow Creek	SW¼ NE¼ Sec. 26 T 42 N, R 7 W	*

*Domestic use only.

(cont.)

Diversion Number.	Stream Diverted From	Location of Point of Diversion	Acreage Irrigated
275	Willow Creek	SW¼ NE¼ Sec. 26 T 42 N, R 7 W	1.3
276	Willow Creek	SW¼ NE¼ Sec. 26 T 42 N, R 7 W	2.2
277	Willow Creek	NW¼ NE¼ Sec. 26 T 42 N, R 7 W	1.6
278	Unnamed Fork of Willow Creek	SE¼ SW¼ Sec. 23 T 42 N, R 7 W	9.8
279	Unnamed Fork of Willow Creek	NE¼ NW¼ Sec. 26 T 42 N, R 7 W	0.1
280	Willow Creek	NW¼ NE¼ Sec. 26 T 42 N, R 7 W	3.3
		TOTAL	43.5

A summary of the results of discharge measurements taken on the ditches on May 3, 1923, follows:

Diversion Number	Discharge in Second Feet	Remarks
266	(a) 0.16	Available flow.
266	(b) 0.40	Maximum capacity.
267	(a) 0.09	Normal irrigating head and maximum capacity.
268		No water available.
269		No water available.
270	(a) 0.07	Available flow.
270	(b) 0.80	Maximum capacity.
271	(a) 0.08	Normal irrigating head.
271	(b) 0.40	Maximum capacity.
272	(c) 0.27	Available flow.
272	(b) 0.90	Normal irrigating head and maximum capacity.
273	(c) 0.23	Available flow.
273	(b) 1.20	Normal irrigating head and maximum capacity.
274	0.03	Volumetric measurement.
275	(a) 0.14	Normal irrigating head.
275	(b) 0.40	Maximum capacity.
276	(c) 0.36	Available flow.
276	(b) 1.20	Normal irrigating head and maximum capacity.
277	(c) 0.42	Available flow.
277	(b) 0.60	Normal irrigating head and maximum capacity.

(a) Float measurement.
(b) Computed.
(c) Current meter measurement.

Diversion Number	Discharge in Second Feet	Remarks
278		No water available.
279		No water available.
280	(c) 0.50	Available flow.
280	(b) 1.10	Normal irrigating head and maximum capacity.

(b) Computed.
(c) Current meter measurement.

Diversions 281 to 291, inclusive, are those of the J. A. Sissel ditches, diverting from Willow Creek, Birch Creek, and an unnamed fork of Willow Creek. The conduits are short earth ditches, supplying water for irrigation on the J. A. Sissel ranch in sections 24 and 25, T 42 N, R 7 W, and section 19 T 42 N, R 6 W (see map sheets 47 and 48 and Acreage Table pages 235 to 237, inclusive).

A summary of the data contained in the Acreage Table, follows:

Diversion Number.	Stream Diverted From	Location of Point of Diversion	Acreage Irrigated
281	Willow Creek.	NW¼ NW¼ Sec. 25 T 42 N, R 7 W	6.6
282	Birch Creek.	NE¼ SW¼ Sec. 25 T 42 N, R 7 W	0.7
283	Birch Creek.	SE¼ NW¼ Sec. 25 T 42 N, R 7 W	0.9
284	Birch Creek.	SE¼ NW¼ Sec. 25 T 42 N, R 7 W	2.1
285	Birch Creek.	SE¼ NW¼ Sec. 25 T 42 N, R 7 W	2.1
286	Birch Creek.	SE¼ NW¼ Sec. 25 T 42 N, R 7 W	4.4
287	Birch Creek.	NE¼ NW¼ Sec. 25 T 42 N, R 7 W	0.3
288	Birch Creek	NE¼ NW¼ Sec. 25 T 42 N, R 7 W	1.6
289	Willow Creek	SE¼ SE¼ Sec. 24 T 42 N, R 7 W	10.5
290	Unnamed Fork of Willow Creek	SW¼ SE¼ Sec. 24 T 42 N, R 7 W	4.1
291	Willow Creek	NE¼ SW¼ Sec. 19 T 42 N, R 6 W	12.3
		TOTAL	45.6

A summary of the results of discharge measurements taken on the ditches on April 24, 1923, follows:

Diversion Number	Discharge in Second Feet	Remarks
281	(c) 0.47	Available flow.
281	(b) 1.10	Normal irrigating head and maximum capacity.
282		No measurement.
283		No measurement.
284		No measurement.
285	(a) 0.08	Normal irrigating head and maximum capacity.
286	(a) 0.06	Available flow.
286	(b) 0.70	Maximum capacity.
287		No measurement.
288		No measurement.
289	(c) 0.65	Normal irrigating head and maximum capacity.
290		No measurement.
291	(a) 0.42	Normal irrigating head.
291	(b) 4.30	Maximum capacity.

(a) Float measurement.
(b) Computed.
(c) Current meter measurement.

Diversions 282 to 284, inclusive, 287, 288, and 290 were not indicated as diversions at the time the other ditches were being measured, consequently no discharge measurements were taken on these ditches.

Diversion 292 is that of the Finnerty Upper Ditch, diverting from Willow Creek in the SW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 19 T 42 N, R 6 W (see map sheet 49).

The conduit is an earth ditch, diverting from the north bank of Willow Creek, and runs northeast to a point about 300 feet below the head, where it empties into a lateral from the Farraher-Finnerty Ditch (Diversion 298). The ditch serves an irrigated area of 0.7 acre above the point of confluence with the Farraher-Finnerty Ditch (see map sheet 49 and Acreage Table page 87).

The ditch was not in use during the period covered by the field investigation, consequently no discharge measurements were obtained.

Diversion 293 refers to the Finnerty Spring, located in the SW¼ NE¼ Sec. 19 T 42 N, R 6 W (see map sheet 49). There are no diversions from the spring but an area of 0.4 acre, lying adjacent to the spring, has been described as irrigated therefrom (see map sheet 49 and Acreage Table page 87).

No discharge measurements were taken to determine the flow of the spring, as it was merely a small trickle when visited by the engineer on May 11, 1923.

Diversions 294 and 295 are those of the Finnerty ditches, re-diverting the water spilled into a small tributary of Willow Creek by the Farraher-Finnerty Ditch (Diversion 298). The use of water under these ditches is described under Diversion 298.

No discharge measurements were taken on the ditches, as they were considered as rediversions.

Diversion 296 is that of the Farraher Upper Ditch, diverting from the west side of Squaw Creek in the NW¼ NE¼ Sec. 30 T 42 N, R 6 W, (see map sheet 49).

The conduit is an earth ditch about three fourths of a mile in length, and serves an irrigated area of 25.2 acres, of which, 24.0 acres are owned by A. E. Farraher, and 1.2 acres are owned by M. Finnerty (see map sheet 49 and Acreage Table pages 86 and 87).

A current meter measurement was taken on the flume at the

head of the ditch on May 11, 1923, showing a discharge of 1.24 second feet. This discharge represents the normal irrigating head. The maximum capacity of the flume, which is 1.20 feet wide by 0.85 feet deep, was computed and found to be 2.43 second feet.

Diversion 296A is that of the Farraher Domestic Pipe Line, diverting from a small spring located on the east side of Squaw Creek in the NW¼ NE¼ Sec. 30 T 42 N, R 6 W (see map sheet 49).

The conduit is a one inch diameter iron pipe, about 400 feet long, which conveys water to the A. E. Farraher ranch house in the SW¼ SE¼ Sec. 19 T 42 N, R 6 W, where it is used for domestic purposes (see map sheet 49).

No measurements were taken to determine the discharge of pipe, as it was not in use when visited by the engineer on May 11, 1923.

Diversion 297 is that of the Farraher Lower Ditch, diverting from the east side of Squaw Creek in the SW¼ SE¼ Sec. 19 T 42 N, R 6 W (see map sheet 49).

The conduit is an earth ditch, about 500 feet in length, and serves an irrigated area of 0.8 acre (see map sheet 49 and Acreage Table page 86).

A current meter measurement was taken on the ditch on April 24, 1923, showing a discharge of 0.30 second foot. This discharge represents the maximum capacity of the ditch, and also the normal irrigating head.

Diversion 298 is that of the Farraher-Finnerty Ditch, diverting from the west side of Squaw Creek in the NW¼ SE¼ Sec. 19 T 42 N, R 6 W (see map

sheet 49).

The conduit is an earth ditch running northerly across the A. E. Farraher ranch to a point about 800 feet below the intake. At this point, the water is spilled into a small tributary of Willow Creek and is rediverted therefrom and distributed for irrigation by the Finnerty ditches (Diversions 294 and 295). The system serves an irrigated area of 1.2 acres on the A. E. Farraher ranch, and 7.7 acres on the M. Finnerty ranch, or a total of 8.9 acres (see map sheet 49 and Acreage Table pages 86 and 87).

A current meter measurement was taken on the ditch on May 11, 1923, showing a discharge of 1.01 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by J. P. Finnerty.

Diversion 299 is that of the Finnerty Ditch, diverting from Squaw Creek in the NW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 19 T 42 N, R 6 W (see map sheet 49).

The conduit is an earth ditch, about three fourths of a mile in length, and serves an irrigated area of 45.7 acres (see map sheet 49 and Acreage Table page 88).

A current meter measurement was taken on the ditch on April 24, 1923, showing a discharge of 1.21 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by J. P. Finnerty.

Diversion 300 is that of the Finnerty Ditch, diverting from Squaw Creek in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 19 T 42 N, R 6 W. The point of diversion is about one fourth of a mile down stream from Diversion 299 (see map

sheet 49).

The conduit is an earth ditch, about 1200 feet in length, and serves an irrigated area of 2.4 acres (see map sheet 49 and Acreage Table page 88).

A current meter measurement was taken on the ditch on April 24, 1923, showing a discharge of 1.58 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by J. P. Finnerty.

Diversion 301 is that of the Edson-Foulke Willow Creek Ditch, diverting from Willow Creek in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 19 T 42 N, R 6 W (see map sheet 49).

The conduit consists of about 550 feet of earth ditch and 150 feet of wooden flume, 3.4 feet wide by 2.0 feet deep. The water diverted by the ditch is spilled into the Edson-Foulke Yreka Ditch, and is used in common with water diverted by that ditch from Shasta River and Parks Creek (see Diversions 18 and 183, respectively).

A permanent measuring station, indicated as Gage 37, was maintained on the flume above the point of confluence with the Edson-Foulke Yreka Ditch, during the irrigation seasons of 1922 and 1923. The results of measurements obtained at this station are submitted at the end of this report in Tables 56 and 57. Hydrographs plotted from the records contained in these tables are shown on Plates XLIV and XLV.

Diversion 302 is that of the Finnerty Ditch, diverting from a small draw, which heads in the hills skirting the Finnerty ranch on the south. The point of diversion is located within the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 20 T 42 N,

R 6 W (see map sheet 49).

The conduit is an earth ditch, about 500 feet in length, and serves an irrigated area of 4.2 acres (see map sheet 49 and Acreage Table page 88).

No discharge measurements were taken on the ditch, as it was not indicated as a diversion at the time the other Finnerty ditches were measured.

Diversion 303 is that of the Harris Ditch, diverting from the north bank of Willow Creek in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 17 T 42 N, R 6 W (see map sheet 50).

The conduit is an earth ditch, about three fourths of a mile in length, and serves an irrigated area of 47.2 acres (see map sheet 50 and Acreage Table page 115).

A current meter measurement was taken on the ditch on April 25, 1923, showing a discharge of 1.46 second feet. This discharge represents the available flow on that date. The maximum capacity of the ditch was computed and found to be 3.4 second feet. The maximum capacity is also the normal irrigating head, when that quantity of water is available for diversion, as stated by M. E. Harris.

Diversion 304 is that of the Harris Ditch, diverting from Long Gulch in the NW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 17 T 42 N, R 6 W (see map sheet 50).

The conduit is an earth ditch, about 1500 feet in length, running northerly from the point of diversion to the Willow Creek crossing, and thence northeasterly along the north side of Willow Creek to the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 17 T 42 N, R 6 W, where it joins the Harris Ditch (Diversion

303). The ditch serves an irrigated area of 7.0 acres (see map sheet 50 and Acreage Table page 115).

No discharge measurements were taken on the ditch, as it was not indicated as a diversion at the time the other Harris ditches were being measured.

Diversion 305 is that of the Harris Ditch, diverting from the south bank of Willow Creek in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 16 T 42 N, R 6 W (see map sheet 51).

The conduit is an earth ditch, about 2200 feet in length, and serves an irrigated area of 43.7 acres (see map sheet 51 and Acreage Table pages 115 and 116).

A current meter measurement was taken on the ditch on April 25, 1923, showing a discharge of 1.14 second feet. This discharge represents the normal irrigating head, as stated by M. E. Harris. The maximum capacity of the ditch was computed and found to be 6.02 second feet.

Diversion 306 is that of the Workman Upper Ditch, diverting from the north bank of Willow Creek in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 16 T 42 N, R 6 W (see map sheet 51).

The main conduit is an earth ditch, running northerly to a point about 400 feet below the intake of the ditch. At this point the ditch divides into two laterals, one of which runs northerly for a distance of about three fourths of a mile, and the other of which runs easterly across Willow Creek and terminates at a point near the southeast corner of section 9 T 42 N, R 6 W. The water diverted by the ditch

serves an irrigated area of 86.9 acres (see map sheet 54 and Acreage Table pages 280 and 281).

A current meter measurement was taken on the ditch on April 25, 1923, showing a discharge of 1.16 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by the lessee of the Workman ranch.

Diversion 307 is that of the Workman Middle Ditch, diverting from the south bank of Willow Creek in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 9 T 42 N, R 6 W (see map sheet 54).

The conduit is an earth ditch, about 600 feet in length, and conveys water to the Workman orchard and garden. An area of 1.4 acres is irrigated by the ditch, (see map sheet 54 and Acreage Table page 281).

A current meter measurement was taken on the ditch on April 25, 1923, showing a discharge of 1.03 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head.

Diversion 308 is that of the Workman Lower Ditch, diverting from the north side of Willow Creek in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 9 T 42 N, R 6 W (see map sheet 54).

The conduit is an earth ditch, about one half of a mile in length, running parallel to and along the north side of Willow Creek. The ditch serves an irrigated area of 9.7 acres (see map sheet 54 and Acreage Table page 281).

A current meter measurement was taken on the ditch on April 26, 1923, showing a discharge of 0.31 second foot. This discharge

represents the flow available on that date. The maximum capacity of the ditch was computed and found to be 0.7 second foot.

Diversion 309 is that the Finnerty Ditch, diverting from Willow Creek in the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 9 T 42 N, R 6 W (see map sheet 54).

The conduit is an earth ditch, heading on the south bank of Willow Creek. The water is conveyed easterly across the Workman ranch for a distance of 600 feet and thence northeasterly for a distance of 1300 feet, across the Finnerty ranch, and is used for the irrigation of 9.9 acres, of which, 8.3 acres are owned by M. Finnerty, and 1.6 acres are owned by L. Workman (see map sheet 54 and Acreage Table pages 88 and 281).

A current meter measurement was taken on the ditch on April 26, 1923, showing a discharge of 1.49 second feet. This discharge represents the normal irrigating head as stated by George Casson, lessee. The maximum capacity of the ditch was computed and found to be 2.8 second feet.

Diversion 310 is that of the Finnerty Ditch, diverting from Willow Creek in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 10 T 42 N, R 6 W (see map sheet 54).

The conduit is an earth ditch, about 750 feet in length, and serves an irrigated area of 0.2 acre on the M. Finnerty ranch. This area also lies under the Finnerty Ditch (Diversion 317), (see map sheet 54 and Acreage Table page 88).

The ditch had not been used for two or three years prior to 1923 and was in poor shape, consequently no measurements were taken to determine the capacity of the ditch.

Diversion 311 is that of the Edson-Foulke Ditch, diverting from Willow Creek in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 10 T 42 N, R 6 W (see map sheet 54).

The conduit is an earth ditch, about one half of a mile in length, running northeasterly along the north bank of Willow Creek. At a point about 1000 feet below the intake, the ditch crosses the Webb Ditch Lateral and the Edson and Foulke Company Lateral from the Edson-Foulke Yreka Ditch, and the water carried by the ditch may be spilled into either of the above laterals and used in common with the Edson-Foulke Yreka Ditch waters, or it may be distributed for the irrigation of a small area lying under the ditch below this crossing. However, since this area is watered principally by the Edson-Foulke Yreka Ditch, it has been included under that system (see Diversion 18).

The ditch has not been used since 1921, due to lack of water in Willow Creek, consequently no discharge measurements were taken on the ditch. It, however, was estimated that the ditch would carry about 4.0 second feet.

Diversions 312 to 315, inclusive, are those of the Harris Ditches, diverting from several small unnamed streams tributary to Willow Creek. The streams from which the ditches divert, rise below the Edson-Foulke Yreka Ditch in the form of springs and small seepages, which are presumably fed by leakage from the above mentioned ditch.

The conduits are short earth ditches and distribute water for irrigation on the M. E. Harris ranch in section 16 T 42 N, R 6 W (see map sheet 51 and Acreage Table page 116).

A summary of the data contained in the Acreage Table, follows:

Diversion Number	Location of Point of Diversion	Acreage irrigated
312	SW¼ NE¼ Sec. 16 T 42 N, R 6 W	5.9
313	SE¼ NW¼ Sec. 16 T 42 N, R 6 W	2.5
314	NW¼ NE¼ Sec. 16 T 42 N, R 6 W	1.6
315	NW¼ NE¼ Sec. 16 T 42 N, R 6 W	4.8
	TOTAL	14.8

No discharge measurements were taken on the ditches, as they were not indicated as diversions at the time the other Harris Ditches were being measured.

Diversions 316 to 318, inclusive, are those of the Finnerty ditches, diverting from several small streams, which are fed principally by springs rising under the Edson-Foulke Yreka Ditch.

The conduits are earth ditches, and supply water for irrigation on the M. Finnerty ranch in sections 10 and 15 T 42 N, R 6 W (see map sheets 54 and 55, and Acreage Table pages 88 and 89).

A summary of the data contained in the Acreage Table, follows:

Diversion Number	Stream Diverted From	Location of Point of Diversion	Acreage Irrigated
316	Finnerty Spring	NW¼ NW¼ Sec. 15 T 42 N, R 6 W	10.8
317	Unnamed Slough	SW¼ SW¼ Sec. 10 T 42 N, R 6 W	39.4
318	McGraw Gulch	SE¼ NW¼ Sec. 15 T 42 N, R 6 W	34.5
		TOTAL	84.7

A summary of the results of discharge measurements taken on the

ditches on April 26, 1923, follows:

Diversion Number	Discharge in Second Feet	Remarks
316	(a) 0.14	Available flow
317	(b) 0.40	Available flow
318	(a) 0.04	Available flow

(a) Float measurement.
(b) Current meter measurement.

Diversion 319 refers to the Kiernan Spring, located in the SW¼ NW¼ Sec. 14 T 42 N, R 6 W (see map sheet 56).

The spring has been walled in by a concrete basin and supplies water for domestic use at the Kiernan ranch house and for the irrigation of 16.7 acres. Of this irrigated area, 6.1 acres have been described as sub-irrigated from the spring (see map sheet 56 and Acreage Table page 142).

Diversions 320 to 324, inclusive, are those of the Edson and Foulke Company ditches diverting from Willow Creek, over that portion of its course traversing the Edson-Foulke Gazelle Ranch. A summary giving the location of the point of diversion of each ditch, follows:-

Diversion Number	Location of Point of Diversion	Map Sheet
320	NW¼ NE¼ Sec. 10 T 42 N, R 6 W	57
321	SW¼ SW¼ Sec. 2 T 42 N, R 6 W	58
322	NW¼ SW¼ Sec. 2 T 42 N, R 6 W	58
323	SE¼ NE¼ Sec. 3 T 42 N, R 6 W	58
324	SE¼ NE¼ Sec. 3 T 42 N, R 6 W	58

The conduits are earth ditches, and distribute water for

irrigation on the Edson and Foulke Company Gazelle Ranch. The water available for diversion by these ditches is supplied principally by water spilled into Willow Creek from the Edson-Foulke Yreka Ditch, or by return water from irrigation under that ditch. For this reason, the ditches have been considered as a part of the Edson-Foulke Yreka Ditch System, and the acreage watered from the ditches has been included under that system (see description of Diversion 18).

A summary of the results of current meter measurements taken on the ditches on May 9, 1923, follows:

Diversion Number	Discharge in Second Feet	Remarks
320	4.86	Maximum capacity and normal irrigating head.
321	6.54	Maximum capacity and normal irrigating head.
322	1.02	Maximum capacity and normal irrigating head.
323		No measurement. Ditch not in use.
324	2.15	Maximum capacity and normal irrigating head.

Diversions 325 to 328, inclusive, are those of the Edson and Foulke Company ditches, diverting from House Creek, over that portion of its course traversing the Edson and Foulke Company Gazelle Ranch. A summary giving the location of the point of diversion of each ditch, follows:

Diversion Number	Location of Point of Diversion	Map Sheet
325	NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 10 T 42 N, R 6 W	57
326	NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 10 T 42 N, R 6 W	57
327	NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 3 T 42 N, R 6 W	58
328	SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 3 T 42 N, R 6 W	58

The conduits are earth ditches, distributing water for irrigation on the Edson and Foulke Company Gazelle Ranch. The acreage irrigated under the several ditches has been included in the acreage watered from the Edson-Foulke Yreka Ditch, for reasons as explained under Diversions 320 to 324, inclusive. At the point indicated as Diversion 327, there is also a pipe line diverting from House Creek, which supplies water for stock watering purposes at a feed yard located in the N½ SE¼ Sec. 3 T 42 N, R 6 W.

A summary of the results of discharge measurements taken on the ditches on May 15, 1923, follows:

Diversion Number	Discharge in Second Feet	Remarks
325		No measurement.
326	5.0	Estimated.
327	0.21	Available flow.
327	15.0	Maximum capacity. Estimated.
328		No measurement.

Diversions 325 and 328 were not indicated as diversions when the other ditches were visited, consequently no discharge measurements or estimates were made on these ditches.

Diversion 329 is that of the Chastain Ditch, diverting from Macks Gulch in the SE¼ NE¼ Sec. 12 T 42 N, R 7 W (see map sheet 52).

The conduit is an earth ditch, about 1800 feet in length, and conveys water to the H. A. Craig and J. W. Chastain ranch, for the irrigation of 10.2 acres (see map sheet 52 and Acreage Table page 44).

The flow of the ditch was determined by a volumetric measurement taken on April 26, 1923. The resulting discharge, of 0.05 second foot, represents the total flow available in Macks Gulch on that date.

Diversion 330 is that of the McCoy Ditch, diverting from Macks Gulch in the SW¼ NE¼ Sec. 7 T 42 N, R 6 W (see map sheet 53).

The conduit consists of about 3600 feet of that portion of the Yreka Ditch lying below Macks Gulch, and, which has been abandoned by the Edson and Foulke Company. The ditch serves an irrigated area of 24.9 acres (see map sheet 53 and Acreage Table page 173).

There was no water available for diversion by the ditch at the time of the engineer's visit on April 26, 1923, consequently no discharge measurements were taken. The maximum capacity of the ditch was estimated to be 3.0 second feet.

Diversion 331 is that of the Workman Ditch, diverting from Macks Gulch in the SW¼ NW¼ Sec. 9 T 42 N, R 6 W (see map sheet 54).

The conduit is an earth ditch, about three fourths of a mile in length, which rediverts water spilled into Macks Gulch from the Edson-Foulke Yreka Ditch, and distributes it for irrigation on the Workman ranch. The acreage irrigated under the ditch is described in the Acreage Table, together with other lands on the Workman ranch, as irrigated from the Edson-Foulke Yreka Ditch (see map sheet 54 and Acreage Table page 280). This acreage is included in the summary of the total area irrigated under the Edson-Foulke Yreka Ditch (see description of Diversion 18).

The ditch was not indicated as a diversion when the other Workman ditches were being measured, consequently no discharge measurements were taken on the ditch.

Diversions 332 to 339, inclusive, are those of the Edson and Foulke Company ditches, diverting from Macks Gulch. A summary giving the

location of the point of diversion of each ditch, follows:

Diversion Number	Location of Point of Diversion	Map Sheet
332	SE¼ NW¼ Sec. 9 T 42 N, R 6 W	54
333	SW¼ NE¼ Sec. 9 T 42 N, R 6 W	54
334	SE¼ NE¼ Sec. 9 T 42 N, R 6 W	54
335	SE¼ NE¼ Sec. 9 T 42 N, R 6 W	54
336	SW¼ NW¼ Sec. 10 T 42 N, R 6 W	54
337	SW¼ NW¼ Sec. 10 T 42 N, R 6 W	54
338	SW¼ SE¼ Sec. 3 T 42 N, R 6 W	58
339	SW¼ NE¼ Sec. 3 T 42 N, R 6 W	58

The conduits are earth ditches and distribute water, which is spilled into Macks Gulch from the Edson-Foulke Yreka Ditch, for irrigation on the Edson and Foulke Company Gazelle Ranch. The acreage irrigated under the several ditches has been included in the acreage watered from the Edson-Foulke Yreka Ditch (see description of Diversion 18).

The results of current meter measurements taken on the ditches on May 15, 1923, follow:

Diversion Number	Discharge in Second Feet	Remarks
332	2.57	Normal irrigating head.
333	6.32	Normal irrigating head.
334	6.24	Normal irrigating head.
335	5.18	Normal irrigating head.
336	5.16	Normal irrigating head.
337	*5.20	Normal irrigating head.
338	2.82	Available flow.
339	2.58	Available flow.

*Discharge estimated as ditch was not in shape to divert water.

The ditches rarely carry more water than the normal irrigating head, consequently the maximum capacities of the ditches were not determined.

Diversion 340 is that of the Hebbring Ditch, diverting from a spring located in the SW¼ SE¼ Sec. 3 T 42 N, R 6 W (see map sheet 59).

The conduit is an earth ditch, about one half of a mile in length, running northwest from the spring to the Hebbring ranch, where it serves an irrigated area of 35.3 acres (see map sheet 59 and Acreage Table page 123).

A float measurement was taken on the ditch on April 24, 1923, showing a discharge of 0.17 second feet. This discharge represents the total flow of the spring.

Diversion 341 is that of the Edson-Foulke Ditch, diverting from Willow Creek in the SE¼ SE¼ Sec. 34 T 43 N, R 6 W. The point of diversion is below the junctions of House Creek and Macks Gulch with Willow Creek (see map sheet 61).

The conduit is an earth ditch about one mile in length. The ditch supplies water for irrigation on the Edson and Foulke Company Gazelle Ranch, and also serves as the main supply ditch to the Edson and Foulke Company's storage reservoir, located in sections 35 and 36 T 43 N, R 6 W. The water available for diversion by the ditch is supplied partly from the natural flow of Willow Creek, and partly by water spilled into the creek from the Edson-Foulke Yreka Ditch. During years of normal run-off, a considerable part of the water stored in the reservoir is from the natural flow of Willow Creek. In operation the

ditch diverts the entire flow of Willow Creek available at the intake of the ditch. The water in excess of that required for immediate irrigation is stored in the reservoir for later use. Since the principal and most dependable source of water supply available for diversion by this ditch is from the Edson-Foulke Yreka Ditch, the irrigated area under the ditch has been included in the acreage described as watered from the Edson-Foulke Yreka Ditch (see description of Diversion 18).

A current meter measurement was taken on the ditch on May 9, 1923, showing a discharge of 7.16 second feet. This discharge represents the total flow available for diversion on the above date. The maximum capacity of the ditch was computed and found to be 43.0 second feet.

Diversion 342 is that of the A. S. Orr Ditch, diverting from Willow Creek in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 26 T 43 N, R 6 W (see map sheet 64).

Diversion is made by means of a wooden dam. The conduit is an earth ditch running west from the point of diversion to a point about one half mile from the dam. At this point, the water is spilled into Orr Slough, and is distributed for irrigation by numerous rediversions from the slough. The ditch serves an irrigated area of 130.4 acres, of which, 129.2 acres are owned by A. S. Orr, and 1.2 acres are owned by G. C. Orr. Of this area, 1.0 acre on the G. C. Orr Ranch has been described as sub-irrigated (see map sheets 64 and 65 and Acreage Table pages 191 and 199).

A current meter measurement was taken on the ditch on May 1, 1923, showing a discharge of 0.75 second foot. This discharge represents the flow available for diversion by the ditch on that date. The maximum

capacity of the ditch was computed and found to be 2.7 second feet. As stated by Mrs. A. S. Orr, the ditch is normally operated at maximum capacity when that quantity of water is available.

Diversion 343 is that of the A. S. Orr and W. D. Duke Ditch, diverting from Willow Creek in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 23 T 43 N, R 6 W (see map sheet 65).

The conduit is an earth ditch, about one fourth of a mile in length, running easterly from the point of diversion. At a point about 200 feet below the intake the ditch crosses a slough, which serves as a lateral from the main ditch. An area of 15.6 acres on the A. S. Orr ranch is irrigated directly from the ditch, and an area of 133.3 acres on the W. D. Duke ranch is irrigated by rediversion from the slough lateral. In addition to the above areas of 7.7 acres and 103.8 acres on the A. S. Orr and W. D. Duke ranches, respectively, or a total of 111.5 acres have been described as sub-irrigated under the system. The total irrigated and sub-irrigated area amounts to 260.4 acres (see map sheets 65, 67, and 68, and Acreage Table pages 65 and 191).

The ditch was not indicated as a diversion when the other A. S. Orr or W. D. Duke ditches were being measured, consequently no discharge measurements were obtained.

Diversions 344 to 346, inclusive, are those of the A. S. Orr ditches, diverting from Willow Creek. The points of diversion are all within the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 23 T 43 N, R 6 W (see map sheet 65).

The conduits are short earth ditches, distributing water for irrigation on the A. S. Orr ranch (see map sheet 65 and Acreage Table

page 192).

A summary of the data contained in the Acreage Table, follows:

Diversion Number.	Acreage Irrigated		
	Irr.	Sub-irr	Total
344	13.8		13.8
345	6.0		6.0
346	1.2	6.4	7.6

The ditches were not indicated as diversions when the other A. S. Orr ditches were being measured, consequently no discharge measurements were obtained.

Diversion 347 is that of the A. S. Orr and W. D. Duke Ditch, diverting from Willow Creek in the NE¼ SW¼ Sec. 23 T 43 N, R 6 W (see map sheet 65).

The conduit is an earth ditch, about 1000 feet in length, and serves an irrigated area of 25.3 acres, of which, 22.9 acres are owned by W. D. Duke, and 2.4 acres are owned by A. S. Orr (see map sheet 65 and Acreage Table pages 65 and 192).

The ditch was not indicated as a diversion at the time the A. S. Orr or W. D. Duke ditches were being measured, consequently no discharge measurements were obtained.

Diversions 348 to 353, inclusive, are those of the Duke ditches, diverting from Willow Creek in sections 14 and 23, T 43 N, R 6 W (see map sheets 65 and 68).

The conduits are earth ditches distributing water for irrigation on the W. D. Duke Willow Creek ranch. The acreage irrigated under

the ditches is shown on map sheets 65 and 68 and is described in the Acreage Table on pages 65 and 66). A summary of the data contained in the Acreage Table, follows:

Diversion Number	Location of Point of Diversion	Acreage Irrigated		
		Irr.	Sub-irr	Total
348)	SW¼ NE¼ Sec. 23			
)	T 43 N R 6 W			
349)	SW¼ NE¼ Sec. 23	84.4		84.4
)	T 43 N R 6 W			
350)	SW¼ NE¼ Sec. 23			
)	T 43 N R 6 W			
351	SW¼ NE¼ Sec. 23	4.4	81.0	85.4
	T 43 N R 6 W			
352	NW¼ SE¼ Sec. 14	1.5		1.5
	T 43 N R 6 W			
353	SW¼ NE¼ Sec. 14	35.3		35.3
	T 43 N R 6 W			

There was no water available for diversion by Diversions 348, 349, and 351, at the time of the engineer's visit on May 1, 1923 or subsequent thereto, during the period covered by the field investigation, consequently no discharge measurements were obtained on these ditches.

Measurements were taken on Diversions 350, 352, and 353, on May 1, 1923, showing discharges of 0.18, o.11, and 0.31 second foot, respectively. These discharges represent the flow available for diversion by the respective ditches on the above date. The maximum capacities of the ditches were computed and found to be 0.58, 3.10, and 1.80 second feet, respectively. The measurements on Diversions 350 and 353 were taken with a current meter. The measurement on Diversion 352 was made by means of a float.

Diversions 354 to 358, inclusive, are those of the G. C. Orr ditches,

diverting from Orr Slough. Orr Slough is a small stream which rises in a swamp on the Edson and Foulke Company ranch in section 34 T 43 N, R 6 W and flows northerly, across the G. C. Orr, A. S. Orr, and W. D. Duke ranches, to its confluence with Willow Creek at a point in the NW¼ SE¼ Sec. 14 T 43 N, R 6 W. The stream is fed principally by return flow from irrigation on the Edson and Foulke Company ranch and by numerous small springs rising on the G. C. Orr and A. S. Orr ranches.

The above numbered diversions are earth ditches, which distribute water for irrigation on the G. C. Orr ranch in sections 27 and 34 T 43 N, R 6 W (see map sheets 61 and 64, and Acreage Table pages 199 to 201, inclusive). In addition to the use on the G. C. Orr ranch, an area of 4.7 acres on the A. S. Orr ranch is sub-irrigated under Diversion 356 (see map sheet 64 and Acreage Table page 192).

A summary of the data contained in the Acreage Table, follows:

Diversion Number	Location of Point of Diversion	Acreage Irrigated		
		Irr.	sub-irr.	Total
354	NW¼ NE¼ Sec. 34 T 43 N, R 6 W	107.9		107.9
355	NW¼ NE¼ Sec. 34 T 43 N, R 6 W	127.3		127.3
356	NE¼ SE¼ Sec. 27 T 43 N, R 6 W	60.0	*4.7	64.7
357	SE¼ NE¼ Sec. 27 T 43 N, R 6 W	9.1		9.1
358	SE¼ NE¼ Sec. 27 T 43 N, R 6 W	3.8		3.8

*Property of A. S. Orr.

A current meter measurement was taken on Diversion 354 on April 26, 1923, showing a discharge of 0.29 second foot. This discharge represents the flow available for diversion by the ditch on the above date. The maximum capacity of the ditch was computed and found to be

3.30 second feet.

No discharge measurements were taken on Diversion 355 as the ditch was not in shape to receive water. The flow available for diversion, however, was measured with a current meter on April 26, 1923, and found to be 0.56 second foot.

Diversions 356 to 358, inclusive, were not indicated as diversions at the time of the engineer's visit on April 26, 1923, consequently no discharge measurements were obtained on these ditches.

Diversion 359 is that of the A. S. Orr Ditch, diverting from Orr Slough in the NW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 26 T 43 N, R 6 W (see map sheet 64).

The conduit is an earth ditch, about one and one fourth miles in length, running northwesterly from the point of diversion to its termination at a point in the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 15 T 43 N, R 6 W. The ditch serves an irrigated area of 170.7 acres, of which, 169.0 acres are owned by A. S. Orr, and 1.7 acres are owned by G. C. Orr (see map sheets 64, 65, and 68 and Acreage Table pages 192, 193, and 201).

A current meter measurement was taken on the ditch on May 1, 1923, showing a discharge of 0.64 second foot. This discharge represents the flow available for diversion on the above date. The maximum capacity of the ditch was computed, and found to be 1.80 second feet.

Diversion 360 is that of the A. S. Orr Ditch, diverting from Orr Spring, which is located at the head of a small lake on the A. S. Orr property in the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 22 T 43 N, R 6 W (see map sheet 65).

The conduit is an earth ditch running north to a point about one fourth of a mile from the spring, where it empties into a lateral

from the A. S. Orr Ditch (Diversion 359). The ditch serves an irrigated area of 21.5 acres (see map sheet 65 and Acreage Table page 193).

The ditch was not indicated as a diversion at the time the other A. S. Orr ditches were measured, consequently no discharge measurements were obtained on the ditch.

Diversion 360A is that of the A. S. Orr Pumping Plant, diverting from the spring described under Diversion 360 (see map sheet 65).

The pump discharges through 100 feet of riveted steel pipe to a high line ditch, which runs west from the pipe line for a distance of about one half of a mile, and thence north, for a distance of three fourths of a mile, along the center line of section 22 T 43 N, R 6 W. Water from the pump may also be discharged into the A. S. Orr Ditch (Diversion 359). The plant serves an irrigated area of 78.0 acres, under the high line ditch (see map sheet 65 and Acreage Table page 193).

The pump was not indicated as a diversion at the time the other A. S. Orr ditches were measured on May 1, 1923, and was not in operation subsequent to that date, during the period covered by the field investigation, consequently no measurements were taken to determine the discharge of the pump.

Diversions 361 to 363, inclusive, are those of the Duke Ditches, diverting from Orr Slough in section 14 T 42 N, R 6 W (see map sheet 68).

The conduits are earth ditches, and distribute water for irrigation on the W. D. Duke Willow Creek ranch. The acreages irrigated under the ditches are shown on map sheets 68 and 69, and are described in the Acreage Table, pages 66 and 67. A summary of these

data follows:

Diversion Number	Location of Point of Diversion	Acreage Irrigated Irr.	sub-irr.	Total
361	NE¼ SW¼ Sec. 14 T 43 N, R 6 W	86.7		86.7
362	NE¼ SW¼ Sec. 14 T 43 N, R 6 W	2.3		2.3
363	NW¼ SE¼ Sec. 14 T 43 N, R 6 W	69.0	8.9	77.9

A current meter measurement was taken on Diversion 361 on May 1, 1923, showing a discharge of 0.31 second foot. This discharge represents the flow available for diversion on the above date. The maximum capacity of the ditch was computed and found to be 1.0 second foot.

There was no water available for diversion by Diversions 362 and 363 on May 1, 1923, or subsequent thereto, during the period covered by the field investigation, consequently no discharge measurements were obtained on these ditches.

Diversions 364 and 366 are those of the Duke ditches, diverting from Willow Creek. The points of diversion are within the SW¼ NE¼ Sec. 14 and the NW¼ SE¼ Sec. 11, T 43 N, R 6 W, respectively (see map sheets 68 and 69).

The conduits are earth ditches, and supply water for the irrigation of 2.2 acres and 9.1 acres, respectively, on the W. D. Duke Willow Creek ranch. Of the 9.1 acres irrigated under Diversion 366, 7.3 acres have been described as sub-irrigated (see map sheets 68 and 69 and Acreage Table page 67).

There was no water available for diversion by the ditches at the time of the engineer's visit on May 1, 1923, or subsequent thereto,

during the period covered by the field investigation, consequently no discharge measurements were obtained.

Diversions 365, 367, and 368 are those of the Orr Brothers ditches, diverting from Willow Creek (see map sheets 69 and 110).

The conduits are earth ditches supplying water for irrigation on the Orr Brothers ranch in sections 2 and 11 T 43 N, R 6 W and section 35 T 44 N, R 6 W. The acreage irrigated under the ditches is shown on map sheets 69, 110 and 116 and is described in the Acreage Table, page 195. A summary of these data follows:

Diversion Number	Location of Point of Diversion	Total Acreage Irrigated
365	NW¼ NE¼ Sec. 11 T 43 N, R 6 W	2.1
367	SE¼ NW¼ Sec. 2 T 43 N, R 6 W	4.5
368	NW¼ SW¼ Sec. 35 T 44 N, R 6 W	9.1

There was no water available for diversion by these ditches at the time of the engineer's visit on April 30, 1923, or subsequent thereto, during the period covered by the field investigation, consequently no discharge measurements were obtained.

Diversion 369 is that of the Orr Brothers Ditch, diverting from an unnamed fork of Willow Creek. The point of diversion is within the NE¼ SW¼ Sec. 2 T 43 N, R 6 W (see map sheet 107).

The conduit is an earth ditch, about 1500 feet in length, and serves an irrigated area of 16.2 acres (see map sheet 110 and Acreage Table page 195).

The ditch was not indicated as a diversion on April 30, 1923, when the other Orr Brothers ditches were measured, consequently no discharge measurements were obtained.

Diversions 368A and 370 are those of the Orr Brothers ditches, diverting from the Grenada Irrigation District Upper Drain Ditch. The points of diversion are within the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 35 T 44 N, R 6 W (see map sheet 116). The water available for diversion by these ditches is return flow from irrigation on the Grenada Irrigation District lands.

The water is diverted by means of wooden control gates constructed across the drain ditch below the intakes of the respective ditches. From these structures, the water is conveyed a short distance by earth ditches, and then flows at random over the Orr Brothers property in sections 26, 27, 34, and 35, T 44 N, R 6 W. The combined flow of the two diversions irrigates an area of 97.5 acres, of which, 3.5 acres have been described as sub-irrigated (see map sheet 116 and Acreage Table page 195).

Current meter measurements were taken on the ditches on April 30, 1923; A discharge of 0.28 second foot, which represents the normal irrigating head, was obtained on Diversion 368A. The maximum capacity of this ditch was computed and found to be 1.30 second feet. On Diversion 370, a discharge of 1.30 second feet was obtained. This discharge represents the normal irrigating head and also the maximum capacity of the ditch.

Diversion 371 is that of the Orr Brothers Ditch, diverting from Willow Creek in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 35 T 44 N, R 6 W. The point of diversion is

just below the point where the Grenada Irrigation District Upper Drain Ditch empties into Willow Creek (see map sheet 116).

The conduit is an earth ditch, about one mile in length, and serves an irrigated area of 156.4 acres (see map sheets 116 and 117 and Acreage Table page 196).

A current meter measurement was taken on the ditch on April 30, 1923, showing a discharge of 0.56 second foot. This discharge represents the normal irrigating head. The maximum capacity of the ditch was computed and found to be 0.80 second foot.

Diversions 372 and 373 are those of the Orr Brothers ditches, diverting from the Grenada Irrigation District Lower Drain Ditch. The points of diversion are within the SW¼ NW¼ Sec. 26 T 44 N, R 6 W (see map sheet 117). The water available for diversion by these ditches is return flow from irrigation on the lands within the boundaries of the Grenada Irrigation District.

Diversion is made by means of wooden control gates, constructed across the drain ditch below the intakes of the respective ditches. The conduits are earth ditches, each ditch being about 200 feet in length. From the ends of the ditches the water runs at random over the Orr Brothers property in sections 23 and 26 T 44 N, R 6 W. The combined flow of the two ditches is used for the irrigation of 103.2 acres (see map sheet 117 and Acreage Table page 196).

A current meter measurement was taken on Diversion 372 on April 30, 1923, showing a discharge of 0.33 second foot. This discharge represents the normal irrigating head. The maximum capacity of the

ditch was computed and found to be 1.20 second feet. No measurements were obtained on Diversion 373, as the ditch was not in use during the period covered by the field investigation.

It will be noted that the areas described as irrigated under Diversions 368A to 373, inclusive, are large in comparison with the normal irrigating heads measured in the respective ditches. This is accounted for by the fact that the areas also receive sub-irrigation from underground return flow from irrigation in the Grenada Irrigation District, and since it was impossible to segregate the area so sub-irrigated from that irrigated by direct diversion, the total area has been alloted to the several ditches. Dr. Charles S. Orr stated that prior to the construction of the Grenada Irrigation District drain ditches, this entire area was practically a swamp during the irrigation season.

In addition to the lands which have been described as irrigated under the Orr Brothers ditches (Diversions 365, and 367, to 373, inclusive), there is a sub-irrigated area of 246.1 acres on the Orr Brothers ranch, lying adjacent to Willow Creek, that can not be alloted to any of the above numbered ditches. This area, therefore, has been described as sub-irrigated from Willow Creek (see map sheets 69, 70, 107, 110, 114, 116, and 117, and Acreage Table pages 196 and 197).

<u>Diversions 374 to 379, inclusive</u>, are those of the Edson and Foulke Company ditches, diverting from White Slough, (see map sheets 118 and 120). White Slough is a stream, which heads in the NW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 20 T 44 N, R 5 W and flows westerly, for a distance of about two and one half miles, and thence northerly, for three fourths of a mile, to its

confluence with Shasta River at a point in the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 14 T 44 N, R 6 W. The stream is fed by springs and also receives some return flow from irrigation under the Big Springs Pumping Plant (Diversion 240).

The conduits are earth ditches, which during the irrigation season, divert the entire flow of the stream for use on the Edson and Foulke Company property in sections 19 and 20 T 44 N, R 5 W and section 24 T 44 N, R 6 W (see map sheets 118 and 120 and Acreage Table pages 80 and 81).

A summary giving the location of the point of diversion of, and the acreage irrigated under, each ditch, follows:

Diversion Number	Location of Point of Diversion	Total Acreage Irrigated
374	SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 20 T 44 N, R 5 W	92.4
375	SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 19 T 44 N, R 5 W	3.1
376	SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 19 T 44 N, R 5 W	2.8
377	SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 19 T 44 N, R 5 W	27.9
378	SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 24 T 44 N, R 6 W	6.7
379	SW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 24 T 44 N, R 6 W	1.2

In addition to the above acreages, there is an area of 198.0 acres of sub-irrigated land lying adjacent to the slough, which can not be alloted to the above ditches. This area, therefore, has been described as sub-irrigated from White Slough (see map sheets 118 and 120 and Acreage Table pages 81 and 82).

On June 17, 1922, current meter measurements were taken of the flows representing the normal irrigating heads of Diversions 374,

375, 377, and 379, respectively. From these measurements the maximum capacities of the respective ditches were computed. In the cases of Diversions 376 and 378 there was no water flowing in the ditches, therefore, no measurements were obtained. The maximum capacities of these ditches, however, were estimated to be the same as the maximum capacities for Diversions 375 and 379, respectively. A summary of the results obtained, follows:

Diversion Number	Normal Irrigating Head Second Feet	Maximum Capacity Second Feet
374	* 1.29	2.6
375	0.41	1.4
376		1.4
377	0.46	1.0
378		0.4
379	0.22	0.4

* The discharge of 1.29 second feet also represents the total flow of White Slough above all diversions.

Diversion 380 is that of the Hanley Ditch, diverting from a small fork of Guys Gulch, indicated on the map as Hanley Gulch. The point of diversion is within the NE¼ NE¼ Sec. 11 T 43 N, R 7 W (see map sheet 167).

The water is diverted from the creek into some ruts in the wagon road, and is conveyed thereby to the T. Hanley property in the NW¼ Sec. 12 T 43 N, R 7 W, where it spreads over an area of 4.7 acres of land (see map sheet 167 and Acreage Table page 115).

A float measurement was taken on the creek on May 27, 1922, showing a discharge of 0.15 second foot. This discharge represents the total flow available for diversion on the above date. No attempt was made to determine the maximum flow that could be diverted, as this quantity would be greatly in excess of the flow required to serve the

irrigable land under the system.

Diversions 381 to 388, inclusive, are those of the Lovelace ditches, diverting from Guys Gulch, and several small springs tributary thereto. The points of diversion are within section 1 T 43 N, R 7 W and section 6 T 43 N, R 6 W (see map sheet 168).

The conduits are short earth ditches, supplying water for irrigation on the E. Lovelace ranch in the above named sections (see map sheet 168 and Acreage Table pages 163 and 164).

A summary giving the location of the point of diversion of, and the acreage irrigated under, each ditch, follows:

Diversion Number	Location of Point of Diversion	Acreage Irrigated
381	SE¼ SE¼ Sec. 1 T 43 N, R 7 W	4.4
382	NE¼ SE¼ Sec. 1 T 43 N, R 7 W	2.7
383	Lot 7 Sec. 6 T 43 N, R 6 W	1.3
384	Lot 6 Sec. 6 T 43 N, R 6 W	1.7
385	Lot 6 Sec. 6 T 43 N, R 6 W	1.3
386	Lot 6 Sec. 6 T 43 N, R 6 W	0.5
387	Lot 5 Sec. 6 T 43 N, R 6 W	0.9
388	Lot 5 Sec. 6 T 43 N, R 6 W	0.4
	TOTAL	13.2

Float measurements were taken on the ditches in 1922 and 1923, showing the flow available for diversion by the respective ditches on the date of measurement. From these measurements, the maximum capacities of the ditches were computed. The results obtained are

given in the following summary.

Date	Diversion Number	Available Flow Second Feet	Maximum Capacity Second Feet
May 31, 1922	381	0.24	0.4
April 17,1923	381	0.10	
May 31, 1922	382	0.07	0.6
April 17,1923	382	0.10	
May 31, 1922	383	0.01	*
April 17,1923	383	0.01	
April 17,1923	384	0.06	0.2
May 31,1922	385	0.07	
May 31,1922	386	0.17	0.7
May 31,1922	387	0.03	
April 17,1923	387	0.039	0.039
May 31,1922	388	0.10	0.6
April 17,1923	388	0.02	

*Maximum capacity of Diversion 383 was not computed as measured discharge represents total flow of spring which supplies the ditch.

Diversions 389, 390, 392, and 393 are those of the J. F. Perry ditches, diverting from Guys Gulch. The points of diversion are within the NW¼ Sec. 31 T 44 N, R 6 W (see map sheet 169).

The conduits are earth ditches supplying water for irrigation on the J. F. Perry ranch in sections 30 and 31 T 44 N, R 6 W (see map sheets 169 and 170, and Acreage Table pages 202 and 203).

A summary giving the location of the point of diversion of each ditch and the acreage irrigated under the same, follows:

Diversion Number	Location of Point of Diversion	Acreage Irrigated
389	SW¼ NW¼ Sec. 31 T 44 N, R 6 W	0.2
390	SW¼ NW¼ Sec. 31 T 44 N, R 6 W	1.1
392	NW¼ NW¼ Sec. 31 T 44 N, R 6 W	1.3
393	NE¼ NW¼ Sec. 31 T 44 N, R 6 W	1.2

Float measurements were taken on the ditches in 1922 and 1923, showing the flows available for diversion by the respective ditches. From these measurements the maximum capacities of the ditches were computed. The results obtained are given in the following summary.

Date	Diversion Number	Available Flow Second Feet	Maximum Capacity Second Feet
May 31,1922	389	0.32	1.6
May 31,1922	390	0.05	
April 18,1923	390	0.26	1.3
May 31,1922	392	0.16	
April 18,1923	392	0.14	0.9
May 31,1922	393	0.13	0.4
April 18,1923	393	0.22	

Diversion 391 is that of the Webb Brothers Ditch, diverting from Guys Gulch in the NW¼ NW¼ Sec. 31 T 44 N, R 6 W (see map sheet 169).

The diversion conduit is a small earth ditch running northerly to a point about 300 feet below the intake, where the ditch empties into the Old Yreka Ditch. From this point, the water is conveyed by the latter ditch, across the J. F. Perry ranch in sections 30 and 31 T 44 N, R 6 W, to the Webb Brothers property in section 19 T 44 N, R 6 W, and thence by a lateral from the Old Yreka Ditch to the Webb Brothers Ditch (Diversion 413) from Schulmeyer Gulch. For the past several years there has been no irrigation on the Webb Brothers property under this ditch, due to the lack of sufficient water in Guys Gulch at the intake of the ditch. During the irrigation seasons of 1922 and 1923, the entire flow available for diversion by the ditch was used for irrigation on the J. F. Perry ranch, where 2.1 acres are served by the ditch (see map sheet 170 and Acreage Table page 203).

A float measurement was taken on the ditch on May 31, 1922,

and a current meter measurement was taken April 18, 1923, showing discharges of 0.47 second foot and 0.36 second foot, respectively. These discharges represent the available flow of the ditch on the respective dates. The maximum capacity of the ditch was computed and found to be 1.2 second feet.

Diversions 394 to 396, inclusive, are those of the Almeder Upper, Almeder Middle, and Almeder Lower ditches, respectively, diverting from Guys Gulch. The points of diversion are within the SE¼ SW¼, NW¼ SE¼, and NE¼ SE¼ Sec. 30 T 44 N, R 6 W, respectively (see map sheets 170 and 171).

The conduits are short earth ditches supplying water for irrigation on the J. H. Almeder ranch in section 30 T 44 N, R 6 W (see map sheets 170 and 171 and Acreage Table page 4). A summary of the data contained in the Acreage Table, follows:

Diversion Number	Acreage Irrigated
394	3.5
395	7.1
396	0.9

A summary of the results of float measurements taken on the ditches on May 31, 1922, showing the flow available for diversion by each ditch, and the computed maximum capacity of each ditch, follows:

Diversion Number	Available Flow Second Feet	Maximum Capacity Second Feet
394	0.19	1.9
395	0.32	2.1
396	0.10	0.7

Diversion 397 is that of the C. S. Orr Upper Ditch, diverting from a branch of Guys Gulch. The point of diversion is within the NW¼ NE¼ Sec. 29

T 44 N, R 6 W (see map sheet 171).

The conduit is an earth ditch about one mile in length, and serves an irrigated area of 63.3 acres (see map sheet 177 and Acreage Table page 198).

The ditch was not indicated as a diversion at the time the other C. S. Orr ditches were visited by the engineer on April 18, 1923, consequently no discharge measurements were obtained.

Diversion 398 is that of the C. S. Orr Lower Ditch, diverting from Guys Gulch in the NE¼ NE¼ Sec. 20 T 44 N, R 6 W. The point of diversion is about 100 feet downstream from the point where the State Highway crosses Guys Gulch (see map sheet 177).

The conduit is an earth ditch running east from the point of diversion along the north side of the stream and terminates in the NE¼ NW¼ Sec. 21 T 44 N, R 6 W. The ditch is about three fourths of a mile long, and serves an irrigated area of 20.4 acres (see map sheets 177 and 178, and Acreage Table page 198).

There was no water available for diversion by the ditch during the period covered by the field investigation, consequently no discharge measurements were obtained. The maximum capacity of the ditch, however, was computed and found to be 2.2 second feet.

Diversion 399 is that of the C. S. Orr East Ditch, diverting from Cram Gulch in the SE¼ NE¼ Sec. 20 T 44 N, R 6 W (see map sheet 177).

The conduit is an earth ditch about three fourths of a mile in length, and serves an irrigated area of 54.4 acres (see map sheets 177 and 178 and Acreage Table page 199).

There was no water available for diversion by the ditch during the period covered by the investigation, consequently no discharge measurements were obtained. The maximum capacity of the ditch, however, was computed and found to be 3.6 second feet.

Diversion 400 is that of the C. S. Orr House Ditch, diverting from Cram Gulch. The ditch diverts from the west bank of the stream in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 20 T 44 N, R 6 W, at a point about 100 feet down stream from Diversion 399 (see map sheet 177).

The conduit is an earth ditch about 750 feet in length, and conveys water for the irrigation of 9.1 acres of garden and orchard at the C. S. Orr residence in the E$\frac{1}{2}$ of the NE$\frac{1}{4}$ Sec. 20 T 44 N, R 6 W (see map sheet 177 and Acreage Table page 199).

The ditch was not indicated as a diversion at the time the other C. S. Orr ditches were visited by the engineer on April 18, 1923, consequently no measurements were obtained.

Diversion 401 is that of the Julian Pumping Plant, located at a well on the south bank of Julian Creek, in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 21 T 44 N, R 6 W. The well is supplied both by surface and underground flow from the creek (see map sheet 178).

The plant consists of a 6 inch Byron Jackson centrifugal pump operated by an electric motor. The motor, however, had been removed prior to the engineer's visit on April 17, 1923, and no data were obtained on the same. The water is pumped from the well through a lift of about 20 feet, to an earth ditch and wooden flume conduit, running south from the plant. From this conduit, the water is distributed

for irrigation on the Octavia Julian ranch in the NE$\frac{1}{4}$ Sec. 21 T 44 N, R 6 W. The plant has at some time served an irrigated area of 83.9 acres. This area, however, was not irrigated in 1922 or 1923, due to lack of sufficient water in Guys Gulch (see map sheet 178 and Acreage Table page 134).

The plant was not in operation during the period covered by the field investigation, consequently no discharge measurements were obtained.

Diversion 402 is that of the Julian Ditch, diverting from an unnamed fork of Julian Creek. The point of diversion is within the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 21 T 44 N, R 6 W (see map sheet 178).

Diversion is made into an earth conduit from a small regulatory reservoir, which has been created by placing a small dam across the stream. The ditch is about three fourth of a mile in length, and serves an irrigated area of 55.3 acres (see map sheets 121 and 178 and Acreage Table pages 134 and 135).

No discharge measurements were taken on the ditch, as there was insufficient water in the pond to fill the ditch at the time of the engineer's visit on April 17, 1923, or subsequent thereto, during the period covered by the field investigation.

Diversions 403 to 408, inclusive are those of the Bray ditches, diverting from Schulmeyer Gulch in sections 22 and 27 T 44 N, R 7 W (see map sheet 172).

The conduits are short earth ditches supplying water for irrigation on the G. K. Bray ranch in the east one half of section 22

T 44 N, R 7 W (see map sheets 172 and 173 and Acreage Table page 25).

A summary showing the location of the point of diversion of each ditch and the acreage irrigated under each ditch, follows:

Diversion Number	Location of Point of Diversion	Acreage Irrigated
403	NW¼ NE¼ Sec. 27 T 44 N, R 7 W	5.8
404	NW¼ SE¼ Sec. 22 T 44 N, R 7 W	5.4
405	NW¼ SE¼ Sec. 22 T 44 N, R 7 W	5.6
406	NW¼ SE¼ Sec. 22 T 44 N, R 7 W	2.1
407	NE¼ SE¼ Sec. 22 T 44 N, R 7 W	4.6
408	SE¼ NE¼ Sec. 22 T 44 N, R 7 W	12.0
	TOTAL	35.5

On May 26, 1922, a float measurement was taken on Diversion 403 and a current meter measurement was taken on Diversion 408. There was no water available for diversion by the remaining ditches on that date. On April 16, 1923, current meter measurements were taken on all the ditches, excepting Diversion 405, which was not in use, and Diversion 407, the flow of which was estimated. From the measurements taken in 1923, the maximum capacities of the respective ditches were computed. A summary of the results obtained by these measurements, follows:

Date	Diversion Number	Available Flow Second Feet	Maximum Capacity Second Feet
May 26, 1922	403	0.41	
April 16,1923	403	0.31	0.9
April 16,1923	404	0.25	1.4
April 16,1923	405 *		
April 16,1923	406	0.43	1.5
April 16,1923	407	0.10	0.2
May 26,1922	408	0.53	
April 16,1923	408	0.26	1.5

*Ditch not in use during 1923.

Diversions 409 and 410 are those of the Charles Schock Upper and Charles Schock Lower ditches, diverting from Schulmeyer Gulch in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 14 and the NW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 14 T 44 N, R 7 W, respectively (see map sheet 174).

The conduits are earth ditches, each about one fourth of a mile in length. The Upper Ditch serves an irrigated area of 10.7 acres on the north side of Schulmeyer Gulch, and the Lower Ditch irrigates an area of 6.6 acres on the south side of the stream, (see map sheet 174 and Acreage Table page 213).

A float measurement was taken May 26, 1922, and a current meter measurement was taken April 16, 1923, on the Upper Ditch, showing discharges of 0.27 second foot and 0.38 second foot, respectively. These discharges represent the flows available for diversion on the respective dates. The maximum capacity of the ditch was computed from the measurement taken in 1923 and found to be 2.2 second feet.

The Lower Ditch was not in use during 1922, consequently no discharge measurements were obtained that year. On April 16, 1923, a current meter measurement was taken on the ditch, showing a discharge of 0.21 second foot. This discharge represents the flow available for diversion on the above date. The maximum capacity of the ditch was computed and found to be 1.2 second feet.

Diversion 411 is that of the Wm. Schock Ditch, diverting from the north bank of Schulmeyer Gulch in the NW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 13 T 44 N, R 7 W (see map sheet 175).

The conduit is an earth ditch,about 1200 feet in length, and serves an irrigated area of 4.0 acres (see map sheet 175 and Acreage

Table page 213).

The ditch was not indicated as a diversion when the other Schock ditches were being measured, consequently no discharge measurements were obtained.

Diversion 412 is that of the Wm. Black Ditch, diverting from the north bank of Schulmeyer Gulch in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 13 T 44 N, R 7 W (see map sheet 175).

The conduit is an earth ditch about one fourth of a mile long, and serves an irrigated area of 2.2 acres (see map sheet 175 and Acreage Table page 25).

The ditch was not in use in 1923, and no discharge measurements were obtained.

Diversion 413 is that of the Webb Brothers Ditch, diverting from the south bank of Schulmeyer Gulch in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 18 T 44 N, R 6 W (see map sheet 175).

The conduit is an earth ditch, about one mile in length, running easterly from the point of diversion to the southeast corner of section 17 T 44 N, R 6 W. Water from the Webb Brothers Ditch (Diversion 391) from Guys Gulch, enters the ditch at a point about one fourth of a mile below the intake. The ditch serves an area of 69.2 acres of grain land (see map sheets 175 and 176 and Acreage Table pages 264 and 265). This area was not irrigated in 1923, and had not been irrigated for several years, prior thereto, due to lack of water in Schulmeyer and Guys gulches.

The ditch was not in use during the period covered by the

field investigation, consequently no discharge measurements were obtained. the maximum capacity of the ditch was computed, from hydraulic data obtained in the field, and found to be 3.9 second feet.

Diversion 414 is that of the Julian Ditch, diverting from Cottonwood Creek. The point of diversion is located 40 feet east of the quarter corner common to sections 16 and 17 T 44 N, R 6 W (see map sheet 179).

The conduit is an earth ditch, about one mile in length, running parallel to and along the south bank of the creek. The water is distributed by the main ditch and by two laterals, running southerly therefrom, for the irrigation of 162.4 acres on the O. Julian, et al property, in the S½ Sec. 16 T 44 N, R 6 W (see map sheet 179 and Acreage Table page 134). This area was not irrigated in 1923, and had not been irrigated for several years, prior thereto, due to lack of water in Cottonwood Creek.

The ditch was not in use during the period covered by the field investigation, but from hydraulic data obtained in the field, the maximum capacity of the ditch was computed and found to be 19.7 second feet.

Diversion 415 is that of the Julian Ditch, diverting from Julian Creek in the SW¼ NW¼ Sec. 22 T 44 N, R 6 W (see map sheet 178).

The conduit is an earth ditch, about 1800 feet in length, and serves an irrigated area of 43.5 acres (see map sheets 121 and 178, and Acreage Table page 135).

A float measurement was taken on the ditch on April 17, 1923, showing a discharge of 0.13 second foot. This discharge represents the flow available for diversion on that date. The maximum capacity of the

ditch was estimated to be about 15.0 second feet.

Diversion 416 is that of the Edmonds and Hudson Ditch, diverting from a slough on the east bank of Shasta River in the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 11 T 44 N, R 6 W (see map sheet 122).

Diversion is made by means of a low, loose rock dam across the river just below the intake of a natural slough. The water is conveyed by the slough to a point 600 feet below the dam. At this point, the water is diverted into an earth ditch, by a dam across the slough. The ditch is about two miles in length, runs parallel to the river, and terminates at the north line of the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 3 T 44 N, R 6 W. A lateral, diverting from the main ditch at a point about three fourths of a mile below the head of the ditch, crosses the river and runs parallel to the main ditch on the west side of the river. There is a total irrigated area of 93.0 acres under the ditch, of which, 91.7 acres, owned by Edmonds and Hudson, are irrigated, and 1.3 acres, owned by Joe Enos, are sub-irrigated (see map sheets 122 and 123 to 125, inclusive, and Acreage Table pages 68, 69, and 83).

A current meter measurement was taken on the ditch on July 12, 1922, showing a discharge of 3.37 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head.

The results of measurements taken in 1912, and available through O.E.S. Bulletin 254, which designates this ditch as the Gilpin Ditch, show discharges of 0.98 second foot and 0.64 second foot on June 24 and July 15, respectively, and that the ditch was dry on July 6 and on July 30.

Diversion 417 is that of the Joe Enos Pumping Plant, diverting from Shasta River in the NW¼ NW¼ Sec. 11 T 44 N, R 6 W (see map sheet 123).

The plant consists of a 4 inch Krogh centrifugal pump, direct connected to a 10 horsepower Westinghouse motor. The suction pipe is a 6 inch diameter steel pipe, about 13 feet in length. The discharge pipe is an 8 inch diameter wood stave pipe, 345 feet in length. The plant operates under a static head of about 35 feet. From the end of the discharge pipe, the water is distributed by a system of earth ditches, which traverse the Joe Enos ranch, for the irrigation of 87.3 acres. Of this area, 5.2 acres have been described as sub-irrigated, (see map sheet 123 and Acreage Table page 84).

A current meter measurement was taken on the ditch below the end of the discharge pipe on June 26, 1922, showing a discharge of 1.27 second feet. This discharge represents the normal irrigating head and also the maximum capacity of the plant.

The total diversions by the plant, in terms of acre feet, for the irrigation seasons of 1922 and 1923, respectively, are given in Table 71, submitted at the end of this report.

Diversion 418 is that of the Edmonds and Hudson Pumping Plant, diverting from Shasta River. The point of diversion is located about 45 feet east of the southwest corner of section 2, T 44 N, R 6 W (see map sheet 124).

The plant consists of a 6 inch Krogh centrifugal pump, direct connected to a 25 horsepower Allis Chalmers motor. The suction pipe is an 8 inch diameter steel pipe, 24 feet in length. The discharge pipe is a 10 inch diameter wood stave pipe, 300 feet in length. The plant

operates under a static head of about 60 feet. The water is discharged into a short main ditch, and is conveyed thereby to a point 300 feet northeast of the end of the pipe line. From this point, the water is distributed for irrigation on the Edmonds and Hudson ranch by two earth ditch laterals, one of which runs easterly for a distance of about one mile, and the other of which runs westerly for a distance of about one half of a mile. The plant serves an irrigated area of 125.4 acres (see map sheet 124 and Acreage Table page 69).

A current meter measurement was taken on the main ditch on June 10, 1922, showing a discharge of 2.33 second feet. This discharge represents the normal irrigating head and also the maximum capacity of the pumping plant.

Diversion 419 is that of the Shasta River Water Users Association Pumping Plant. The plant is located on the west bank of Shasta River in the SW¼ SW¼ Sec. 3 T 44 N, R 6 W (see map sheet 125).

A low concrete dam, provided with wooden flash boards, constructed across Shasta River at a point about 700 feet below the plant, serves to back the water up to the required level at the pump sump. This dam was completed in September, 1923, and replaced a timber dam, located about 350 feet upstream, which served the same purpose.

The plant consists of two units, herein designated as the High Line and Low Line units, respectively.

The High Line unit is a 12 inch Worthington Volute pump, direct connected to a 225 horsepower induction motor. The suction pipe is an 18 inch diameter steel pipe, 8 feet in length. The discharge pipe is a 24 inch diameter wood stave pipe, 1970 feet in length. The unit operates

under an average static head of about 108 feet, and discharges into the High Line Canal.

The Low Line unit is a 16 inch Worthington Volute pump, direct connected to a 325 horsepower induction motor. The suction pipe is a 24 inch diameter steel pipe, 8 feet in length. The discharge pipe is a 36 inch diameter wood stave pipe, 1703 feet in length. The unit operates under an average static head of about 78 feet, and discharges into the Low Line Canal. The High Line Canal has a total length of about seven miles, and extends northwesterly and southeasterly from the end of the discharge pipe for distances of about three miles and four miles, respectively. The Low Line Canal is about nine miles long, and runs, roughly parallel to the High Line Canal, northwesterly and southeasterly from the end of the discharge pipe for distances of about six miles and about three miles, respectively.

The system serves an irrigated area of 3400.7 acres of land (see map sheets 117, 121, 122, 123, 125, 126, 127, 129, 130, 132, 133, and 134 and Acreage Table pages 214 to 230, inclusive). Of this area 64.2 acres, owned by the Edson and Foulke Company, has been described as sub-irrigated.

This irrigated area is held in separate tracts under the ownership of thirty-seven water users, who comprise the Shasta River Water Users Association. Two of these tracts, that of 425.6 acres owned by G. W. Dwinell, and that of 822.2 acres owned by the Edson and Foulke Company, comprise about thirty-seven percent of the total irrigated area. The remaining thirty-five tracts range in size from 7.9 acres to 216.9 acres, the average tract being about 60 acres. Alfalfa is the principal irrigated crop.

The use of water is rotated between the members of the Association, each user receiving his pro rata share of the water, in turn,

during successive irrigations throughout the season. The water is pro rated on the basis of the users acreage under the system.

The above described irrigated area is for the most part moderately sloping or rolling hill land. The wild flooding method of irrigation is used, and there is a considerable return flow from irrigation. This return flow finds it way into numerous small channels, tributary to Shasta River, from which, it is diverted for irrigation on lands owned by non-members of the Association, or is returned to Shasta River.

The areas irrigated by this return flow have been described in the Acreage Table under the names of the respective users, but have not been included in the total acreage irrigated under the Shasta River Water Users Association Pumping Plant. A summary of the data contained in the Acreage Table, follows:

Name of Owner	Acreage Irrigated	Map Sheet	Acreage Table Page
Edmonds and Hudson	13.8	125	70
King, E. W.	39.0	125,129	145 to 147
Magoffey, Nettie King	0.8	133	165
Sequeria, John	2.3	136	213
TOTAL	55.9		

The results of current meter measurements taken on the High Line and Low Line canals, below the ends of the respective discharge pipes, during 1922 and 1923, follow:

Date	High Line Discharge Second Feet	Low Line Discharge Second Feet	Plant Discharge Second Feet
June 26,1922	13.95	28.10	42.05
April 20,1923)		26.56	
April 21,1923)	12.99		39.55

Records of the total diversions by the plant, in terms of acre feet, for the irrigation seasons of 1922 and 1923, respectively, are given in Table 71 submitted at the end of this report.

Diversion 420 is that of the Edmonds and Hudson Ditch, which picks up leakage from the Shasta River Water Users Association pipe lines. The point of diversion is within the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 3, T 44 N, R 6 W (see map sheet 125).

The conduit is an earth ditch, running southeast from the pipe line, and serves an irrigated area of 4.6 acres on the Edmonds and Hudson ranch (see map sheet 125 and Acreage Table page 70).

A float measurement was taken on the ditch on June 28, 1922, showing a discharge of 0.21 second foot. This discharge represents the available flow and the normal irrigating head of the ditch.

The lateral, from the Edmonds and Hudson Ditch (Diversion 416), which crosses the Shasta River Water Users Association pipe lines, also diverts water leaking from the pipe lines. The water so diverted is used in common with that supplied from the Edmonds and Hudson Ditch, and the acreage served has been included under the latter ditch. A measurement of the flow, entering the lateral at the pipe line crossing, was taken on June 27, 1922, showing a discharge of 0.23 second foot. This discharge represents the flow, normally tributary to the lateral, from the pipe lines.

Diversion 421 is that of the King Ditch, diverting from Shasta River in the NW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 3 T 44 N, R 6 W (see map sheet 125).

The diversion conduit is a 16 inch diameter buried pipe line,

150 feet in length, heading on the west bank of the river at the timber dam, described under Diversion 419. From the end of the pipe line, the water is conveyed by an earth ditch to the G. W. King ranch, and is used for the irrigation of 67.0 acres (see map sheets 125 and 129 and Acreage Table pages 144 and 145).

Current meter measurements were taken on the ditch on November 16, 1922, and April 27, 1923, showing discharges of 1.37 second feet and 2.53 second feet, respectively. The discharge, of 2.53 second feet, represents the maximum capacity of the ditch and also the normal irrigating head, as stated by G. W. King.

The results of measurements taken on the ditch during 1912, and available through O.E.S. Bulletin 254, follow:

Date	Discharge in Second Feet
June 24	0.27
July 6	1.04
July 15	1.04
July 30	1.25

Diversion 422 is that of the King Ditch, diverting from the east bank of Shasta River in the NE¼ SW¼ Sec. 3 T 44 N, R 6 W (see map sheet 125).

The conduit system consists of a natural slough, and an artificial ditch diverting therefrom. The system serves an irrigated area of 3.3 acres (see map sheet 125 and Acreage Table page 145).

The ditch was in very poor shape, and from appearances, had not been used for several years. The maximum capacity of the ditch, however, was computed and found to be 0.81 second foot.

Diversion 423 is that of the Edmonds and Hudson Ditch, diverting from

a small ravine, which carries return water from irrigation on the lands of the Shasta River Water Users Association. The point of diversion is within the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 4 T 44 N, R 6 W (see map sheet 125).

The conduit is an earth ditch, about 700 feet in length, and serves an irrigated area of 5.9 acres on the Edmonds and Hudson ranch (see map sheet 125 and Acreage Table page 70).

A float measurement was taken on the ditch on September 29, 1923, showing a discharge of 0.84 second feot. This discharge represents the normal flow of the ditch. The maximum capacity of the ditch was computed and found to be 2.9 second feet.

In addition to the areas irrigated under the Edmonds and Hudson ditches (Diversion 420 and 423), there is an area of 3.3 acres on the Edmonds and Hudson ranch, which is also irrigated by return flow from irrigation on the Shasta River Water Users Association lands, but has not been alloted to any ditch. This area is described in the Acreage Table as irrigated by return water from the Shasta River Water Users Association System (see map sheet 125 and Acreage Table page 70).

Diversions 424 to 428, inclusive, are those of the King ditches, diverting from several small ravines, which carry return flow from irrigation under the Shasta River Water Users Association System. The conduits are short earth ditches, which supply water for irrigation on the G. W. King ranch in sections 3 and 4, T 44 N, R 6 W and section 33 T 45 N, R 6 W (see map sheets 125 and 129 and Acreage Table pages 145 and 146).

A summary giving the location of the point of diversion of

each ditch and the acreage irrigated under each ditch, follows:

Diversion Number	Location of Point of Diversion	Acreage Irrigated
424	SE¼ NE¼ Sec. 4 T 44 N, R 6 W	3.0
425	NE¼ NE¼ Sec. 4 T 44 N, R 6 W	16.1
426	NE¼ NE¼ Sec. 4 T 44 N, R 6 W	1.0
427	SE¼ SE¼ Sec. 33 T 45 N, R 6 W	1.6
428	SE¼ SE¼ Sec. 33 T 45 N, R 6 W	2.2

The results of measurements obtained on these ditches during 1922 and 1923, follow:

Date	Diversion Number	Discharge Second Feet	Remarks
Sept.29, 1923	424	(a) 0.44	Normal irrigating head.
July 17,1922	425	(b) 1.18	Maximum capacity.
July 17,1922	427	(b) 1.42	Maximum capacity.
November 30,1923	428	(c) 1.90	Maximum capacity.

(a) Float measurement.
(b) Current meter measurement.
(c) Computed.

Diversion 426 was in very poor shape, consequently no measurements were obtained thereon.

Diversions 429 and 430 are those of the Martin Dairy Upper and Martin Dairy Lower ditches, diverting from the North Fork of Little Shasta River. The points of diversion are within the SE¼ SE¼ Sec. 28 T 46 N, R 3 W, (see map sheet 140). The ditches are owned by Mrs. I. A. Martin.

The conduits are short earth ditches and run northeasterly along the north and south sides of the stream, respectively. The

Martin Dairy Upper Ditch serves an irrigated area of 9.4 acres, and the Martin Dairy Lower Ditch serves an irrigated area of 4.2 acres (see map sheet 140 and Acreage Table page 171).

Current meter measurements were taken on the ditches on July 26, 1923, showing a discharge of 0.41 second foot for the upper ditch, and a discharge of 0.46 second foot for the lower ditch. These discharges represent the normal irrigating heads of the respective ditches. The discharge of 0.46 second foot also represents the total flow available for the two ditches, at the time the measurement was taken.

Diversion 431 is that of the United States Forest Service Ditch, diverting from a spring at the head of an unnamed fork of Little Shasta River. The point of diversion is within the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 22 T 46 N, R 3 W (see map sheet 140).

The conduit system consists of a natural channel leading from the spring, and two short earth ditch laterals, diverting therefrom. The system serves an irrigated area of 8.3 acres at the Little Shasta Ranger Station (see map sheet 140 and Acreage Table page 262). Water from the spring is also used for domestic purposes at the ranger station.

At the time of the engineer's visit on July 26, 1923, there was no water available for diversion by the ditch. The flow of the spring, however, was measured and found to be 0.003 second foot.

Diversions 432 to 434, inclusive, are those of the Smith ditches, diverting from several small streams tributary to and near the head waters of the South Fork of Little Shasta River. The points of diversion are within the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 14, SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 14, and SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 14, T 45

N, R 3 W, respectively (see map sheet 140).

The conduits are short earth ditches supplying water for the irrigation of 9.2 acres, 16.4 acres, and 4.7 acres, respectively, on the Cordia V. Smith Estate property, in sections 14 and 15 T 45 N, R 3 W (see map sheet 140 and Acreage Table page 237).

There was no water available for diversion by Diversion 432 at the time of the engineer's visit on July 25, 1923, consequently no discharge measurements were obtained. On the same date, a volumetric measurement was taken on Diversion 433, showing a discharge of 0.05 second foot. This discharge represents the maximum capacities of Diversions 433 and 434, and also the total flow of the spring, which supplies these ditches.

Diversion 435 is that of the Smith Ditch, diverting from the South Fork of Little Shasta River in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 15 T 45 N, R 3 W (see map sheet 140).

The conduit is an earth ditch, diverting from the west bank of the stream, and is about one fourth of a mile in length. The ditch serves an irrigated area of 8.2 acres on the Cordia V. Smith Estate property, in section 15 T 45 N, R 3 W (see map sheet 140 and Acreage Table pages 237 and 238).

A current meter measurement was taken on the ditch on July 25, 1923, showing a discharge of 0.37 second foot. This discharge represents the total flow available for diversion by the ditch on the above date.

Diversion 436 is that of the R. Mills Ditch, diverting from the west

bank of Little Shasta River in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 8 T 45 N, R 3 W (see map sheet 142).

The ditch is now owned by Charles Soule, but is operated by R. Mills, former owner, who holds a life lease. On the maps and in the Acreage Table the property, served by the ditch, is given under the name of Charles Soule. This is also the status of ownership and operation of the other R. Mills ditches (Diversions 437 to 443, inclusive), which are described below.

The conduit is an earth ditch, about one half of a mile in length, and serves an irrigated area of 24.0 acres (see map sheet 142 and Acreage Table page 242).

Two current meter measurements were taken on the ditch on July 24, 1923, showing discharges of 0.31 second foot and 0.63 second foot, respectively. The discharge, of 0.31 second foot, represents the normal irrigating head, while that, of 0.63 second foot, represents the maximum capacity of the ditch.

Diversion 437 is that of the R. Mills Ditch, diverting from the east side of Little Shasta River in the SW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 8 T 45 N, R 3 W (see map sheet 142).

The conduit is an earth ditch, about one half of a mile long, and serves an irrigated area of 14.8 acres (see map sheet 142 and Acreage Table page 242). The ditch also supplies water for domestic use at the R. Mills houses, in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 8 T 45 N, R 3 W.

A current meter measurement was taken on the ditch on July 24, 1923, showing a discharge of 2.14 second feet. This discharge represents the flow available for diversion by the ditch on the above

date. The maximum capacity of the ditch was computed and found to be 4.7 second feet.

Diversions 438 to 442, inclusive, are those of the R. Mills ditches, diverting from Little Shasta River. The points of diversion are within the SW¼ NE¼ Sec. 8 T 45 N, R 3 W (see map sheet 142).

The conduits are short earth ditches, supplying water for the irrigation of lands in the SW¼ NE¼ and the SE¼ NW¼ Sec. 8 T 45 N, R 3 W (see map sheet 142 and Acreage Table pages 242 and 243). A summary of the data contained in the Acreage Table, follows:

Diversion Number	Acreage Irrigated
438	2.6
439) 440) 441)	7.7
442	1.3

The results of measurements taken on the ditches on July 24, 1923, follow:

Diversion Number	Discharge Second Feet	Remarks
438	(a) 0.27	Normal irrigating head and maximum capacity.
439	(c)	No measurement.
440	(b) 0.15	Available flow.
441	(c)	No measurement.
442	(a) 0.56	Normal irrigating head and maximum capacity.

(a) Current meter measurement.
(b) Float measurement.
(c) Ditches not in shape to divert water

Diversion 443 is that of the R. Mills Ditch, diverting from an unnamed fork of Little Shasta River. The point of diversion is within the NE¼ SW¼ Sec. 8 T 45 N, R 3 W (see map sheet 142).

The conduit is an earth ditch, about 850 feet in length, and serves an irrigated area of 4.7 acres (see map sheet 142 and Acreage Table page 243).

A current meter measurement was taken on the ditch on July 24, 1923, showing a discharge of 0.24 second foot. This discharge represents the maximum capacity of the ditch, and also the total flow available for diversion on the above date.

Diversion 444 is that of the Loosley Mill Ditch, diverting from Little Shasta River in the SE¼ NW¼ Sec. 8 T 45 N, R 3 W (see map sheet 142).

The conduit is an earth ditch, about one half of a mile in length, and conveys water to the Loosley Saw Mill, in the SE¼ NE¼ Sec. 7 T 45 N, R 3 W, where it is used for various mill purposes.

A current meter measurement was taken on the ditch on July 24, 1923, showing a discharge of 0.46 second foot. This discharge represents the maximum capacity and the normal flow of the ditch.

Diversion 445 is that of the Loosley Mill Ditch, diverting from a spring located in the SW¼ SE¼ Sec. 6 T 45 N, R 3 W (see map sheet 142).

The conduit is an earth ditch, about one half of a mile long, and conveys water to the Loosley Mill, where it is used for domestic purposes and various mill uses.

A current meter measurement was taken on the ditch on July 24, 1923, showing a discharge of 0.16 second foot. This discharge represents the maximum capacity and the normal flow of the ditch.

Diversion 446 is that of the Hudson Ditch, diverting from Little Shasta

River in the SW¼ SE¼ Sec. 12 T 45 N, R 4 W (see map sheet 141).

The conduit is an earth ditch, heading on the south bank of the river. At a point about 150 feet below the intake, the ditch crosses to the north side of the stream, and runs westerly and northerly to NW¼ SW¼ Sec. 12 T 45 N, R 4 W. The ditch is about one mile long, and serves an irrigated area of 12.7 acres (see map sheet 141 and Acreage Table page 127). This area was not irrigated in 1923 and had not been irrigated for three years prior thereto.

The ditch was not in use during the period covered by the field investigation, consequently no discharge measurements were obtained. The maximum capacity of a flume section, near the head of the ditch, was computed and found to be 3.7 second feet.

Diversion 447 is that of the Hudson Ditch, diverting from Little Shasta River in the SE¼ SW¼ Sec. 12 T 45 N, R 4 W (see map sheet 141).

The conduit is an earth ditch, heading on the north bank of the river. At a point 100 feet below the intake, the ditch crosses to the south side of the river, by means of a short flume, 1.3 feet wide by 1.25 feet deep, and runs southwesterly to a point near the northwest corner of section 13 T 45 N, R 4 W. The ditch has a total length of about one half of a mile, and serves an irrigated area of 12.2 acres (see map sheet 141 and Acreage Table page 127). This area was not irrigated in 1923 and had not been irrigated for three years prior thereto.

The ditch was not in use during the period covered by the field investigation, consequently no discharge measurements were

obtained. The maximum capacity of the flume, below the head of the ditch, was computed and found to be 3.3 second feet.

Diversion 448 is that of the S. F. Terwilliger Ditch, diverting from the south bank of Little Shasta River in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 16 T 45 N, R 4 W (see map sheet 143).

The conduit is an earth ditch, about 1000 feet in length, and serves an area of 1.8 acres. S. F. Terwilliger stated that this area was last irrigated in 1920 (see map sheet 143 and Acreage Table page 260).

The ditch was not in use during the period covered by the field investigation, consequently no discharge measurements were obtained.

Diversion 449 is that of the S. F. Terwilliger Ditch, diverting from the north bank of Little Shasta River in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 16 T 45 N, R 4 W. The point of diversion is about 1200 feet down stream from Diversion 448, (see map sheet 143).

The conduit is an earth ditch, about three and one half miles in length, running westerly from the point of diversion and terminating in the SW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 18 T 45 N, R 4 W. The ditch serves an irrigated area of 105.1 acres (see map sheets 144 and 145 and Acreage Table page 260).

A current meter measurement was taken on the ditch on July 13, 1922, showing a discharge of 0.90 second foot. This discharge represents the normal irrigating head as stated by S. F. Terwilliger. A second current meter measurement was taken on the ditch on April 30, 1923, showing a discharge of 2.63 second feet. This discharge represents

the maximum capacity of the ditch, as the flume below the intake of the ditch was running full when the measurement was taken.

The result of a measurement taken on the ditch during 1912, and available through O.E.S. Bulletin 254, shows a discharge of 1.89 second feet. This discharge represents the "maximum measured diversion in 1912".

Diversion 450 is that of the S. F. Terwilliger Ditch, diverting from the north bank of Little Shasta River in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 17 T 45 N, R 4 W (see map sheet 144).

The conduit is an earth ditch about 1100 feet in length, and at one time served an irrigated area of 2.1 acres (see map sheet 144 and Acreage Table page 261). S. F. Terwilliger, the owner of this property, stated that this area was last irrigated in about 1916.

The ditch was not in use during the period covered by the field investigation, consequently no discharge measurements were obtained.

Diversion 451 is that of the S. F. Terwilliger Ditch, diverting from the north bank of Little Shasta River in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 20 T 45 N, R 4 W (see map sheet 145).

The conduit is an earth ditch, about one mile in length, running west from the point of diversion to the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 19 T 45 N, R 4 W. At a point 350 feet below the intake, water diverted from Cleland Spring, by the S. F. Terwilliger Ditch (Diversion 452), enters the ditch. The water diverted from the two sources is used in common for the irrigation of 29.9 acres (see map sheet 145 and Acreage Table page 261). The water is also used for power development purposes at

the S. F. Terwilliger electric lighting plant in the NW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 20 T 45 N, R 4 W (see map sheet 145).

Two current meter measurements were taken on the ditch, at a point about 75 feet below the intake, on July 13, 1922, showing discharges of 2.03 second feet and 3.68 second feet, respectively. The discharge, of 2.03 second feet, represents the normal irrigating head, and the discharge, of 3.68 second feet, represents the maximum capacity of the ditch.

Diversion 452 is that of the S. F. Terwilliger Ditch, diverting from Cleland Spring. The point of diversion is located in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec.20 T 45 N, R 4 W (see map sheet 145).

The conduit is an earth ditch, running west, for a distance of about one fourth of a mile, to Little Shasta River, and thence southwest, along the south bank of the river, to the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 19 T 45 N, R 4 W. At the point where the ditch turns southwest along the river, a flume diverting from the ditch crosses Little Shasta River and empties into the S. F. Terwilliger Ditch (Diversion 451). The water diverted by the ditch is used for the irrigation of 32.0 acres of land on the south side of the river, in addition to the use described under Diversion 451 (see map sheet 145 and Acreage Table page 261).

Current meter measurements were taken on the ditch on July 13, and July 27, 1922, showing discharges of 3.42 second feet and 3.06 second feet, respectively. The maximum capacity of the ditch was computed and found to be 12.8 second feet.

The result of a measurement taken on the ditch during 1912, and available through O.E.S. Bulletin 254, shows a discharge of 8.4 second

feet. This discharge represents the "maximum measured diversion in 1912".

Diversions 453 and 454 are those of the S. F. Terwilliger ditches, diverting from small branches of Cleland Spring. The points of diversion are within the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 20 T 45 N, R 4 W (see map sheet 145).

The conduits are short earth ditches, and serve irrigated areas of 13.5 acres and 6.4 acres, respectively (see map sheet 145 and Acreage Table page 262).

A current meter measurement was taken on each ditch on June 19, 1923, showing discharges of 0.81 second foot and 0.46 second foot, respectively. These discharges represent the maximum capacities of the respective ditches and also the normal irrigating heads, as stated by S. F. Terwilliger.

Diversion 455 is that of the I. A. Martin Ditch, diverting from Cleland Spring. The point of diversion is within the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 20 T 45 N, R 4 W (see map sheet 145).

The conduit is an earth ditch, running southwesterly along the north slope of Table Rock, and thence southerly, crossing Evans Spring Creek at a point in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 19 T 45 N, R 4 W, to the Bassey Spring Creek crossing, near the center of section 30 T 45 N, R 4 W. From this latter point, the water diverted from Cleland Spring, together with additional water, which enters the ditch from Evans Spring and Bassey Spring creeks, is divided into several laterals and is distributed therefrom for irrigation on the Mrs. I. A. Martin ranch. The ditch serves an irrigated area of 888.7 acres, of which 2.4 acres have been described as sub-irrigated (see map sheets 147, 149, 151, and 152

and Acreage Table pages 166 to 169, inclusive).

Current meter measurements were taken on the ditch on July 27, 1922 and August 18, 1922, showing discharges of 5.69 second feet and 3.54 second feet, respectively. The maximum capacity of the ditch was computed and found to be 11.5 second feet. The flows entering the ditch from Evans Spring Creek and Bassey Spring Creek were measured on August 18, 1922, showing discharges of 0.45 second foot and 2.09 second feet respectively.

The result of a measurement taken on the ditch during 1912, and available through O.E.S. Bulletin 254, which designates this ditch as the Haight, Deter, and Kegg Ditch, shows a discharge of 8.17 second feet. This discharge represents the "maximum measured diversion in 1912".

Diversion 456 is that of the Dimmick Ditch, diverting from Little Shasta River in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 19 T 45 N, R 4 W (see map sheet 154).

The conduit is an earth ditch, about three fourths of a mile in length, running southwesterly along the north side of the river to the E. D. Dimmick property, in the E$\frac{1}{2}$ SE$\frac{1}{4}$ Sec. 24 T 45 N, R 5 W. The ditch serves an irrigated area of 6.0 acres (see map sheet 154 and Acreage Table pages 51 and 52).

A current meter measurement was taken on the ditch on May 1, 1923, showing a discharge of 0.25 second foot. This discharge represents the maximum capacity of the ditch. E. D. Dimmick stated that the ditch had a right, by court decree, to six miners inches measured under a four inch pressure, and that this decreed flow was normally diverted by the ditch.

The result of a measurement taken on the ditch during 1912, and available through O.E.S. Bulletin 254, shows a "maximum measured diversion" of 0.43 second foot.

Diversion 457 is that of the Soule and Terwilliger Ditch, diverting from Little Shasta River in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 19 T 45 N, R 4 W (see map sheet 154). The ditch is owned by E. C. Soule and E. D. Terwilliger.

The conduit is an earth ditch cut into the west bank of the river on a level with the stream bed. As the water in the river drops, a few loose rocks placed in the stream channel serve to divert the water into the ditch. The ditch is provided with a wooden control gate at the intake. From the intake, the ditch runs westerly, for a distance of about three miles, terminating on the E. D. Terwilliger ranch, in the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 22 T 45 N, R 5 W. The ditch serves an irrigated area of 620.0 acres, of which, 251.2 acres are owned by E. C. Soule and 368.8 acres are owned by E. D. Terwilliger (see map sheets 153, 154, 155, and 161, and Acreage Table pages 243, 244, 258, and 259).

A current meter measurement was taken on the ditch on July 24, 1922, showing a discharge of 6.58 second feet. This discharge represents the maximum capacity of the ditch and also the head normally diverted when that quantity of water is available. On May 1, 1923, two current meter measurements were taken on the ditch, showing discharges of 4.95 second feet and 6.06 second feet, respectively.

The result of a measurement taken on the ditch during 1912 and available through O.E.S. Bulletin 254, shows a "maximum measured diversion" of 12.0 second feet.

Diversion 458 is that of the I. A. Martin Ditch, diverting from Jim Spring Creek in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 20 T 45 N, R 4 W (see map sheet 145).

The conduit is an earth ditch, about one fourth of a mile in length, running south from the point of diversion, and terminating in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 29 T 45 N, R 4 W. The ditch serves an irrigated area of 38.1 acres (see map sheets 145 and 146 and Acreage Table page 169).

A current meter measurement was taken on the ditch on September 13, 1922, showing a discharge of 1.64 second feet. This discharge represents the normal irrigating head. The maximum capacity of the ditch was computed and found to be 3.2 second feet.

Diversion 459 is that of the I. A. Martin Ditch, diverting from Jim Spring Creek in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 20 T 45 N, R 4 W. The ditch heads on the west side of the stream, at a point about 600 feet down stream from Diversion 359 (see map sheet 146).

The conduit is an earth ditch, running west from the point of diversion to the northwest corner of section 29 T 45 N, R 4 W, and serves an irrigated area of 6.5 acres (see map sheet 146 and Acreage Table page 169).

A current meter measurement was taken on the ditch on September 8, 1922, showing a discharge of 2.28 second feet. The maximum capacity of the ditch was computed and found to be 6.62 second feet.

Diversion 460 is that of the I. A. Martin Ditch, diverting from Tunnel Spring, located in the southwest corner of section 21 T 45 N, R 4 W (see map sheet 146).

The conduit is an earth ditch, running to a point 400 feet

west of the spring. At this point, the water is divided into two earth ditch laterals and distributed for the irrigation of 21.2 acres, in the NE$\frac{1}{4}$ Sec. 29 T 45 N, R 4 W (see map sheet 146 and Acreage Table page 169).

The ditch was not in use during 1922, when the other I.A. Martin ditches were measured, consequently no discharge measurements were obtained.

Diversions 461 to 463, inclusive, are those of the I. A. Martin ditches, diverting from Martin Spring Creek. The points of diversion are within the NW$\frac{1}{4}$ NE$\frac{1}{4}$, the NE$\frac{1}{4}$ NW$\frac{1}{4}$, and the NE$\frac{1}{4}$ NW$\frac{1}{4}$ of section 29 T 45 N, R 4 W, respectively (see map sheet 146).

In operation, Martin Spring Creek, indicated as Diversion 461, serves as the main ditch, and Diversions 462 and 463 serve as laterals diverting therefrom. The available flow in Martin Spring Creek is rotated between the several ditches and serves an irrigated area of 124.9 acres, of which 7.8 acres have been described as sub-irrigated (see map sheet 146 and Acreage Table pages 169 and 170).

A current meter measurement was taken on Diversion 463 on September 13, 1922, showing a discharge of 3.13 second feet. This discharge represents the total flow of Martin Spring Creek, below the junction of Jim Spring Creek, and also the normal irrigating head for each of the above numbered diversions.

The result of a measurement taken during 1912, and available through O.E.S. Bulletin 254, which designates this ditch as the Martin Ditch from Martin and Jim springs, shows a "maximum measured diversion" of 4.46 second feet.

Diversion 464 is that of the I. A. Martin Ditch, diverting from a small spring, a branch of Bassy Spring, located in the SW¼ NW¼ Sec. 29 T 45 N, R 4 W (see map sheet 146).

The conduit is an earth ditch, running southeast to a point, about 700 feet from the spring, and thence southerly across the I. A. Martin ranch, to the M. F. Martin ranch. In its course across the I. A. Martin ranch, the ditch picks up a considerable amount of return flow from irrigation under Diversions 461 to 463, inclusive. The ditch is about one mile in length and serves an irrigated area of 65.5 acres, of which, 41.8 acres are owned by Mrs. I. A. Martin, and 23.7 acres are owned by M. F. Martin (see map sheets 146 and 147, and Acreage Table pages 170 and 171).

A current meter measurement was taken on the ditch on September 12, 1922, showing a discharge of 0.17 second foot. This discharge represents the available flow on the above date. The maximum capacity of the ditch was computed and found to be 1.6 second feet.

Diversion 465 is that of the Martin Pipe Line, diverting from Bassy Spring. The point of diversion is within the SW¼ NW¼ Sec. 29 T 45 N, R 4 W (see map sheet 146).

The water is conveyed south from the spring by a pipe line, 400 feet in length, to a point in the NW¼ SW¼ Sec. 29 T 45 N, R 4 W, where it is used to operate a turbine, which generates power for lighting and other uses on the I. A. Martin ranch. From the turbine, the water is returned to Bassy Spring Creek.

A current meter measurement was taken, in the tail race, on September 12, 1922, showing a discharge of 1.39 second feet. This discharge represents the maximum capacity and the normal flow of the pipe

line.

Diversion 466 is that of the Davis Ditch, diverting from Bassey Spring Creek in the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 30 T 45 N, R 4 W (see map sheet 146).

The conduit is an earth ditch, about two and one half miles in length, running south from the point of diversion to the I. Davis ranch, in the S$\frac{1}{2}$ Sec. 6 T 44 N, R 4 W, and thence southwesterly to its termination on the L. Kegg ranch, in the E$\frac{1}{2}$ NW$\frac{1}{4}$ Sec. 7 T 44 N, R 4 W. The ditch serves an irrigated area of 194.8 acres, of which, 177.0 acres are owned by I. Davis, 13.3 acres are owned by Anne Kegg, and 4.5 acres are owned by L. Kegg (see map sheets 149 to 151, inclusive, and Acreage Table pages 44, 45, 138, and 139).

A weir measurement was taken on the ditch on August 18, 1922, showing a discharge of 1.50 second feet. This discharge represents the normal irrigating head and also the maximum capacity of the ditch in its present condition.

The result of a measurement taken during 1912, and available through O.E.S. Bulletin 254, which designates this ditch as the Kegg Ditch, shows a "maximum measured diversion" of 5.08 second feet. This discharge "includes some waste water".

Diversion 467 is that of the E. C. Hart Ditch, diverting from Evans Spring. The point of diversion is within the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 30 T 45 N, R 4 W (see map sheet 146).

The conduit is an earth ditch, running southwesterly from the point of diversion to the E. C. Hart and K. C. Hart ranches. The ditch is about four miles in length, and serves an irrigated area of 297.8

acres, of which, 120.0 acres are owned by E. C. Hart, and 177.8 acres are owned by K. C. Hart, (see map sheets 150 to 152, inclusive, and Acreage Table pages 117 and 121).

A current meter measurement was taken on the ditch on August 18, 1922, showing a discharge of 2.36 second feet. This discharge represents the normal flow of the ditch, and also the total flow of Evans Spring.

The result of a measurement taken during 1912, and available through O.E.S. Bulletin 254, which designates this ditch as the Evans Ditch, shows a "maximum measured diversion" of 3.07 second feet.

Diversion 468 is that of the Kegg Ditch, diverting from Kegg Spring, which is located within the NE¼ NE¼ Sec. 30 T 45 N, R 4 W (see map sheet 146).

The conduit is an earth ditch, about three miles in length, running south from the point of diversion to a point near the center of the W½ NE¼ Sec. 6 T 44 N, R 4 W, and thence southwesterly to the Anne Kegg ranch, in the SE¼ Sec. 1 T 44 N, R 5 W. The ditch serves an irrigated area of 129.1 acres (see map sheets 150 and 151 and Acreage Table page 138).

A current meter measurement was taken on the ditch on August 18, 1922, showing a discharge of 0.29 second foot. This discharge represents the normal flow of the ditch, and also the total flow of Kegg Spring.

Diversions 469 and 470 are those of the I. A. Martin ditches, diverting from sloughs, which rise on the I. A. Martin ranch, and which are

fed by return water from irrigation under the I. A. Martin Ditch (Diversion 455) from Cleland Spring. These ditches, therefore, have been considered as part of that ditch system and the use of water has been described thereunder.

Diversion 471 is that of the E. C. Hart and A. Haight Ditch, diverting from Little Shasta River in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 25 T 45 N, R 5 W (see map sheet 153).

Diversion is made by means of a low rock dam. The conduit is an earth ditch, heading on the south bank of the river and running southwesterly to the section corner common to sections 25, 28, 35, and 36 T 45 N, R 5 W, and thence southeasterly, across the A. C. Haight ranch, to the E. C. Hart ranch. The ditch has a total length of about two and one half miles. The flow of the ditch is split equally between the two owners and serves an irrigated area of 72.6 acres, on the A. C. Haight ranch, and an irrigated area of 10.7 acres, on the E. C. Hart ranch, or a total area of 83.3 acres (see map sheets 151 and 152 and Acreage Table pages 110 and 117). In addition to the above, the water is used, on the E. C. Hart ranch, in common with waters diverted from Little Shasta River by the Hart, Haight, and Prather Ditch (Diversion 474).

Current meter measurements were taken on the ditch on June 18 and June 25, 1923, showing discharges of 0.82 second foot and 1.34 second feet, respectively. The discharge, of 0.82 second foot, represents the normal irrigating head, as stated by E. C. Hart. The discharge, of 1.34 second feet, represents the maximum capacity of the ditch.

The result of a measurement taken on the ditch during 1912, and

available through O.E.S. Bulletin 254, shows a "maximum measured diversion" of 2.59 second feet.

Diversion 472 is that of the Company Ditch, also known as the Musgrove-Linton Ditch, diverting from Little Shasta River in the NW¼ NE¼ Sec. 25 T 45 N, R 5 W (see map sheet 153). The ditch is owned and operated by Mrs. A. Soule, E. F. Dreyer, J. B. Rohrer, E. O'Conner, M. J. O'Conner, and J. F. Long.

The conduit is an earth ditch, cut into the north bank of the river on a level with the bed of the stream. Diversion into the ditch is controlled by placing rocks across the intake of the ditch, or across the river channel, below the intake of the ditch, as the stage of the river may require. The ditch is about five miles in length, and runs westerly from the point of diversion, along the slopes of the hills bordering Little Shasta Valley on the east, to a point in the NW¼ NW¼ Sec. 29 T 45 N, R 5 W. Division boxes are located on the ditch, at the east line of the A. Soule ranch, at the east line of the E. F. Dreyer ranch, and at a point in the SW¼ SW¼ Sec. 22 T 45 N, R 5 W, respectively, by means of which the flow of the ditch is divided between the owners in accordance with their respective rights. At the A. Soule division box one quarter of the total flow of the ditch goes to Mrs. A. Soule, the remaining three quarters being passed on down the ditch, across the Ira Haight ranch, which has a right for the irrigation of 25.0 acres. The water remaining in the ditch, below the Ira Haight ranch, is divided at the second division box, one sixth part to E. F. Dreyer and J. B. Rohrer, and five sixths part passed down to the third division box, where

it is divided, one half part to M. J. O'conner, and one half part to J. F. Long and Grisez Ranch. The above data, on the respective rights of the owners of the ditch, were obtained from Mr. E. O'Conner.

The water diverted by the ditch is used for irrigation, principally, on the lands of the above mentioned owners. There is, however, a considerable acreage of grain land, owned by others, which receives early spring irrigation, when the flow of the ditch is in excess of that required by the interests in the ditch. In addition to the acreage irrigated directly from the ditch, there is also a considerable area of land, lying below the property of the owners of the ditch, which is irrigated by return flow from irrigation on the higher lands. The areas irrigated from the ditch are described in the Acreage Table under the names of the respective owners. A summary of these data, follows:

Name of Owner	Acreage Irrigated	Map Sheet	Acreage Table Page
Dreyer, E. F.	33.1	161	55,56
Fairchild, K. M.	85.5	164	85
Haight, Ira	27.3	161	111
Lee, M. F.	180.7	164	150,151
Long, J. F.	288.1	162	155
O'Conner, E.	24.1	162	188
O'Conner, M.J.	319.6	162	189
Rohrer, J.B.	330.3	161	207,208
Soule, A.	161.4	155	241
Tamisier, M. A.	105.2	163	255
TOTAL	1555.3		

The results of current meter measurements taken on the ditch in 1923, follow:

Number of Measurement	Date	Discharge Second Feet
1	April 24	6.94
2	April 25	14.25
3	April 26	6.19
4	April 30	6.82
5	June 12	2.34
6	June 18	2.72

The discharges, shown by measurements 1 and 3 to 6, inclusive, represent the flows available for diversion by the ditch on the respective dates. The discharge, of 14.25 second feet, obtained by measurement 2, represents the total flow of Little Shasta River at the head of the ditch, the entire flow of the river having been turned into the ditch for the purpose of obtaining a measurement of the flow representing the maximum capacity of the ditch. This flow, however, fell far short of filling the ditch to capacity. The maximum capacity of the ditch, therefore, was computed and found to be 29.0 second feet.

As stated by E. O'Conner, the ditch is normally operated at maximum capacity, when that quantity of water is available for diversion by the ditch.

The result of a measurement taken on the ditch during 1912, and available through O.E.S. Bulletin 254, shows a "maximum measured diversion" of 20.5 second feet.

Diversion 473 is that of the Babcock, Martin, and C. W. Soule Ditch, diverting from Little Shasta River in the NW¼ NE¼ Sec. 25 T 45 N, R 5 W (see map sheet 153). The ditch is owned and operated by A. L. Babcock, W. T. Martin, and C. W. Soule.

The conduit is an earth ditch, about two and one half miles in length, running southwesterly along the north side of the river, to the A. L. Babcock ranch in the NW¼ Sec. 34 T 45 N, R 5 W. At a point about 500 feet below the intake, a lateral, known as the Haight and Martin Branch, diverts from the main ditch, and runs south across Little Shasta River, and thence southwesterly, supplying water to that portion of the W. T. Martin ranch on the south side of the river, and to the

A. C. Haight ranch, in section 36 T 45 N, R 5 W. A second lateral, known as the Martin and Soule Upper Ditch, and a third lateral, known as the Martin and Soule Lower Ditch, divert from the main ditch and supply water to the remaining portion of the W. T. Martin ranch and to the C. W. Soule ranch. That portion of the water going to the Babcock ranch is conveyed by the main ditch, which is known as the Babcock Ditch, over that portion of its course below the point of diversion of the Martin and Soule Lower Ditch. In addition to the use by the above named interests in the ditch, there is a considerable acreage on the M. A. Tamisier ranch, and small acreages on the M. J. O'Conner, M. L. Prather, and C. V. Smith ranches, which have been described as irrigated from the ditch. The irrigated areas served by the ditch have been described in the Acreage Table under the names of the respective owners. A summary of these data, follows:

Name of Owner	Acreage Irrigated			Map Sheet	Acreage Table Page
	Irr	sub-irr	Total		
Babcock, A. L.	157.5		157.5	160	7
Haight, A. C.	4.7		4.7	152	110
Martin, I. A.	2.2		2.2	152	171
Martin, W. T.	285.2		285.2	153,155	172,173
O'Conner, M. J.	4.7		4.7	156	189
Prather, M. L.	9.3*		9.3	160,163	203
Smith, C. V.		5.8	5.8	156	238
Soule, A.	58.6**		58.6	153	241
Soule, C. W.	156.1		156.1	155	244,245
Tamisier, M. A.	79.8*		79.8	163	255
TOTALS	758.1	5.8	763.9		

* Also receives water from Grisez Ditch (Diversion 479).
** Also receives water from Company Ditch and Soule and Terwilliger Ditch.

The results of current meter measurements taken on the ditch during 1923, follow:

Number of Measurement	Date	Discharge Second Feet	Remarks
1	April 25	9.09	Normal irrigating head.
2	April 26	2.98	Available flow.
3	April 30	4.02	Available flow.
4	June 12	0.83	Available flow.
5	June 18	1.41	Available flow.

The maximum capacity of the main ditch was not determined, as this quantity would be far in excess of the combined capacities of the several laterals.

On April 25, 1923, a current meter measurement was taken on each of the four laterals, diverting from the main ditch. The results obtained are given in the following summary.

Name of Lateral	Normal Irrigating Head Second Feet	Maximum Capacity Second Ft.
Martin and Haight Branch	0.78	0.78
Martin and Soule Upper Ditch	2.25	4.8*
Martin and Soule Lower Ditch	2.42	7.1*
Babcock Ditch	2.45	4.2*

*Computed.

The result of a measurement taken on the main ditch during 1912, and available through O.E.S. Bulletin 254, shows a "maximum measured diversion" of 16.40 second feet.

Diversion 474 is that of the Hart, Haight, and Prather Ditch, diverting from Little Shasta River in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 25 T 45 N, R 5 W (see map sheet 153). The ditch is owned and operated by E. C. Hart, G. M. Haight, and Mary L. Prather.

Diversion is made by means of a temporary rock and dirt dam. The conduit is an earth ditch, about five miles in length, running

southwesterly from the point of diversion and terminating at Cedar Lake, on the E. C. Hart ranch, in the NE$\frac{1}{4}$ Sec. 15 T 44 N, R 5 W. The water diverted by the ditch is divided between the owners, five eighths part to E. C. Hart, two eighths part to G. M. Haight, and one eighth part to M. L. Prather, and is used for irrigation on the lands of these owners, as described in the Acreage Table. A summary of the data contained in the Acreage Table, follows:

Name of Owner	Acreage Irrigated	Map Sheet	Acreage Table Page
Haight, G. M.	150.1	151,152,156	110,111
Hart, E. C.	1171.0	152,156-159	117-121
Hart, K. C.	50.3	151,156	122
Prather, M. L.	349.2	159,160,163	203,204
TOTAL	1720.6		

The results of current meter measurements taken on the ditch during 1923, follow:

Number of Measurement.	Date	Discharge Second Feet	Remarks
1	April 25	11.29	Normal irrigating head.
2	April 26	4.34	Available flow.
3	April 30	6.49	Available flow.
4	June 12	2.48	Available flow.

The maximum capacity of the ditch was computed and found to be 20.3 second feet.

The result of a measurement taken during 1912, and available through O.E.S. Bulletin 254, which designates this ditch as the Hart and Hoyt Ditch, shows a "maximum measured diversion" of 15.0 second feet.

Diversion 475 is that of the Smith Ditch, diverting from the east bank of Little Shasta River in the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 25 T 45 N, R 5 W (see map

sheet 153).

The conduit is an earth ditch, about one and one fourth miles in length, running southwesterly to the C. V. Smith ranch, in the NE$\frac{1}{4}$ Sec. 35 T 45 N, R 5 W. The ditch serves an irrigated area of 82.0 acres (see map sheet 156 and Acreage Table page 238).

There was no water available for diversion by the ditch during the period covered by the field investigation, consequently no discharge measurements were obtained.

The result of a measurement taken on the ditch during 1912, and available through O.E.S. Bulletin 254, shows a "maximum measured diversion" of 5.65 second feet.

Diversion 476 is that of the Hart and Smith Ditch, diverting from the east bank of Little Shasta River in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 35 T 45 N, R 5 W (see map sheet 156).

The conduit is an earth ditch, running south from the point of diversion, across the C. V. Smith ranch, to the E. C. Hart ranch. The ditch serves an irrigated area of 94.3 acres, of which, 58.6 acres are owned by E. C. Hart, and 35.7 acres are owned by C. V. Smith (see map sheet 156 and Acreage Table pages 121 and 238).

There was no water available for diversion by the ditch during the period covered by the field investigation, consequently no discharge measurements were obtained. The maximum capacity of the ditch was computed and found to be 10.8 second feet.

Diversion 477 is that of the Smith Ditch, diverting from the west bank of Little Shasta River in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 35 T 45 N, R 5 W (see map sheet 156).

The conduit is an earth ditch, about 350 feet long, and serves an irrigated area of 14.6 acres (see map sheet 156 and Acreage Table page 239).

There was no water available for diversion by the ditch during the period covered by the field investigation, consequently no discharge measurements were obtained. The maximum capacity of the ditch was computed and found to be 1.8 second feet.

Diversion 477A is that of the Smith Ditch, diverting from the east bank of Little Shasta River in the NW¼ NE¼ Sec. 35 T 45 N, R 5 W. The point of diversion is directly opposite that of the Smith Ditch (Diversion 477) (see map sheet 156).

The conduit is an earth ditch, about 900 feet in length, running southwest along the south bank of the river. The ditch serves an irrigated area of 8.6 acres (see map sheet 156 and Acreage Table page 239).

There was no water available for diversion by the ditch during the period covered by the field investigation, consequently no discharge measurements were obtained. The maximum capacity of the ditch was computed and found to be 4.2 second feet.

In addition to the above described irrigated areas on the C. V. Smith ranch, there is an area of 6.7 acres, which is sub-irrigated from Little Shasta River (see map sheet 156 and Acreage Table page 238).

Diversion 478 is that of the K. C. Hart Ditch, diverting from Little Shasta River in the SE¼ NW¼ Sec. 35 T 45 N, R 5 W (see map sheet 156).

Diversion is made by means of a wooden dam. The conduit is an earth ditch, running south along the center line of section 35 T 45 N,

R 5 W, across the M. J. O'Conner and K. C. Hart ranches, to the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 2 T 44 N, R 5 W. The water diverted by the ditch is distributed for irrigation on the K. C. Hart ranch, by laterals extending westerly from the main ditch. The ditch serves an irrigated area of 239.2 acres on the K. C. Hart ranch, and in addition thereto, there is an area of 30.8 acres, owned by M. J. O'Conner, and an area of 33.3 acres, owned by M. L. Prather, which receive return flow from irrigation on the K. C. Hart ranch, making a total of 303.3 acres under the ditch (see map sheets 156 and 160 and Acreage Table pages 122, 189, and 204).

There was no water available for diversion by the ditch during the period covered by the field investigation, consequently no discharge measurements were obtained. The maximum capacity of the ditch was computed and found to be 21.0 second feet.

The results of measurements taken on the ditch during 1912, and available through O.E.S. Bulletin 254, show a "maximum measured diversion" of 11.25 second feet, on June 1, and diversions of 3.47 second feet and 0.91 second foot on June 22 and July 27, respectively.

Diversion 479 is that of the Grisez Ditch, diverting from the north bank of Little Shasta River in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 35 T 45 N, R 5 W (see map sheet 156).

The conduit is an earth ditch, running northwesterly across the M. J. O'Conner ranch in sections 34 and 35 T 45 N, R 5 W. At a point about 900 feet below the intake, water from the Grisez Ditch (Diversion 481) enters the ditch. The combined flow of the two ditches serves an irrigated area of 207.2 acres on the M. J. O'Conner ranch

(see map sheets 156 and 160 and Acreage Table page 190). Return water from the ditch, commingled with return water from the Babcock, Martin, and C. W. Soule Ditch (Diversion 473) is used on the M. L. Prather and M. A. Tamisier ranch. The acreages on these ranches, however, have been alloted to the latter ditch.

There was no water available for diversion by the ditch during the period covered by the field investigation, consequently no discharge measurements were obtained. The maximum capacity of the ditch was computed and found to be 19.5 second feet.

Diversion 480 is that of the Grisez Ditch, diverting from the south bank of Little Shasta River. The point of diversion is directly opposite that of the Grisez Ditch (Diversion 479), and within the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 35 T 45 N, R 5 W (see map sheet 156).

The conduit is an earth ditch, extending south to a point about 600 feet from the intake. From this point, the water runs at random over the M. J. O'Conner ranch, and on to the K. C. Hart and M. L. Prather ranches. The ditch serves an irrigated area of 119.2 acres, of which, 15.4 acres are owned by K. C. Hart, 72.9 acres are owned by M. J. O'Conner, and 30.9 acres are owned by M. L. Prather (see map sheets 156, 160, and 163, and Acreage Table pages 123, 190, 191, 204, and 205).

There was no water available for diversion by the ditch during the period covered by the field investigation, consequently no discharge measurements were obtained. The maximum capacity of the ditch was computed and found to be 4.8 second feet.

Diversion 481 is that of the Grisez Ditch, diverting from an unnamed

slough of Little Shasta River, which rises on the W. T. Martin ranch. The ditch heads on the north bank of the slough at a point about 400 feet west of the northeast corner of the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 35 T 45 N, R 5 W (see map sheet 156).

The conduit is an earth ditch, running southwest to a point about 600 feet from the intake, where it empties into the Grisez Ditch (Diversion 479). The use of the combined flow of the two ditches is described under Diversion 479.

There was no water available for diversion by the ditch during the period covered by the field investigation, consequently no discharge measurements were obtained.

Diversion 482 is that of the Prather and Tamisier Ditch, diverting from Little Shasta River in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 34 T 45 N, R 5 W (see map sheet 160).

Diversion is made by means of a concrete dam. The conduit is an earth ditch, running southwest from the dam, across the M. L. Prather ranch, thence westerly and notherly, across the M. A. Tamisier ranch, and terminating in the NW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 33 T 45 N, R 5 W. The ditch has a total length of about two miles, and serves an irrigated area of 381.8 acres, of which, 164.5 acres are owned by M. L. Prather and 217.3 acres are owned by M. A. Tamisier (see map sheets 160 and 163, and Acreage Table pages 205 and 256).

There was no water available for diversion by the ditch during the period covered by the field investigation, consequently no discharge measurements were obtained.

Diversion 483 is that of the Tamisier Ditch, diverting from the north bank of Little Shasta River in the SW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 33 T 45 N, R 5 W (see map sheet 163).

The conduit is an earth ditch, about two miles in length, running northwesterly across the M. A. Tamisier, J. Beaudroit, and A. Albee ranches, to a point in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 29 T 45 N, R 5 W, where it is joined by a lateral from the Company Ditch (Diversion 472). During the early spring of each year, when water is plentiful, water is supplied to the ditch from this lateral for irrigation on the A. Albee ranch. Return flow from irrigation, under the Company Ditch and the Babcock, Martin, and C. W. Soule Ditch, also enters the ditch, through numerous sloughs, which are intersected by the ditch in its course across the M. A. Tamisier and J. Beaudroit ranches. The water diverted by the ditch, together with additional water which enters the ditch from the above described sources, is used for the irrigation of 357.1 acres, of which 260.9 acres are owned by A. Albee, 46.0 acres are owned by J. Beaudroit, and 50.2 acres are owned by M. A. Tamisier (see map sheets 163 to 165, inclusive, and Acreage Table pages 2, 3, 10, and 256).

There was no water available for diversion by the ditch during the period covered by the field investigation, consequently no discharge measurements were obtained.

Diversion 484 is that of the E. Jones Ditch, diverting from the north bank of Little Shasta River in the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 25 T 45 N, R 6 W (see map sheet 165).

Diversion is made by means of a brush and rock dam. The

conduit is an earth ditch, running westerly, for a distance of about one mile, and thence southwesterly to the E. Jones ranch, in the E½ Sec. 35 T 45 N, R 6 W. The ditch has a total length of about two and one half miles, and serves an irrigated area of 45.4 acres (see map sheet 128 and Acreage Table page 131).

A current meter measurement was taken on the ditch on April 26, 1923, showing a discharge of 0.84 second foot. This discharge represents the normal irrigating head and also the maximum capacity of the ditch. The ditch, however, was in poor shape and would carry more water if cleaned.

Diversions 485 and 486 are those of the J. D. Williams Upper and Middle ditches, diverting from Davis Gulch, in the NE¼ SE¼ and the NW¼ SE¼ Sec. 4 T 44 N, R 4 W, respectively (see map sheet 148).

The conduits are earth ditches, which run northwesterly from their respective points of diversion and unite at a point near the center of section 4 T 44 N, R 4 W. From this point, the combined flow of the two ditches is conveyed north and westerly across the J. D. Williams upper ranch, where the water is used for the irrigation of 87.9 acres. In addition to this area, there is an area of 0.8 acre on the I. Davis ranch, which is irrigated under Diversion 485 (see map sheet 148 and Acreage Table pages 45, 275, and 276).

Davis Gulch was dry during the period covered by the field investigation, consequently no discharge measurements were obtained on the ditches diverting therefrom. The maximum capacities of Diversions 485 and 486 were computed and found to be 12.8 second feet and 15.8 second feet, respectively.

Diversion 487 is that of the Davis Upper Ditch, diverting from the south bank of Davis Gulch at a point about 250 feet east of the quarter section corner common to sections 4 and 5 T 44 N, R 4 W (see map sheet 148).

The conduit is an earth ditch, about one fourth of a mile in length, and serves an irrigated area of 32.3 acres (see map sheet 149 and Acreage Table page 45).

No discharge measurements were obtained on the ditch for reasons given under Diversions 485 and 486. The maximum capacity of the ditch was computed and found to be 6.0 second feet.

Diversion 488 is that of the J. D. Williams Lower Ditch, diverting from the north bank of Davis Gulch in the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 5 T 44 N, R 4 W (see map sheet 149).

The conduit is an earth ditch, about one mile in length, running northwesterly, across the I. Davis ranch, to the J. D. Williams ranch, where the ditch unites with the J. D. Williams Benson Spring Ditch. The ditch serves an irrigated area of 114.4 acres, of which, 73.2 acres are owned by I. Davis and 41.2 acres are owned by J. D. Williams (see map sheet 149 and Acreage Table pages 46 and 276).

No discharge measurements were obtained on the ditch for reasons given under Diversions 485 and 486. The maximum capacity of the ditch was computed and found to be 6.2 second feet.

Diversion 489 is that of the Davis Lower Ditch, diverting from the south bank of Davis Gulch in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 5 T 44 N, R 4 W (see map sheet

149).

The conduit is an earth ditch, about one half of a mile in length, and serves an irrigated area of 36.2 acres (see map sheet 149 and Acreage Table page 46).

No discharge measurements were obtained on the ditch for reasons given under Diversions 485 and 486. The maximum capacity of the ditch was computed and found to be 16.8 second feet.

There are several small ditches on the I. Davis ranch, diverting from Davis Gulch below the point where the Davis Ditch from Bassey Spring Creek (Diversion 466) crosses the Gulch. These ditches, however, were considered as part of the distribution system of the Davis Ditch (Diversion 466), and the acreages served have been described under that ditch.

Diversion 490 is that of the J. D. Williams Benson Spring Ditch, diverting from Benson Springs, located in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 32 T 45 N, R 4 W (see map sheet 149).

The conduit is an earth ditch, running south from the spring, for a distance of about one half of a mile, to a point in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 5 T 44 N, R 5 W, where the ditch joins the J. D. Williams Lower Ditch (Diversion 488). From this point, the water is distributed for the irrigation of 67.4 acres on the J. D. Williams ranch (see map sheet 149 and Acreage Table pages 276 and 277).

Diversion 491 is that of the King Ditch, diverting from the south bank of Little Shasta River in the NW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 35 T 45 N, R 6 W (see map sheet 128).

Diversion is made by means of a rock and dirt dam. The conduit is an earth ditch, about one mile in length, running westerly from the dam, for a distance of about one half of a mile, and thence southerly to a point in the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 3 T 44 N, R 6 W. The ditch serves an irrigated area of 84.9 acres, of which, 2.9 acres have been described as sub-irrigated (see map sheets 125 and 128 and Acreage Table page 146).

A current meter measurement was taken on the ditch on April 26, 1923, showing a discharge of 0.72 second foot. This discharge represents the normal irrigating head, as stated by G. W. King. The maximum capacity of the ditch was computed and found to be 1.54 second feet.

Diversion 492 is that of the King Ditch, diverting from the north bank of Little Shasta River in the NW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 35 T 45 N, R 6 W (see map sheet 128).

The point of diversion is directly opposite that of the King Ditch (Diversion 491), and diversion is made by means of the dam described thereunder. The diversion conduit is an earth ditch, which empties into a slough at a point about 150 feet from the dam. From this point, the water is conveyed by the slough, and an area of 29.5 acres is irrigated therefrom (see map sheet 128 and Acreage Table page 146). The diversion conduit was in very poor shape, and had the appearance of not having been used for some time. A considerable portion of the irrigated area was covered with sage brush, but was claimed to be irrigated land by G. W. King.

The ditch was not in use during the period covered by the field investigation, consequently no discharge measurements were obtained. Due to the poor condition of the ditch, no attempt was made to compute

or estimate the maximum capacity of the ditch.

Diversion 493 is that of the King Pumping Plant, located on the east bank of Shasta River in the NW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 34 T 45 N, R 6 W (see map sheet 129).

The plant consists of a 6 inch Krogh centrifugal pump, direct connected to a 15 horsepower Westinghouse Motor. The water is discharge from the pump through a 6 inch diameter riveted steel pipe, 220 feet in length, into three ditches, low, middle, and high line ditches, respectively, and is distributed therefrom for the irrigation of 37.2 acres (see map sheet 129 and Acreage Table page 147). This area was not irrigated during 1922 or 1923, and had not been irrigated for several years prior to 1922.

In addition to the areas irrigated under the G. W. King ditches and pumping plant, diverting from Shasta River, there is an area of 5.7 acres, which has been described as sub-irrigated from the river (see map sheet 129 and Acreage Table page 147).

Diversions 494 and 495 are those of the King ditches, diverting from Coyote Ravine. The points of diversion are within the NW$\frac{1}{4}$ SE$\frac{1}{4}$ and the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 33 T 45 N, R 6 W, respectively (see map sheet 129).

The conduits are short earth ditches, diverting from the east and west sides of the stream, respectively, and are supplied principally by return water from irrigation under the Shasta River Water Users Association System. G. W. King, however, claims that there was water flowing in Coyote Ravine prior to the time irrigation was started on the Shasta River Water Users Association lands. Irrigated areas of 13.2 acres and 1.9 acres are served by Diversions 494 and 495, respectively (see map sheet 129 and Acreage Table page 147).

No discharge measurements were obtained on Diversion 494. The maximum capacity of the ditch, however, was computed and found to be 4.3 second feet.

A float measurement was taken on Diversion 495 on November 30, 1923, showing a discharge of 0.18 second foot. This discharge represents the maximum capacity of the ditch, and the normal irrigating head. It also represents the natural flow of Coyote Ravine, on the above date.

Diversion 496 is that of the Lucas Pumping Plant, diverting from Shasta River in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 33 T 45 N, R 6 W (see map sheet 129).

The plant consists of a 4 inch Byron Jackson centrifugal pump, direct connected to a 10 horsepower Wagner Electric Manufacturing Company motor. The pump discharges through a 6 inch diameter riveted steel pipe, 140 feet in length, into a low line ditch, with a lift of about 10 feet, and into a high line ditch, with a lift of about 54 feet. The water diverted by the plant is used for the irrigation of 56.1 acres on the D. S. Lucas ranch (see map sheet 129 and Acreage Table page 164).

The plant was installed in 1918 to replace the Lucas Current Wheel, in accordance with an agreement between Domingus S. Lucas and Isabel Lucas and the Lucerne Water Company, now Grenada Irrigation District.

No discharge measurements were obtained on the diversion by the plant, as it was in operation for a short period only, during 1923. The rated capacity of the pump is given as 400 gallons per minute, or

0.89 second foot.

The results of measurements of diversions by the Lucas Current Wheel, taken during 1912, and available through O.E.S. Bulletin 254, follow:

Date	Discharge in Second Feet
June 24	0.53
July 6	0.44
July 15	No diversion.
July 30	0.49

Diversion 497 is that of the Webb Brothers Pumping Plant, located on the east bank of Shasta River in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 28 T 45 N, R 6 W (see map sheet 138).

The plant consists of an 8 inch Byron Jackson centrifugal pump and an 8 inch Worthington centrifugal pump, direct connected and belt connected, respectively, to 50 horsepower Westinghouse motors. The Worthington pump was formerly driven by a 50 Horsepower Bessemer Semi-Diesel gas engine, which, though not in use, forms part of the plant equipment. Each pump is connected to a 10 inch diameter suction pipe, 37 feet in length, and discharges through 31 feet of 8 inch diameter pipe. The discharge pipes from both pumps unite and connect to a 16 inch diameter pipe, about 240 feet in length, which in turn discharges, into two main ditches, here designated as the Low Line and High Line ditches. These ditches run westerly and northerly, respectively, across section 28 T 45 N, R 6 W, and distribute water for irrigation on that portion of the Webb Brothers ranch, lying on the east side of Shasta River. An 11 inch diameter pipe line, about 1130 feet in length, branches from the 16 inch discharge pipe at the

pump house, crosses to the west side of Shasta River on a suspension bridge, and discharges into an earth ditch from which the water is distributed for irrigation on the Webb Brothers property on the west side of the river. The system serves an irrigated area of 369.1 acres on the Webb Brothers ranch (see map sheet 138 and Acreage Table pages 265 and 266). In addition to the above, there are areas of 1.9 acres and 0.4 acre, owned by Amy Lewis and C. Payot, respectively, which are irrigated by return flow from the Webb Brothers ranch (see Diversion 499), making a total irrigated area of 371.4 acres under the system.

The right to the use of Shasta River water by the Webb Brothers is based on Application 58, on which Permit 509 has been issued, allowing the diversion of 5.0 second feet for the irrigation of 463 acres of land.

The Low Line and High Line ditches are each equipped with a Cippoletti weir, located below the points where water from the pipe line discharges into the respective ditches. During 1922, measurements were secured at these weirs to determine the discharge of each pump, when operating singly and discharging into the Low Line and High Line ditches, respectively. Current meter measurements were also taken during the same year on the respective ditches to determine the discharge of the plant, with both pumps operating and discharging into the Low Line and High Line ditches, respectively. The results obtained by these measurements are given in the following summaries.

Pumps discharging into Low Line Ditch

Date	Discharge in Second Feet		
	South Pump	North Pump	Both Pumps
July 8			8.06
July 9	4.11	4.11	

Date	Pumps discharging into High Line Ditch: Discharge in Second Feet: South Pump	North Pump	Both Pumps
June 30			7.34
July 9			7.58
July 9	*3.69	*3.77	

* Also estimated to be the discharge of the respective pumps when water was being pumped to the west side of the river.

From the above measurements, together with a log of the operation of each pump, the total diversion, in terms of acre feet, for the irrigation season of 1922 was computed. The result obtained is shown in Table 71, submitted at the end of this report.

The plant was not in operation during 1923, consequently no diversion measurements were obtained for that year.

Diversion 498 is that of the Lewis Ditch, diverting from the west side of Shasta River in the SW¼ SE¼ Sec. 28 T 45 N, R 6 W (see map sheet 138).

Diversion is made by means of a timber and rock dam. The conduit is an earth ditch, running westerly and northerly along the left bank of the river to the Amy Lewis ranch in the SE¼ Sec. 20 T 45 N, R 6 W. A 6 inch diameter riveted steel pipe line, 600 feet in length, extends northerly from the end of the ditch, crosses to the east side of Shasta River, and serves a small acreage on that side of the river, formerly irrigated by the Lewis Current Wheel. The ditch has a total length of about one and one half miles, and serves an irrigated area of 46.8 acres, of which, 3.3 acres have been described as

sub-irrigated (see map sheets 133 and 134 and Acreage Table pages 153 and 154).

On July 9, 1922, two current meter measurements were taken on the ditch, one near the head of the ditch, which showed a discharge of 2.77 second feet, and another at the Montague-Yreka Road Crossing, which showed a discharge of 1.24 second feet. The discharge, of 2.77 second feet, represents the maximum capacity of the ditch and the normal irrigating head. The discharge, of 1.24 second feet, represents the flow delivered to the Lewis ranch, the remaining part of the 2.77 second feet measured at head, or 1.53 second feet, being lost between the two points of measurement. On April 27, 1923, a current meter measurement was taken on the ditch, near the intake, showing a discharge of 2.00 second feet.

The results of measurements taken on the ditch during 1912, and available through O.E.S. Bulletin 254, follow:

Date	Discharge in Second Feet
July 6	1.17
July 15	0.91
July 30	0.72

The results of measurements of diversions by the Lewis Current Wheel, taken during 1912, and available through O.E.S. Bulletin 254, follow:

Date	Discharge in Second Feet
June 25	0.44
July 6	0.25
July 15	0.25
July 30	0.52

Diversion 499 is that of the Lewis Ditch, which diverts from a small

ravine carrying return water from irrigation on the Webb Brothers ranch under Diversion 497. The point of diversion is within the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 20 T 45 N, R 6 W (see map sheet 134).

The conduit is an earth ditch, about 900 feet in length, and serves small acreages on the Amy Lewis and C. Payot ranches, respectively (see map sheet 134 and Acreage Table pages 154 and 201). The total area of 2.3 acres, served by this ditch, has been included in the total acreage irrigated under the Webb Brothers Pumping Plant (see Diversion 497).

The ditch was not indicated as a diversion by George Lewis, consequently no discharge measurements were obtained.

Diversion 499A is that of the G. Lemos Dam, located on Shasta River in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 29 T 45 N, R 6 W (see map sheet 133).

The dam is a timber and rock dam, which serves to back the water up over the east bank of the river. A short distance below the dam, the water enters a short, natural slough, from which it runs at random across a narrow strip of land, lying adjacent to the river. A considerable portion of the water diverted is returned to the river after passing over the land. The system serves an irrigated area of 15.4 acres (see map sheet 133 and Acreage Table page 151).

No discharge measurements were taken to determine the flow diverted by the system for the reason that the flow diverted, under normal operating conditions, is in excess of that required, and a large part of it is returned to the river.

Diversion 500 is that of the G. Lemos Upper Pumping Plant, located on

the east bank of Shasta River in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 29 T 45 N, R 6 W (see map sheet 133).

The plant consists of a 6 inch Byron Jackson centrifugal pump, direct connected to a 29 horsepower, four cylinder, automobile engine. The suction pipe is a 10 inch diameter pipe 10 feet in length. The pump discharges through 600 feet of 10 inch diameter pipe, with a lift of 40 feet, into an earth ditch, from which the water is distributed for irrigation on the G. Lemos ranch. The plant serves an irrigated area of 14.9 acres (see map sheet 133 and Acreage Table page 152).

The plant was installed in 1918 to replace the G. Lemos Current Wheel.

The plant was not in operation at the time of the engineer's visit on July 5, 1922, due to a breakdown; or on the dates of several visits made during 1923, consequently no discharge measurements were obtained.

The results of measurements of diversions by the G. Lemos Current Wheel, taken during 1912, and available through O.E.S. Bulletin 254, follow:

Date	Discharge in Second Feet
June 24	0.48
July 6	0.25
July 15	0.25
July 30	0.36

Diversion 501 is that of the G. Lemos Lower Pumping Plant, located on the east bank of Shasta River in the NE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 29 T 45 N, R 6 W (see map sheet 133).

The plant consists of a 5 inch Krogh centrifugal pump, belt

connected to a 7 horsepower Waterloo Boy gasoline engine. The suction pipe is a 6 inch diameter pipe, 20 feet in length. The pump discharges through 100 feet of 7 inch diameter pipe, with a lift of about 10 feet, into a small earth ditch, which runs south to a point 350 feet from the end of the pipe line. The plant serves an irrigated area of 2.0 acres (see map sheet 133 and Acreage Table page 152).

During 1923, this plant was not visited until after the close of the irrigation season, and the pump was not in operation at that time, consequently no discharge measurements were obtained.

Diversion 502 is that of the Antonio Ditch, diverting from the west bank of Shasta River in the SW¼ SE¼ Sec. 20 T 45 N, R 6 W (see map sheet 134).

The diversion dam is a permanent timber and rock dam, about 5 feet high and about 100 feet long on top. A spillway, provided with flash boards, is located near the center of the dam. During the low water season of each year, the dam is made practically watertight by a dirt, sand, and gravel filling placed on the upstream face of the dam. The conduit is an earth ditch, about three miles in length, running northerly along the west side of the river, and terminating in the SW¼ SE¼ Sec. 7 T 45 N, R 6 W. The ditch is not provided with a head gate, the water diverted being controlled by means of the spillway in the dam or at a spillway on the ditch, about one half of a mile down stream from the dam. In its course between the intake and the Antonio ranch, the ditch intersects numerous ravines, through which return flow from irrigation on the Shasta River Water Users Association lands enters the ditch. This return flow at times furnishes considerable

water to the ditch and is used in common with the water diverted at the intake of the ditch. As stated by H. Fiock, the flow of the ditch is divided, 1/4 part to G. Fiock, H. Fiock, and R. E. Swigart, and 3/4 part to Mary Antonio, the use of the water being rotated for the irrigation of lands owned by the above named interests. In addition thereto, there is a small area owned by C. Payot, which receives water from the ditch. The areas served by the ditch have been described in the Acreage Table under the names of the respective users. A summary of these data, follows:

Name of Owner	Acreage Irrigated	Map Sheet	Acreage Table Page
Antonio, Mary	89.4	136,137	4,5
Fiock, G.	17.7	134	89
Fiock, H.	40.6	136	90
Payot, C.	8.3	134	201
Swigart, R. E.	17.1	134	255
TOTAL	173.1		

A permanent measuring station, indicated as Gage 22, was maintained on the ditch, below the spillway, located about one half of a mile down stream from the dam, during the irrigation seasons of 1922 and 1923. A gage observer, however, could not be secured, and the records obtained show the discharge of the ditch, only for those dates on which the gage was read by the engineer in charge of the field investigation. These records are submitted at the end of this report in Tables 69 and 70.

On June 2, 1923, a current meter measurement was taken on the ditch at the measuring station, showing a discharge of 10.23 second feet. This discharge represents the maximum capacity of the ditch, as

the ditch was running full at the spillway just above the measuring station. The carrying capacity of the ditch, however, is variable throughout the season, due to moss growing in the ditch. A flow of from 5 to 6 second feet is considered, by the owners of the ditch, to be an adequate irrigation head.

The results of measurementst taken on the ditch during 1912 and available through O.E.S. Bulletin 254, follow:

Date	Discharge in Second Feet
June 25	14.81
July 6	1.26
July 30	7.70

Diversion 503 is that of the Fiock Upper Ditch, diverting from a natural slough, which heads on the east bank of Shasta River at a point about 700 feet upstream from the Antonio Dam. The point of diversion of the ditch is in the SW¼ SE¼ Sec. 20 T 45 N, R 6 W (see map sheet 134).

Diversion is made by means of a low concrete dam, provided with wooden flash boards, constructed across the slough at a point about 600 feet down stream from the head of the slough. The conduit is an earth ditch, running parallel to and along the east side of the river, across the Amy Lewis, C. Payot, G. Fiock, and H. Fiock ranches, and terminating on the latter ranch, in the SE¼ SE¼ Sec. 7 T 45 N, R 6 W. The ditch has a total length of about three and one half miles. As stated by H. Fiock, the flow of the ditch is divided, 2/3 part to G. Fiock, and H. Fiock, and 1/3 part to C. Payot, the use of the water being rotated for irrigation on lands owned by these interests. In addition thereto, a small area, owned by Amy Lewis, is sub-irrigated

from the ditch. The areas irrigated or sub-irrigated by the ditch are described in the Acreage Table under the names of the respective owners of the irrigated lands. A summary of these data, follows:

Name of Owner	Acreage Irrigated: Irr	sub-irr	Total	Map Sheet	Acreage Table Page
Fiock, G.	13.1		13.1	134	89,90
Fiock, H.	207.4		207.4	134,136, 137	90-92
Lewis, Amy		7.1	7.1	134	154
Payot, C.	38.6		38.6	134	201
TOTALS	259.1	7.1	266.2		

A permanent measuring station, indicated as Gage 50, was maintained on the ditch during the irrigation seasons of 1922 and 1923. The results of measurements obtained at this station are shown in Tables 67 and 68, submitted at the end of this report. A hydrograph plotted from the records contained in Table 67 is shown on Plate LIV.

The result of a current meter measurement taken on the ditch on April 20, 1923, showing a discharge of 10.98 second feet, represents the maximum capacity of the ditch. For discharges above this quantity, the ditch overflows its banks below the measuring station. The ditch is normally operated to maximum capacity, when that quantity of water is available. However, a flow of from 6 to 7 second feet is considered, by the owners of the ditch, as an adequate irrigation head.

The results of measurements taken during 1912, and available through O.E.S. Bulletin 254, which designates this ditch as the Fiock and Payot Ditch, follow:

Date	Discharge in Second Feet
June 25	6.91
July 6	5.60
July 30	9.99

Diversion 504 is that of the Magoffey Ditch, diverting from a small ravine, which carries return flow from irrigation under the Shasta River Water Users Association System. The point of diversion is within the SW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 30 T 45 N, R 6 W (see map sheet 133).

The conduit is an earth ditch, about 450 feet in length, and serves an irrigated area of 0.8 acre, owned by Nettie King Magoffey (see map sheet 133 and Acreage Table page 165).

Diversion 505 is that of the Payot Ditch, diverting from Oregon Slough in the SW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 21 T 45 N, R 6 W (see map sheet 139).

The conduit is an earth ditch, running westerly along the north side of Oregon Slough to the C. Payot ranch. The ditch has a total length of about one mile, and serves an irrigated area of 19.8 acres. The greater part of this area, also lies under the High Line lateral from the Fiock Ditch (Diversion 503). The area has therefore been described in the Acreage Table as irrigated by Diversions 503 and 505 (see map sheet 134 and Acreage Table page 202).

In addition to the above, there is an area of 8.1 acres on the C. Payot ranch, which has been described as sub-irrigated from Oregon Slough (see map sheet 134 and Acreage Table page 202).

Two measurements were taken on the ditch, a float measurement on September 9, 1922, and a current meter measurement on May 2, 1923, showing discharges of 0.15 second foot and 0.34 second foot, respectively.

These discharges represent the total flow of Oregon Slough on the respective dates.

Diversion 506 is that of the Sequeria Ditch, diverting from a small ravine, which carries return flow from irrigation under the Shasta River Water Users Association System. The point of diversion is within the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 18 T 45 N, R 6 W (see map sheet 136).

The conduit is an earth ditch, about 900 feet in length, and serves an irrigated area of 2.3 acres (see map sheet 136 and Acreage Table page 213).

Diversion 507 is that of the Fiock Lower Ditch, diverting from Shasta River in the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 18 T 45 N, R 6 W (see map sheet 136).

Diversion is made by means of a timber dam, about 10 feet high and about 75 feet long on top. The conduit is an earth ditch, running along the east bank of the river to a point about 2000 feet north of the dam. An area of 2.8 acres has been described in the Acreage Table as being irrigated under the ditch, (see map sheet 136 and Acreage Table page 92). There is, however, an area lying east of the ditch, which is irrigated therefrom, but which also receives water from the Fiock Upper Ditch. A segregation of the portions of this area irrigated from each ditch could not be made, therefore, the area lying east of the ditch and under the Fiock Upper Ditch has been alloted to the latter ditch, while only the area lying west of the Fiock Lower Ditch, has been alloted to that ditch.

Current meter measurements were taken on the ditch on August 16 and August 24, 1922, showing discharges of 0.17 second foot and 1.57

second feet, respectively. The discharge, of 1.57 second feet, represents the maximum capacity of the ditch, and also the normal irrigating head when that quantity of water is available.

Diversion 508 is that of the Fiock Spring Ditch, diverting from Fiock Spring in the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 17 T 45 N, R 6 W (see map sheet 136).

A small reservoir has been constructed, by means of which the flow of several small springs is collected and diverted into an earth ditch, which serves an area of 1.6 acres of garden and orchard on the H. Fiock ranch (see map sheet 136 and Acreage Table page 92).

A current meter measurement was taken on the ditch on September 9, 1922, showing a discharge of 0.05 second foot. This discharge represents the total flow of the springs which feed the ditch. The maximum capacity of the ditch was computed and found to be 0.90 second foot.

Diversion 509 is that of the Shelly Pumping Plant, located on the east bank of Shasta River in the SW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 7 T 45 N, R 6 W (see map sheet 137).

The plant consists of a 5 inch Yuba centrifugal pump, direct connected to a 15 horsepower General Electric motor. The suction pipe is a 6 inch diameter pipe, 12 feet in length. The pump discharges through 250 feet of 8 inch diameter wood stave pipe, with a lift of 51.6 feet, into a high line ditch or through 90 feet of the same pipe, with a lift of 22.8 feet, into a low line ditch. The high line ditch extends northwesterly and southeasterly from the end of the pipe line, and has a total length of about one and one fourth miles. The low line

ditch is about three fourths of a mile long and runs northwesterly from the pipe line. The water diverted by the plant is used for the irrigation of 73.7 acres on the Manuel Shelly ranch, in section 7 T 45 N, R 6 W (see map sheet 137 and Acreage Table page 231).

The plant was installed during 1918 to replace the Shelly Current Wheel, in accordance with an agreement between Manuel Shelly and the Lucerne Water Company, now Grenada Irrigation District.

On September 12, 1922, current meter measurements were taken to determine the discharge of the pump, when operating on the high line and low line ditches, respectively. Discharges of 1.06 second feet and 1.77 second feet were obtained under the respective operating conditions.

The results of measurements of diversions by the Shelly Current Wheel (formerly Foster Current Wheel) taken during 1912, and available through O.E.S. Bulletin 254, follow:

Date	Discharge in Second Feet
June 6	0.16
July 15	0.19
July 30	0.25

During 1922, a second unit was installed in the Shelly Pumping Plant, by means of which water will be lifted to a proposed ditch above the present high line ditch (see map sheet 137). This unit was installed for the purpose of increasing the diversion by the Shelly Plant, principally, at such times as flush heads occur in the Shasta River at the plant. These flush heads occur at intermittent periods throughout the irrigation season, due to the shutting down of the larger pumping plants on Big Spring and the Lower Shasta River. During these periods, the

flow is greatly in excess of that required by the diversions on the lower reaches of the stream, and since the Shelly Plant is the lowest irrigation diversion on the stream, the increased rate of use, due to the installation of this additional unit, will merely utilize water that would otherwise be wasted.

Diversion 510 is that of the Walter Upper Ditch, diverting from the west bank of Walter Gulch in the SE¼ SE¼ Sec. 9 T 44 N, R 7 W (see map sheet 180).

The conduit is an earth ditch, which empties into the Old Yreka Ditch at a point about 850 feet down stream from the intake of the ditch. From this point, the water is conveyed by the latter ditch, for a distance of about three fourths of a mile northeasterly across the George Walter ranch. At a point 250 feet below the point of diversion, a lateral from the ditch crosses to the east side of the stream. The system serves an irrigated area of 26.6 acres (see map sheet 180 and Acreage Table page 264).

Float measurements were taken on the ditch on June 2, 1922, and on April 16, 1923, showing discharges of 0.12 second foot and 0.27 second foot, respectively. The discharges represent the available flows on the respective dates. The maximum capacity of the ditch was computed and found to be 3.4 second feet.

Diversion 511 is that of the Walter Lower Ditch, diverting from the east bank of Walter Gulch in the NW¼ SW¼ Sec. 10 T 44 N, R 7 W (see map sheet 180).

The conduit is an earth ditch, about 1200 feet in length, and serves an irrigated area of 24.2 acres (see map sheet 180 and Acreage Table page 264).

A float measurement was taken on the ditch on June 2, 1922, showing a discharge of 0.17 second foot. This discharge represents the available flow on the above date. The maximum capacity of the ditch was computed and found to be 3.6 second feet.

Diversions 512 to 514, inclusive, are those of the Pruett Upper, Middle, and Lower ditches, respectively, diverting from Walter Gulch. The respective points of diversion are within the SE$\frac{1}{4}$ NW$\frac{1}{4}$, SW$\frac{1}{4}$ NE$\frac{1}{4}$, and NE$\frac{1}{4}$ NE$\frac{1}{4}$ of Sec. 10 T 44 N, R 7 W (see map sheet 181).

The conduits are short earth ditches, supplying water for irrigation on the R. E. and R. H. Pruett ranch. The ditches serve areas of 39.9 acres, 9.5 acres, and 13.7 acres, respectively (see map sheet 181 and Acreage Table pages 205 and 206).

There was no water available for diversion by these ditches during the period covered by the field investigation, consequently no discharge measurements were obtained.

Diversion 515 is that of the R. H. Pruett Ditch, diverting from Pruett Gulch (also called Calpay Gulch) in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 11 T 44 N, R 7 W (see map sheet 181).

The conduit is an earth ditch, about 350 feet long. The ditch is used to divert the natural flow of Pruett Gulch and, also, for the rediversion of water released from storage in the R. H. Pruett Reservoir, for irrigation on the R. H. Pruett ranch. The system serves

an irrigated area of 8.7 acres (see map sheet 181 and Acreage Table page 206).

The R. H. Pruett Reservoir is located within sections 11, 12, and 14, T 44 N, R 7 W, and was constructed as part of the Yreka Ditch System during the time that that ditch was in use for mining purposes near Yreka and Hawkinsville.

The dam, forming the reservoir, is located in the S½ Sec. 11 T 44 N, R 7 W, near the head of a small fork of Pruett Gulch, and is an earth fill about 15 feet high, by about 750 feet long on top, with top and bottom widths of about 15 feet and 160 feet, respectively. An outlet is provided through the dam.

The maximum capacity of the reservoir is 275 acre feet, as determined by a contour survey made by the Division of Water Rights during 1923. The catchment area, however, is very small and during 1922 and 1923 and for several years prior thereto, there was insufficient water to fill the reservoir. During the period covered by the field investigation, there was no water used from the reservoir for irrigation purposes, the water level being below the outlet. In 1923, however, water was pumped from the reservoir and used for construction purposes on the State Highway.

There was no water available for diversion by the R. H. Pruett Ditch during the period covered by the field investigation, consequently no discharge measurements were obtained.

Diversion 516 is that of the Caldwell Ditch, diverting from Walter Gulch in the NE¼ SE¼ Sec. 3 T 44 N, R 7 W (see map sheet 185).

The conduit is an earth ditch, about one half of a mile in length, running northwesterly across the A. J. Caldwell ranch. The ditch serves an irrigated area of 29.4 acres, of which, 23.7 acres are owned by A. J. Caldwell and 5.7 acres are owned by W. B. Thomas (see map sheet 185 and Acreage Table pages 32 and 262).

There was no water available for diversion by the ditch during the period covered by the field investigation, consequently, no discharge measurements were obtained.

Diversions 517 to 530, inclusive, are those of the Burton ditches, diverting from Yreka Creek and several small streams tributary thereto (see map sheets 182 and 183).

The conduits are earth ditches supplying water for irrigation on the F. C. Burton ranch in sections 4, 5, 8, and 9 T 44 N, R 7 W (see map sheets 180 to 184, inclusive, and Acreage Table pages 29 to 32, inclusive).

A summary giving the location of the point of diversion of each ditch and the acreage irrigated under each ditch, follows;

Diversion Number	Stream Diverted From	Location of Point of Diversion	Acreage Irrigated
517	Yreka Creek	SE¼ SE¼ Sec. 7 T 44 N, R 7 W	27.4
518	Yreka Creek	NE¼ SE¼ Sec. 7 T 44 N, R 7 W	5.8
519	Yreka Creek	NW¼ SW¼ Sec. 8 T 44 N, R 7 W	21.5
520	Yreka Creek	NE¼ SW¼ Sec. 8 T 44 N, R 7 W	19.8
521	Yreka Creek	NW¼ SE¼ Sec. 8 T 44 N, R 7 W	12.2
522	Canan Gulch	SW¼ SE¼ Sec. 8 T 44 N, R 7 W	1.2
523	Canan Gulch	SW¼ SE¼ Sec. 8 T 44 N, R 7 W	1.6

(cont.)

Diversion Number	Stream Diverted From	Location of Point of Diversion	Acreage Irrigated
524	Canan Gulch	NW¼ SE¼ Sec. 8 T 44 N, R 7 W	1.4
525	Yreka Creek	NW¼ SE¼ Sec. 8 T 44 N, R 7 W	6.0
526	Yreka Creek	NW¼ SE¼ Sec. 8 T 44 N, R 7 W	4.4
527	Yreka Creek	NE¼ NE¼ Sec. 8 T 44 N, R 7 W	7.4
528	Lime Gulch	NE¼ SW¼ Sec. 5 T 44 N, R 7 W	7.7
529	Lime Gulch	SW¼ SE¼ Sec. 5 T 44 N, R 7 W	61.9
530	Lime Gulch	SE¼ SE¼ Sec. 5 T 44 N, R 7 W	50.9
		TOTAL	229.2

During 1922 and 1923, measurements were taken on all the ditches, excepting Diversion 525, to determine the normal irrigating head and the maximum capacity of each ditch. No discharge measurements were obtained on Diversion 525 as it was not indicated as a diversion at the time the other ditches were measured. On a number of the ditches, the flow available for diversion was insufficient to fill the ditch to capacity. The maximum capacities of these ditches were therefore computed. The results obtained are shown in the following summary.

Date	Diversion Number	Discharge in Second Feet: Available Flow	Normal irr.head	max.cap.
May 15,1922	517		0.73	0.73
April 7,1923	517		0.56	0.56
May 15, 1922	518			1.14
April 7,1923	518		0.78	1.39
May 15,1922	519		0.45	0.45
April 7,1923	519		0.39	0.39
May 15,1922	520	(a) 0.32		
April 7,1923	520		0.72	0.72
May 15,1922	521		0.80	0.80
April 7,1923	521		0.38	0.38
May 15,1922	522	(a) 0.10		(b) 0.90

(cont.)

Date	Diversion Number	Discharge in Second Feet: Available Flow	Normal irr. head	Max. Cap.
May 15, 1922	523	(a) 0.05		(b) 0.30
April 7, 1923	523	(a) 0.10		
May 15, 1922	524	(a) 0.13		(a) 0.13
May 15, 1922	526	0.43		
April 7, 1923	526		1.09	1.09
May 15, 1922	527	(a) 0.46		(b) 4.70
April 7, 1923	527	0.49		
May 15, 1922	528	(a) 0.31		(b) 1.50
April 7, 1923	528	0.89		
May 15, 1922	529	(a) 0.15		(b) 1.10
May 15, 1922	530	(a) 0.37		(b) 2.20
April 7, 1923	530	1.13		

(a) Float measurement.
(b) Computed.
Other measurements made by current meter.

Under normal operating conditions the respective ditches divert the flow available at the intake up to the maximum capacity of the ditch. The differences in the maximum capacities of the respective ditches, as shown by the measurements, is accounted for by the difference of the condition, in which the ditches are maintained from year to year.

Diversion 531 is that of the Wm. Schock Ditch, diverting from Yreka Creek in the SE¼ SW¼ Sec. 34 T 45 N, R 7 W (see map sheet 186).

The conduit is an earth ditch, about one fourth of a mile long, and serves an irrigated area of 12.6 acres (see map sheet 186 and Acreage Table page 213).

A float measurement was taken on the ditch on June 1, 1922, showing a discharge of 0.44 second foot. This discharge represents the flow available for diversion on the above date. On April 11, 1923, a current meter measurement was taken on the ditch, showing a discharge of 1.94 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by Wm. Schock.

Diversions 532 to 535, inclusive, are those of the M. S. Simas ditches. Diversions 532 and 534 are the Simas Upper and Lower ditches, respectively diverting from Greenhorn Creek in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 24 T 45 N, R 8 W. Diversion 533, in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 24 T 45 N, R 8 W, and Diversion 535, in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 24 T 45 N, R 8 W, divert from an unnamed gulch and from Stewart Ravine, respectively, and are feeders to the Simas Upper Ditch (see map sheet 188).

The water diverted by the several ditches is conveyed to a small regulatory reservoir, located in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 24 T 45 N, R 8 W, from which it is used in flush heads for hydraulic mining purposes at the M. S. Simas Mine (see map sheet 188). From the mine, the water is returned to Greenhorn Creek above all other diversions from the stream.

On April 9, 1923, current meter measurements were taken on the Upper Ditch, at the head of the ditch, below the point of inflow from Diversion 533, and below the point of inflow from Diversion 535, respectively. Discharges of 0.89 second foot, 0.62 second foot, and 1.26 second feet were obtained at the respective measuring points. The discharge of 0.89 second foot also represents the total flow of Greenhorn Creek at the intake of the Upper Ditch, on the above date.

On the same date, a float measurement was taken on the flume at the head of the Lower Ditch, showing a discharge of 0.56 second foot.

Diversion 536 is that of the Simas Domestic Pipe Line, diverting from a spring, located in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 24 T 45 N, R 8 W (see map sheet 188).

The conduit is a one inch diameter pipe line, about 300 feet

in length, conveying water to the M. S. Simas residence, where it is used for domestic purposes.

The pipe line was not indicated as a diversion at the time of the engineer's visit on April 9, 1923, consequently no discharge measurement was obtained.

Diversion 537 is that of the Jose Rose Ditch, diverting from Greenhorn Creek in the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 24 T 45 N, R 8 W (see map sheet 188).

Diversion is made by a temporary rock dam. The conduit is an earth ditch, about one half of a mile in length, running easterly from the point of diversion to the Jose G. Rose ranch. The ditch serves an irrigated area of 10.2 acres, of which, 1.5 acres are owned by F. G. and M. G. Rose, and 8.7 acres are owned by Jose G. Rose. Of the 8.7 acres owned by Jose G. Rose, 0.9 acre has been described as sub-irrigated. (See map sheet 188 and Acreage Table pages 208 and 209).

Float measurements were taken on the ditch on June 14, 1922, and on April 10, 1923, showing discharges of 0.79 second foot and 0.76 second foot, respectively. These discharges represent the maximum capacity of the ditch. On April 10, 1923, the normal irrigating head, as turned into the ditch by Jose Rose, was measured by means of a float and found to be 0.49 second foot.

Diversion 538 is that of the Rose Brothers Ditch, diverting from Bob Rice Ravine, a tributary of Greenhorn Creek, in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 19 T 45 N, R 7 W (see map sheet 188). The ditch is owned by F. G. and M. G. Rose.

A rock dam has been constructed across the ravine, forming a small regulatory reservoir. Water is stored in the reservoir and is

released in flush heads for diversion into an earth ditch, which heads on the west side of the ravine just below the dam. The ditch is about 600 feet in length, and serves an irrigated area of 1.7 acres (see map sheet 188 and Acreage Table page 208).

A float measurement was taken on the ditch on June 14, 1922, showing a discharge of 0.45 second foot. This discharge represents the maximum capacity of the ditch and also the normal irrigating head. On April 10, 1923, a volumetric measurement was taken on the ravine, at a point above the reservoir, showing a discharge of 0.017 second foot. This discharge represents the total flow of the ravine on the above date.

Diversion 539 is that of the Rose Brothers Ditch, diverting from Greenhorn Creek in the NE¼ NW¼ Sec. 30 T 45 N, R 7 W (see map sheet 188). The ditch is owned by F. G. and M. G. Rose.

The conduit is an earth ditch, about 1200 feet in length, running southeasterly along the south bank of Greenhorn Creek. The ditch serves an irrigated area of 1.7 acres (see map sheet 188 and Acreage Table page 208).

Float measurements were taken on the ditch on June 14, 1922 and on April 10, 1923, showing discharges of 0.22 second foot and 0.25 second foot, respectively. These discharges represent the maximum capacity of the ditch and also the normal irrigating head.

Diversion 540 is that of the M. F. Rose Ditch, diverting from the north bank of Greenhorn Creek in the NE¼ NW¼ Sec. 30 T 45 N, R 7 W (see map sheet 188).

The conduit is an earth ditch, about one mile in length, running easterly from the point of diversion and terminating near the SW¼ NW¼ Sec. 29 T 45 N, R 7 W. The ditch serves an irrigated area of 13.0 acres (see map sheet 189 and Acreage Table page 209).

Water diverted by the ditch, in excess of that required for the irrigation of the lands under the ditch, is returned to Greenhorn Creek below the Nunes Ditch (Diversion 542), but above the M. F. Rose Ditch (Diversion 549). During the low water season of each year, the ditch is often used as a bypass around the Nunes Ditch, thereby making water available for diversion by the M. F. Rose Ditch (Diversion 549), without interference from the Nunes Ditch.

Current meter measurements were taken on the ditch on June 14, 1922, and on April 10, 1923, showing discharges of 0.74 second foot and 1.18 second feet, respectively. The discharge, of 0.74 second foot, represents the total flow of Greenhorn Creek at the head of the ditch, on June 14, 1922. The discharge, of 1.18 second feet represents the maximum capacity of the ditch and also the normal irrigating head, as stated by M. F. Rose.

Diversion 541 is that of the M. F. Rose Ditch, diverting from Tannor Gulch, a tributary of Greenhorn Creek, in the NW¼ SE¼ Sec. 30 T 45 N, R 7 W (see map sheet 189).

The diversion conduit is a 6 inch diameter pipe, about 130 feet in length. From the end of the pipe line the water is conveyed, by an earth ditch, for a distance of some 1300 feet, to a point in the SW¼ NE¼ Sec. 30 T 45 N, R 7 W, where it is used for the irrigation of 1.2 acres (see map sheet 189 and Acreage Table page 209).

A float measurement was taken on the ditch on June 14, 1922, showing a discharge of 0.12 second foot. This discharge represents the total flow of Tanner Gulch on the above date. The maximum capacity of the ditch was computed and found to be 0.40 second foot. The ditch is normally operated at maximum capacity when that quantity of water is available for diversion.

Diversion 542 is that of the Nunes Ditch, diverting from Greenhorn Creek in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 30 T 45 N, R 7 W (see map sheet 189).

The conduit is an earth ditch, running southeast from the point of diversion and terminates on the west bank of Milk Gulch at a point in the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 30 T 45 N, R 7 W. The ditch has a total length of about one fourth of a mile and serves an irrigated area of 4.9 acres (see map sheet 189 and Acreage Table page 188).

Two float measurements were taken on the ditch on April 9,1923, showing discharges of 0.45 second foot and 0.83 second foot, respectively. The discharge, of 0.45 second foot, represents the normal irrigating head, and the discharge of 0.83 second foot represents the maximum capacity of the ditch.

Diversion 543 is that of the Nunes Ditch, diverting from Milk Gulch, a tributary of Greenhorn Creek, in the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 30 T 45 N, R 7 W (see map sheet 189).

The conduit is an earth ditch, about 450 feet in length, and serves an irrigated area of 1.1 acres (see map sheet 189 and Acreage Table page 188).

The ditch was not in use at the time of the engineer's visit on

April 9, 1923, consequently no discharge measurements were obtained on the ditch.

Diversion 544 is that of the Nunes Ditch System, consisting of a small regulatory reservoir located on Milk Gulch in the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 30 T 45 N, R 7 W, and five small earth ditches, which divert from the gulch below the reservoir. The system serves an irrigated area of 11.7 acres (see map sheet 189 and Acreage Table page 188). Of this irrigated area 10.8 acres are served by the two ditches diverting from the west side of the gulch, while the three east side ditches serve an area of 0.9 acres.

A current meter measurement was taken on the upper west side ditch on April 9, 1923, showing a discharge of 0.85 second foot. This discharge represents the maximum capacity of the ditch and also the normal irrigating head. The maximum capacity of the lower west side ditch was estimated to be the same as the above. The east side ditches were not measured, but have ample capacity to carry sufficient water for the irrigation of the areas under the respective ditches.

On June 14, 1922, a weir measurement was taken on Milk Gulch, above the Nunes Ditch (Diversion 543), showing a discharge of 0.01 second foot. A volumetric measurement taken on the gulch, at the same point, on April 9, 1923, gave a discharge of 0.15 second foot. These discharges represent the total flow of Milk Gulch and the flow available for diversion by the Nunes ditches (Diversions 543 and 544) on the respective dates.

Diversions 545 and 546 refer to two springs, located at the head of a

small ravine, on the C. C. Marlow property, in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 29 T 45 N, R 7 W (see map sheet 189).

The flow of the springs is diverted from the ravine by several small ditches, and is used for the irrigation of 5.1 acres (see map sheet 189 and Acreage Table page 165).

Volumetric measurements were taken on April 10, 1923, to determine the flow of the springs. These measurements showed discharges of 0.0022 second foot and 0.0065 second foot for Diversions 545 and 546, respectively.

Diversion 547 refers to a spring, located on the C. C. Marlow property, in the NW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 29 T 45 N, R 7 W. The flow of the spring is used for the irrigation of 0.2 acre of orchard and garden at the C. C. Marlow residence, (see map sheet 189 and Acreage Table page 166).

The spring was not indicated as a diversion at the time of the engineer's visit on April 10, 1923, consequently no discharge measurements were obtained.

Diversion 548 is that of the C. C. Marlow Ditch, diverting from the North Fork of Greenhorn Creek in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 19 T 45 N, R 5 W (see map sheet 188).

Diversion is made by means of a small regulatory reservoir, located on the creek channel. From the reservoir the water is conveyed by a flume, for a distance of about 150 feet, and thence by an earth ditch, to a point in the NW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 19 T 45 N, R 7 W, where it is emptied into a ravine. From this point the water is carried by the ravine for a distance of some 200 feet, and is rediverted therefrom by two earth

ditches. The system serves an irrigated area of 2.3 acres (see map sheet 189 and Acreage Table page 166).

The ditch was not in use during the period covered by the field investigation, due to lack of sufficient water at the intake of the ditch. On April 10, 1923, the flow of the North Fork of Greenhorn Creek at the intake of the ditch was measured volumetrically, and found to be 0.038 second foot.

Diversion 549 is that of the M. F. Rose Ditch, diverting from the south bank of Greenhorn Creek in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 29 T 45 N, R 7 W (see map sheet 189).

The conduit is an earth ditch, running southeasterly from the point of diversion and terminating in the NW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 33 T 45 N, R 5 W. The ditch has a total length of about one mile, and serves an irrigated area of 36.2 acres on the M. F. Rose lower ranch (see map sheets 187 and 191 and Acreage Table pages 209 and 210).

A current meter measurement was taken on the ditch on June 14, 1922, showing a discharge of 0.26 second foot. This discharge represents the total flow available for diversion on the above date. On April 10, 1923, a float measurement was taken on the ditch. The resulting discharge, of 0.87 second foot, represents the maximum capacity of the ditch and also the normal irrigating head.

Diversion 550 is that of the Upper Greenhorn Ditch, diverting from Greenhorn Creek in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 29 T 45 N, R 7 W (see map sheet 189). The ditch is owned by M. C. Lawrence, J. H. Le May, George Sousa, and George A. Tebbe.

The conduit is an earth ditch, and was originally a part of the Yreka Ditch System. That portion of the ditch now in use by the above named interests, is about two and one half miles in length, and extends easterly from the intake to a point about 400 feet east of the section corner common to sections 27, 28, 33, and 34, T 45 N, R 7 W, and thence northerly, across the J. H. LeMay, M. C. Lawrence, and George Sousa ranches, to a point about 650 feet west of the section corner common to sections 21, 22, 27, and 28 T 45 N, R 7 W, where the takeout for George A. Tebbe, the lowest owner on the ditch, is located. The water diverted by the ditch is divided between the above named interests, 1/2 part to M. C. Lawrence and a 1/6 part to each of the remaining three owners, and is used for irrigation, principally, on the lands of the owners of the ditch. There are, however, three other users, namely, Bert Calkins, Mary B. Davis, and Antone Valin, who receive water from the ditch. The lands irrigated from the ditch are described in the Acreage Table under the names of the various users. A summary of these data follows:

Name of Owner	Acreage Irrigated: Irr.	sub-irr.	Total	Map Sheet	Acreage Table page
Calkins, Bert	(a)12.1		12.1	191	33
Davis, Mary B.	(b)10.7		10.7	193	46
Lawrence, M.C.	77.7	7.4	85.1	192	149,150
LeMay, J.H.	32.8	1.7	34.5	192	151
Sousa, George	61.2		61.2	191,192	247
Tebbe, George A.	13.5		13.5	193	256
Valin, Antone	(c) 5.2		5.2	190	262
TOTAL	213.2	9.1	222.3		

(a) The status of Bert Calkins use of the ditch as explained by George A. Tebbe, is as follows:
Bert Calkins claims a right from Greenhorn Creek, but has no ditch for the conveyance of the water to his lands. For several years past, it has been his practice to convey this water to his lands through the Upper Greenhorn Ditch, although he has no interest in the ditch.

(b) Mary B. Davis receives water from George A. Tebbe.
(c) Antone Valin uses that portion of the Upper Greenhorn Ditch below the Tebbe takeout, and receives the water which passes the Tebbe takeout or is picked up by the ditch below that point.

Two current meter measurements were taken on the ditch on April 11, 1923, showing discharges of 1.05 second feet and 2.68 second feet, respectively. These discharges represent the flows available for diversion at the time the measurements were taken. The maximum capacity of the ditch was computed and found to be 7.0 second feet.

Diversion 551 is that of the City of Yreka Pipe Line, diverting from Greenhorn Creek in the NE¼ SW¼ Sec. 29 T 45 N, R 7 W (see map sheet 189).

A submerged dam has been constructed across Greenhorn Creek for the purpose of intercepting the underground flow of the stream. The structure consists of a concrete wall about 240 feet long on top, and rises vertically from bed rock to a height of about 21 feet at the deepest point. The wall is about 18 inches thick on the bottom and about 12 inches thick on top and is filled in on both sides with stones and gravel. The top of the dam is about three feet below the surface of the tailings, which form the bed of the stream.

A circular collecting well, extending from bed rock to the top of the dam, has been constructed just above the upstream face of the wall and at a point about 100 feet north of the center of the stream channel. One inch diameter pipes, set 12 inches apart both horizontally and vertically, have been inserted in the walls to provide for the passage of water into the well.

The conduit consists of 8110 feet of 8 inch diameter and

4660 feet of 6 inch diameter, riveted steel pipe, number 14 B.W. gauge, and extends from the dam to a distributing reservoir, located in the SE$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 28 T 45 N, R 7 W. The elevations of the top of the dam and the bottom of the outlet pipe are 277 feet and 260 feet respectively. The elevation of the bottom of the discharge pipe at the reservoir is 201 feet. These elevations are from an assumed datum.

Construction on the system was begun on or about September 1, 1903.

The above data were obtained from the "Specificiations for the Construction of Water Works for the City of Yreka".

Based on the above data, and assuming the water surface at the intake to be level with the top of the dam, the maximum capacity of the pipe line was computed and found to be 0.75 second foot and 0.56 second foot, for new and old pipe respectively. Assuming no head on the outlet pipe at the dam, the capacity of the pipe line was computed and found to be 0.67 second foot and 0.50 second foot, for new and old pipe, respectively.

Under normal conditions the pipe line is operated at maximum capacity, when that amount of water is available. The water supply, however, usually fails during the summer months and the City of Yreka has to resort to pumping from other sources to obtain an adequate supply.

Diversion 552 is that of the Allison Ditch, diverting from an unnamed fork of Greenhorn Creek in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 32 T 45 N, R 7 W (see map sheet 187).

The conduit is an earth ditch, running northeast from the

point of diversion for a distance of about 600 feet. A small patch of land, lying under the ditch, has been cleared, but has never been cropped or irrigated (see map sheet 187).

There was no water available for diversion by the ditch during the period covered by the field investigation, consequently, no discharge measurements were obtained.

Diversions 553 to 557, inclusive, are those of the M. F. Rose ditches, diverting from an unnamed fork of Greenhorn Creek.

Diversions 553 to 555, inclusive, are short earth ditches, which divert from the stream in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 29 T 45 N, R 7 W, and supply water to the M. F. Rose lower ranch for the irrigation of a small area, lying above the flow line of the M. F. Rose Ditch (Diversion 549). Irrigated areas of 0.8 acre, 0.3 acre, and 0.6 acre are served by Diversions 553, 554, and 555, respectively (see map sheet 191 and Acreage Table page 210).

Diversion 556 is a three quarters inch diameter pipe, about 450 feet in length, which heads at a spring in the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 29 T 45 N, R 7 W, and supplies water for domestic use and for the irrigation of 0.2 acre of garden at the house on the M. F. Rose lower ranch (see map sheet 191 and Acreage Table page 210).

Diversion 557 is an earth ditch, diverting from the gulch at a point within the SE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 29 T 45 N, R 7 W, and just below the point where the M. F. Rose Ditch (Diversion 549) crosses the gulch. The ditch has been considered as a part of the distribution system of the latter ditch and the area served has been described under that ditch (see map sheet 191 and Acreage Table pages 209 and 210).

There was no water available for diversion by the above numbered ditches during the period covered by the field investigation, consequently no discharge measurements were obtained.

Diversion 558 is that of the Buckner Ditch, diverting from Greenhorn Creek in the NE¼ NW¼ Sec. 33 T 45 N, R 7 W (see map sheet 187).

The conduit system consists of a buried drain, laid on the bed rock in Greenhorn Creek, and an earth ditch, running southeast from the end of the drain to the Miles Buckner ranch. The conduit has a total length of about one mile and serves an irrigated area of 38.2 acres (see map sheets 186 and 187, and Acreage Table page 28).

Current meter measurements were taken on the ditch on June 15, 1922, and on April 11, 1923, showing discharges of 0.48 second foot and 1.00 second foot, respectively. The discharge, of 1.00 second foot, represents the maximum capacity of the ditch and also the normal irrigating head.

Diversion 559 is that of the Lower Greenhorn Ditch, diverting from Greenhorn Creek in the SW¼ NW¼ Sec. 34 T 45 N, R 7 W (see map sheet 186). The ditch is owned by John Brazil, one eighth interest, Matt Castro, one eighth interest, Ed. McNulty, one half interest, and George B. Simmons, one fourth interest.

The conduit is an earth ditch, about five miles in length, running north from the point of diversion, for a distance of about one and one fourth miles, and thence northeasterly to its termination at a small regulatory reservoir, located on the George B. Simmons property, at a point 300 feet south of the section corner common to sections 1,2,

11, and 12, T 45 N, R 7 W. The water diverted by the ditch is used for irrigation, principally, on the lands of the owners of the ditch. There are, however, four other users, namely, M. S. Burgess, Nellie Calkins Cooper, Jose Fillippe, and Joe Leal, who receive water from the ditch. The areas served by the ditch are described in the Acreage Table under the names of the respective users. A summary of these data follows:

Name of Owner	Acreage Irrigated	Map Sheet	Acreage Table Page
Brazil, John	7.6	196	26
Burgess, M. S.	1.5	195	29
Castro, Matt	8.5	195	36
Cooper, Nellie Calkins	3.6	193	42
Fillippe, Jose	0.7	195	87
Leal, Joe	2.8	196	150
McNulty, Ed.	47.8	194	177
Simmons, Geo. B.	3.1	196	234
TOTAL	75.6		

There was no water available for diversion by the ditch during the period covered by the field investigation, consequently no discharge measurements were obtained. The maximum capacity of the ditch was computed and found to be 9.4 second feet.

Diversion 560 is that of the H. Brown Ditch, diverting from a small branch of Greenhorn Creek in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 34 T 45 N, R 7 W (see map sheet 186).

Prior to the construction of the State Highway during 1923, the water flowing in this channel was carried under the road by two Armco iron culverts to the intake of the ditch. In 1923, however, the ditch was cut off from this source of supply by the construction of the State Highway, which filled in the channel and made no provision for bypassing

the water to the ditch. From the ends of the culverts, the water was conveyed by an earth ditch and distributed for irrigation on the H.Brown ranch. The ditch has a total length of about one half of a mile, and serves an area of 38.8 acres, which has been irrigated at some time (see map sheets 186 and 192 and Acreage Table page 27).

On June 15, 1922, a float measurement was taken on the ditch, showing a discharge of 0.08 second foot. This discharge represents the flow available for diversion by the ditch on the above date. The maximum capacity of the ditch was computed and found to be 5.4 second feet.

Diversion 561 is that of the Howard Brown Pumping Plant located at a well in the SW¼ SE¼ Sec. 27 T 45 N, R 7 W. The well is on the west side of,and about 370 feet from, Yreka Creek (see map sheet 192).

The pumping plant consists of a 1 1/2 inch centrifugal pump, driven by a 2 1/2 horsepower gasoline engine. The suction pipe is a 2 inch diameter pipe with a lift of about 10 feet. The pump discharges through a 1 1/2 inch diameter pipe, with a lift of about 4 feet. The plant serves an irrigated area of 1.2 acres of garden (see map sheet 192 and Acreage Table page 27).

This pumping plant, together with several others located on or near Yreka Creek and its tributaries, was not found until the transit and stadia survey was being made in this area during November of 1923. Due to the pressure of time subsequent to that date, no discharge measurements were obtained on these plants.

Diversion 562 is that of the Steele Ditch, diverting from Yreka Creek in the SE¼ SE¼ Sec. 27 T 45 N, R 7 W (see map sheet 192).

The conduit is an earth ditch, about one half of a mile in length, running north along the east bank of Yreka Creek. The ditch serves an irrigated area of 13.1 acres (see map sheet 192 and Acreage Table page 250).

On June 15, 1922, a current meter measurement was taken on the ditch. The resulting discharge of 0.53 second foot represents the flow available for diversion on that date. A second current meter measurement was taken on the ditch on April 14, 1923, showing a discharge of 1.68 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head.

Diversion 563 is that of the Steele Pumping Plant, located in the NW¼ SE¼ Sec. 27 T 45 N, R 7 W (see map sheet 192).

Water is pumped from a well, located on the west bank of Yreka Creek, and is used for the irrigation of 0.1 acre of garden, at the Alden J. Steele house (see map sheet 192 and Acreage Table page 250).

The pump is a 2 inch Byron Jackson centrifugal, and operates under a total head of about 18 feet.

No discharge measurements were obtained on the pump for reasons given under Diversion 561.

Diversion 564 is that of the Raymond Ditch, diverting from Yreka Creek in the SW¼ NE¼ Sec. 27 T 45 N, R 7 W (see map sheet 192).

The conduit is an earth ditch, diverting from the east bank of the creek. At a point about 250 feet below the intake, the ditch crosses to the west side of the creek, by means of a pipe line 50 feet in length. From the end of the pipe the ditch runs northerly, for a distance of

about one fourth of a mile, to the George Raymond ranch, where additional water is supplied to the ditch from the Raymond Pumping Plant (Diversion 566). The ditch serves an irrigated area of 15.6 acres, which has been described in the Acreage Table as irrigated under Diversions 564 and 566 (see map sheet 192 and Acreage Table page 206).

Two current meter measurements were taken on the ditch, one on June 27, 1922, showing a discharge of 0.62 second foot, which represents the flow available for diversion on that date, and the other on April 14, 1923, which resulted in a discharge of 1.68 second feet. The discharge obtained by the second measurement represents the normal irrigating head, as stated by George Raymond. The maximum capacity of the ditch was computed and found to be 3.0 second feet.

Diversion 565 is that of the Siskiyou County Hospital Pumping Plant. The plant pumps from a well, located at a point about 500 feet east of Yreka Creek, and within Lot 10 Block 52 of the City of Yreka (see map sheet 192).

The pump is a Byron Jackson quadruplex pump, with a rated capacity of 150 gallons per minute or about 0.33 second foot. The water is used for the irrigation of 8.1 acres at the Siskiyou County Hospital (see map sheet 192 and Acreage Table page 44).

No discharge measurements were obtained on the pump for reasons given under Diversion 561.

Diversion 566 is that of the Raymond Pumping Plant, located at a well near the west bank of Yreka Creek, within Lot 8, Block 52, of the City of Yreka (see map sheet 192).

The pump is a 1 3/4 inch Woodin and Little Gould centrifugal, and discharges through about 75 feet of 2 1/2 inch diameter pipe, into the Raymond Ditch (Diversion 564). The pump operates under a static head of about 13 feet. The water is used for irrigation in common with that diverted from Yreka Creek by the Raymond Ditch (see description of Diversion 564).

No discharge measurements were obtained on the pump for reasons given under Diversion 561.

Diversion 567 is that of the Marion Pumping Plant, located at a well about 100 feet east of Yreka Creek and within Lot C Block 52 of the City of Yreka (see map sheet 192).

The pump is a 2 inch Jackson centrifugal, and operates under suction and discharge lifts of 12 feet and 3 feet, respectively. The suction and discharge pipes are each 2 inches in diameter. An area of 0.9 acre is irrigated under the pump (see map sheets 192 and 193 and Acreage Table page 165).

No discharge measurements were obtained on the pump for reasons given under Diversion 561.

Diversion 568 is that of the Rogers Pumping Plant, located at a well about 500 feet west of Yreka Creek and within Lot B Block 52 of the City of Yreka (see map sheet 192).

The pump is a 3 inch Jackson centrifugal, with 3 inch diameter suction and discharge pipes, and operates under suction and discharge lifts of 15 feet and 8 feet, respectively. The pump serves an irrigated area of 3.1 acres (see map sheets 192 and 193 and Acreage Table page 207).

No discharge measurements were obtained on the pump, for reasons given under Diversion 561.

Diversion 569 is that of the Souza Buried Rock Drain, which heads in Souza's irrigated pasture in the NW¼ NW¼ Sec. 27 T 45 N, R 7 W (see map sheet 192).

Water is collected by the rock drain and is conveyed thereby to a point about 200 feet east of the head of the drain, where it is emptied into an earth ditch. The ditch is about 800 feet long, runs easterly from the end of the drain, and serves an irrigated area of 10.5 acres. Of this area, 7.1 acres has been described as sub-irrigated (see map sheet 192 and Acreage Table page 248).

This area also receives water from the Souza Pumping Plant, which pumps from a well, located south of Souza's house, and discharges into the ditch at a point 150 feet below the end of the rock drain.

This drain ditch was not found until the area was mapped in November, 1923, and due to the lack of time, subsequent to that date, no discharge measurements were taken on the ditch.

Diversion 570 is that of the Archibald Pumping Plant, located at a well 100 feet north of Yreka Creek and within Lot 4b, Block 52, of the City of Yreka (see map sheet 193).

The pump is a 1 1/2 inch centrifugal, operating under suction and discharge lifts of 15 feet and 10 feet, respectively. From the pump the water is discharged into an earth ditch, which runs east and west from the discharge pipe, and serves an irrigated area of 3.5 acres (see map sheet 193 and Acreage Table page 6).

No discharge measurements were obtained on the pump for reasons given under Diversion 561.

Diversion 571 is that of the Archibald Pump, located on Yreka Creek, within Lot 4b, Block 52, of the City of Yreka (see map sheet 193).

The pump is a 1 1/2 inch centrifugal, and was a temporary installation used during 1923 to supply water to the same area, describ under Diversion 570.

Diversion 572 is that of the Perry Upper Ditch, diverting from Yreka Creek. The point of diversion is located within Block 52 of the City of Yreka, at a point just above the highway bridge on the Yreka-Montague road (see map sheet 193). The ditch is owned by Ed. McNulty, who acquired the interests of J. T. and M. W. Perry, former owners, during 1923.

Diversion is made by means of a temporary board and sand dam. The conduit is an earth ditch, about two miles in length, running northerly along the west side of Yreka Creek and terminating at the north line of section 14 T 45 N, R 7 W. The water diverted by the ditch is used for irrigation principally, on the Ed. McNulty ranch. The Churchill Company, John Cordoza, Harold J. Lang, George Meamber, Joe Miller, and Frank Silva are sold water during the spring of each year, when water is plentiful. The areas irrigated from the ditch are described in the Acreage Table under the names of the above mentioned users. A summary of these data follows:

Name of Owner	Acreage Irrigated	Map Sheet	Acreage Table Page
Churchill Company	0.4	193	39
Cordoza, John	1.8*	193	43
Lang, Harold J.	11.8	193,194	148
McNulty, Ed.	20.1	194	178
Meamber, Geo.	4.9	193	178,179
Miller, Joe	0.3	193	179
Silva, Frank	2.7	193	232
TOTAL	42.0		

* In addition to this acreage, there is an area of 12.2 acres, owned by John Cordoza, which is irrigable under the ditch, but is also served by the Cordoza Pumping Plant (Diversion 579). A segregation of the portions of this area irrigated under each diversion, could not be made, therefore, the whole of the 12.2 acres has been alloted to the Cordoza Pumping Plant.

Two current meter measurements were taken on the ditch, one on June 19, 1922, and the other on April 14, 1923, showing discharges of 0.75 second foot and 1.05 second feet, respectively. These discharges represent the total flow of Yreka Creek at the intake of the ditch on the respective dates. The maximum capacity of the ditch was computed and found to be 2.8 second feet.

Diversion 572A is that of the City of Yreka Pumping Plant. The plant pumps from a well, located about 60 feet west of Yreka Creek and within Block 13 of the City of Yreka (see map sheet 193).

The plant has two units, one a double acting piston pump, with a rated capacity of 400 gallons per minute, and the other a two stage centrifugal pump, rated at 500 gallons per minute. The water is used for domestic purposes in the City of Yreka.

Diversion 573 is that of the Churchill Company Pumping Plant. The plant pumps from a well, located about 270 feet west of Yreka Creek, and within Lot 3a, Block 13 of the City of Yreka (see map sheet 193).

The pump is a 3 inch Byron Jackson centrifugal, and operates under a static head of about 30 feet. The water is used for the irrigation of 0.9 acre (see map sheet 193 and Acreage Table page 39).

No discharge measurements were obtained on the pump for reasons given under Diversion 561.

Diversion 574 is that of the Valin Ditch, diverting from the North Fork of Humbug Gulch, a tributary of Yreka Creek, in the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 21 T 45 N, R 7 W (see map sheet 190).

The water is collected by a buried drain, laid on the bed of the stream, and conveyed thereby for a distance of some 200 feet, to the intake of an earth ditch. From this point the water is conveyed southerly by the ditch and emptied into a small regulatory reservoir, located on the South Fork of Humbug Gulch, in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 21 T 45 N, R 7 W. From the reservoir, the water together with water stored in the reservoir from the South Fork of Humbug Gulch, is discharged into that stream and rediverted by the Valin Ditch (Diversion 576). The water diverted by the ditch is used for the irrigation of 10.3 acres, above its confluence with the South Fork of Humbug Gulch, and serves an additional area of 5.8 acres, in common with waters of the South Fork of Humbug Gulch under the Valin Ditch (Diversion 576), (see map sheet 190 and Acreage Table page 263).

A float measurement was taken on the ditch on April 12, 1923, showing a discharge of 0.23 second foot. This discharge represents the available flow on the above date. The maximum capacity of the ditch was computed and found to be 0.5 second foot.

Diversion 575 is that of the Valin Ditch, diverting from the North Fork of Humbug Gulch in the SE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 21 T 45 N, R 7 W. The ditch heads at a point about 450 feet downstream from Diversion 574 (see map sheet 190).

The conduit is an earth ditch, running southeasterly to a

point about 450 feet below the intake, where it empties into a small regulatory reservoir. From the reservoir, the water is distributed by a system of lateral ditches. for the irrigation of 31.4 acres (see map sheet 190 and Acreage Table page 263).

Water from Diversion 574 may be spilled into Diversion 575, above the reservoir, but since this water would otherwise be available for diversion by the latter ditch, no part of the above described area has been alloted to Diversion 574.

A float measurement was taken on the ditch on April 12, 1923, showing a discharge of 0.19 second foot. The discharge represents the flow turned into the ditch from the Valin Ditch (Diversion 574) for the purpose of obtaining a measurement. The ditch was otherwise dry. The maximum capacity of the ditch was computed and found to be 2.18 second feet.

Diversion 576 is that of the Valin Ditch, diverting from the South Fork of Humbug Gulch in the SE¼ SW¼ Sec. 21 T 45 N, R 7 W (see map sheet 190).

The conduit is an earth ditch, running southeasterly from the intake for a distance of about 100 feet. The use of water under the ditch is described under Diversion 574.

There was no water available for diversion by the ditch at the time of the engineer's visit on April 12, 1923, consequently no discharge measurements were obtained.

Diversion 577 is that of the Valin Domestic Pipe Line, diverting from Valin Spring. The spring is located in the SE¼ SW¼ Sec. 21 T 45 N, R 7W,

(see map sheet 190).

The pipe line is about 1100 feet in length, and conveys water to the Valin house, where it is used for domestic purposes and for the irrigation of 0.1 acre (see map sheet 190 and Acreage Table page 264).

The pipe line was not indicated as a diversion at the time of the engineer's visit on April 12, 1923, consequently no discharge measurements were obtained.

Diversion 578 is that of the Tebbe Drain, diverting from Humbug Gulch in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 22 T 45 N, R 7 W (see map sheet 193).

The conduit is a buried drain, about 600 feet in length, laid on the bed rock in Humbug Gulch. The water diverted by the drain is used for the irrigation of 0.6 acre of pasture (see map sheet 193 and Acreage Table page 257).

The drain was not indicated as a diversion at the time of the engineer's visit on April 12, 1923, consequently, no discharge measurements were obtained.

Diversion 579 is that of the John Cordoza Pumping Plant, located in Lot 2, Block 1, of the City of Yreka (see map sheet 193).

The pump is a 3 inch centrifugal, which pumps from a well located on the west bank of Yreka Creek. The water is discharged through a 6 inch diameter riveted steel pipe, about 650 feet in length, into an earth ditch, which runs northeast and southwest from the end of the pipe line, across the John Cordoza ranch. The plant serves an irrigated area of 12.2 acres (see map sheet 193 and Acreage Table page 43). This area is also irrigable under the Perry Upper Ditch (Diversion 572) but as stated, thereunder, no part of it has been alloted to that ditch.

No discharge measurements were obtained on the pump for reasons given under Diversion 561.

Diversion 580 is that of the John Cordoza Domestic Pipe Line, diverting from a spring, located on an unnamed tributary of Yreka Creek, in the NW¼ NE¼ Sec. 22 T 45 N, R 7 W (see map sheet 193).

The conduit is a 1 1/4 inch diameter pipe, about 2200 feet in length, conveying water to the John Cordoza house, where it is used for domestic purposes and for the irrigation of 0.2 acre (see map sheet 193 and Acreage Table page 43).

Diversion 581 is that of the Lang Ditch, diverting from Yreka Creek in the SW¼ NW¼ Sec. 23 T 45 N, R 7 W (see map sheet 193).

The conduit is an earth ditch, running north along the east side of Yreka Creek. At a point about one fourth of a mile below the intake, the ditch forks into two laterals, one of which extends northerly from this point for a distance of about one fourth of a mile and the other of which crosses to the west side of the creek and runs northwesterly, for a like distance. The ditch serves an irrigated area of 39.9 acres (see map sheets 193 and 194, and Acreage Table page 148).

A current meter measurement was taken on the ditch on April 17, 1923, showing a discharge of 0.96 second foot. This discharge represents the flow available for diversion on the above date. The maximum capacity of the ditch was computed and found to be 2.21 second feet.

Diversion 582 is that of the Perry Middle Ditch, diverting from Yreka

Creek in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 14 T 45 N, R 7 W (see map sheet 194). The ditch is owned by Ed. McNulty, who acquired the interests of J. T. and M. W. Perry, former owners, during 1923.

The conduit is an earth ditch, about one half of a mile in length, running northerly from the point of diversion, along the west side of Yreka Creek, and terminating near the northeast corner of the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 14 T 45 N, R 7 W. The ditch serves an irrigated area of 9.6 acres, owned by Ed. McNulty, and a sub-irrigated area of 1.8 acres, owned by Harold J. Lang, or a total area of 11.4 acres (see map sheet 194 and Acreage Table pages 149 and 178).

A current meter measurement was taken on the ditch on April 14, 1923, showing a discharge of 2.52 second feet. This discharge represents the normal irrigating head as stated by J. T. Perry. The maximum capacity of the ditch was computed and found to be 4.40 second feet.

Diversion 583 is that of the Perry Lower Ditch, diverting from Yreka Creek in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 14 T 45 N, R 7 W (see map sheet 194). The ditch is owned by Ed. McNulty, who acquired the interests of J. T. and M. W. Perry, former owners, during 1923.

The conduit is an earth ditch, running northerly along the east bank of Yreka Creek and terminating at the north line of the Ed. McNulty ranch, near the quarter section corner common to sections 11 and 14 T 45 N, R 7 W. The ditch is about one fourth of a mile in length, and serves an irrigated area of 25.0 acres (see map sheet 194 and Acreage Table page 178).

Two current meter measurements were taken on the ditch, one on June 19, 1922, and the other on April 14, 1923, showing discharges of 2.87 second feet and 3.30 second feet, respectively. The discharge, of 3.30 second feet, represents the maximum capacity of the ditch and also the normal irrigating head, as stated by J. T. Perry.

Diversion 584 is that of the Alves and Simmons Ditch, diverting from Yreka Creek in the SW¼ SE¼ Sec. 11 T 45 N, R 7 W (see map sheet 196). The ditch is owned by G. S. Alves and George B. Simmons.

The conduit is an earth ditch, about one and one fourth miles in length, running northeasterly along the west side of Yreka Creek, across the George B. Simmons, G. S. Alves, and Joe Silva ranches, to its termination at a point on the latter ranch, in the SW¼ SE¼ Sec. 1 T 45 N, R 7 W. At a point about 450 feet below the intake of the ditch, water diverted from the sub-surface flow of the stream by the Alves and Simmons Buried Drain (Diversion 585), enters the ditch. The combined flow of the two diversions is used for irrigation on the above named ranches. The lands irrigated from the ditch are described in the Acreage Table under the names of the respective owners of these lands. A summary of these data, follows:

Name of Owner	Acreage Irrigated	Map Sheet	Acreage Table Page
Alves, G. S.	11.6	196,197	4
Silva, Joe	5.0	197	232
Simmons, Geo.B.	18.8*	196	234
TOTAL	35.4		

* Of this area, 12.3 acres are also served by the Lower Greenhorn Ditch and, partially, by the Simmons Lower Ditch (Diversions 559 and 601, respectively).

A current meter measurement was taken on the ditch, at a point below the confluence of the Alves and Simmons Buried Drain, on April 13, 1923, showing a discharge of 4.30 second feet. This discharge represents the normal irrigating head, as stated by George B. Simmons, and also the combined flow of Diversions 484 and 485. The maximum capacity of the ditch was computed and found to be 7.05 second feet.

Diversion 585 is that of the Alves and Simmons Buried Drain, heading on Yreka Creek at a point about 200 feet northeast of the quarter section corner common to sections 11 and 14, T 45 N, R 7 W (see map sheet 196).

The conduit is a buried drain, about 1600 feet in length, laid along the bed of Yreka Creek, which collects the sub-surface flow of the stream and discharges it into the Alves and Simmons Ditch. The use of water is described under the Alves and Simmons Ditch.

On June 27, 1922, a current meter measurement was taken to determine the flow discharged by the drain, showing a discharge of 1.47 second feet. This discharge also represents the total flow of the Alves and Simmons Ditch, on the above date, as the ditch was dry above the point of confluence of the drain.

Diversion 586 is that of the Tom Cordoza Upper Ditch, diverting from Long Gulch, a tributary of Yreka Creek in the NW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 10 T 45 N, R 7 W (see map sheet 195).

The conduit is an earth ditch, running easterly and emptying into a small regulatory reservoir, having a capacity of 0.6 acre foot, at a point about 400 feet from the intake. From the reservoir, the water is conveyed by an earth ditch, running easterly and northeasterly for a distance of about three fourths of a mile, and terminating in the SE$\frac{1}{4}$ NE$\frac{1}{4}$

Sec. 10 T 45 N, R 7 W. The water diverted by the ditch is used for the irrigation of 35.7 acres (see map sheet 195 and Acreage Table page 43).

A float measurement was taken on the ditch on April 12, 1923, showing a discharge of 0.39 second foot. This discharge represents the flow available for diversion by the ditch on the above date. The maximum capacity of the ditch was computed and found to be 1.6 second feet.

Diversion 587 is that of the Tom Cordoza Middle Ditch, diverting from Long Gulch in the NE¼ SW¼ Sec. 10 T 45 N, R 7 W (see map sheet 195).

The diversion conduit is a short buried drain, laid along the bed of Canal Gulch, which collects the sub-surface flow of the stream and discharges it into an earth ditch or into a buried pipe line, both of which head at the end of the drain. The water discharged into the ditch is conveyed easterly, for a distance of about one fourth of a mile, and is used for the irrigation of 3.2 acres, while that diverted by the pipe line, is conveyed for a distance of some 1900 feet, to the Tom Cordoza house, and is used for domestic purposes (see map sheet 195 and Acreage Table page 43). The area served by the ditch also lies under the Tom Cordoza Upper Ditch.

A float measurement was taken at the end of the drain on April 12, 1923, showing a discharge of 0.065 second foot. This discharge represents the total flow of the drain on the above date.

Diversion 588 is that of the Tom Cordoza Lower Ditch System, diverting from Long Gulch in the E½ SE¼ Sec. 10 T 45 N, R 7 W (see map sheet 195).

The system consists of a small regulatory reservoir, located in the channel of Long Gulch, and a pumping plant and two gravity

ditches, which divert from the reservoir. The reservoir has a storage capacity of 1.5 acre feet. The water diverted by the system is used for the irrigation of 19.9 acres (see map sheet 195 and Acreage Table page 44). Of the above described area, 1.9 acres are served by the pumping plant, and 18.0 acres are served by the gravity ditches.

There was no water available for diversion by the system at the time of the engineer's visit on April 12, 1923, consequently, no discharge measurements were obtained.

Diversion 589 is that of the Burgess, Castro, and O'Donnell Ditch, diverting from Long Gulch in the SE¼ SE¼ Sec. 10 T 45 N, R 7 W, at a point just below the Tom Cordoza Lower Ditch System reservoir (see map sheet 195). The ditch is owned by M. S. Burgess, Matt Castro, and Annie O'Donnell.

The conduit system consists of a buried drain and pipe line, which runs along Long Gulch to a point about 1200 feet easterly from the head of the drain. At this point, the pipe line crosses the Lower Greenhorn Ditch and empties into an earth ditch, which runs easterly and northerly, for a distance of about one half of a mile, and terminates on the Annie O'Donnell ranch, in the NE¼ SW¼ Sec. 11 T 45 N, R 7 W. The water diverted by the ditch is used for the irrigation of 4.8 acres, of which, 1.1 acres are owned by M. S. Burgess, and 3.7 acres are owned by Annie O'Donnell (see map sheet 195 and Acreage Table pages 29 and 191).

The ditch was not in use during the period covered by the field investigation, and had not been in use for two or three years prior to 1923, consequently, no discharge measurements were obtained.

Diversion 590 is that of the Fillippe Ditch, diverting from Canal Gulch, a tributary of Yreka Creek, in the SE¼ NE¼ Sec. 10 T 45 N, R 7 W (see map sheet 195).

The conduit is an earth ditch, about 1400 feet in length, running easterly from the point of diversion and supplying water to a chain of three small regulatory reservoirs, located on the ditch line at points about 600 feet, 900 feet, and 1400 feet, respectively, from the intake of the ditch. The reservoirs have a combined capacity of 2.26 acre feet. From the reservoir, the water is distributed for the irrigation of 2.9 acres on the Jose Fillippe ranch (see map sheet 195 and Acreage Table page 87).

A float measurement was taken on the ditch on April 12, 1923, showing a discharge of 0.34 second foot. The discharge represents the flow available for diversion by the ditch on the above date. The maximum capacity of the ditch was computed and found to be 1.9 second feet.

Diversion 591 is that of the Joe Lemos Ditch System, diverting from Rocky Gulch, at a point about 100 feet north of the section corner common to sections 2, 3, 10, and 11, T 45 N, R 7 W (see map sheet 195).

A rock and dirt dam has been constructed across Rocky Gulch, at the above mentioned point, forming a small regulatory reservoir with a storage capacity of 5.0 acre feet. From the reservoir the water is discharged into an earth ditch at the northeast end of the dam, or is discharged into Rocky Gulch, through an outlet at the bottom of the dam, for rediversion by two earth ditches, which head on the gulch below the reservoir. The system serves an irrigated area of 15.3 acres (see map

sheet 195 and Acreage Table page 153).

On April 13, 1923, a volumetric measurement was taken on Rocky Gulch above the reservoir, showing a discharge of 0.05 second foot. This discharge represents the flow available for diversion by the system on the above date.

Diversions 592 and 593 are those of the Joe Lemos domestic pipe lines, diverting from springs located east of Rocky Gulch in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 2 and the NW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 11 T 45 N, R 7 W, respectively (see map sheet 195).

The conduits are pipe lines, having lengths of 1250 feet and 800 feet, respectively, and convey water to the Joe Lemos house, where it is used for domestic purposes and for the irrigation of 0.3 acre of grass (see map sheet 195 and Acreage Table page 153).

Diversion 594 is that of the Simmons Upper Ditch, diverting from Yreka Creek in the NE$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 11 T 45 N, R 7 W (see map sheet 196).

The diversion conduit is a buried drain, about 400 feet in length, laid in the bed of Yreka Creek. From the drain, the water is discharged into an earth ditch and is conveyed, thereby, northeasterly along the east side of the creek, to the George B. Simmons ranch, where it is used for the irrigation of 8.9 acres (see map sheet 196 and Acreage Table page 235).

A current meter measurement was taken on the ditch on April 13, 1923, showing a discharge of 1.16 second feet. This discharge represents the flow available for diversion on the above date. The maximum capacity of the ditch was computed and found to be 3.13 second feet.

Diversion 595 is that of the Leal Drain, diverting from an unnamed gulch, a tributary of Yreka Creek. The point of diversion is within the NE¼ NW¼ Sec. 11 T 45 N, R 7 W (see map sheet 195).

The conduit system consists of a buried drain, about 150 feet in length, laid along the bed of the gulch, and a metal flume, 450 feet in length, extending from the end of the drain to a small garden patch on the east side of the gulch. The system serves an irrigated area of 0.3 acre (see map sheet 195 and Acreage Table page 150).

The drain was not indicated as a diversion at the time of the engineer's visit on April 13, 1923, consequently, no discharge measurements were obtained.

Diversion 596 is that of the Leal Ditch, diverting from the unnamed gulch described under Diversion 595. The ditch heads on the east side of the stream at a point within the NE¼ NW¼ Sec. 11 T 45 N, R 7 W, and about 350 feet below the intake of the Leal Drain (see map sheet 195).

The conduit is an earth ditch, running easterly from the intake, for a distance of about 600 feet, to a small regulatory reservoir, which is described under Diversion 597. The ditch is used for mining purposes only.

There was no water available for diversion by the ditch during the period covered by the field investigation, consequently, no discharge measurements were obtained.

Diversion 597 is that of the Leal Ditch, diverting from an unnamed gulch in the NE¼ NW¼ Sec. 11 T 45 N, R 7 W (see map sheet 195).

A small regulatory reservoir, having a capacity of 0.6 acre foot, has been formed on the gulch, by the construction of a rock and dirt dam, and impounds the flow of the gulch and a small spring which rises within the reservoir. From the reservoir, the water is discharged, in flush heads, into the gulch for rediversion by three earth ditches, heading on the gulch just below the dam. The system serves an irrigated area of 4.1 acres (see map sheet 196 and Acreage Table page 150). The reservoir is also used in connection with the Leal Ditch (Diversion 596) for mining purposes.

At the time of the engineer's visit, on April 13, 1923, the only water available for storage in the reservoir was that discharged by the above mentioned spring. This supply was not sufficient for irrigating purposes, consequently, no discharge measurements were obtained.

Diversion 598 is that of the A. Brazil Pipe Line, diverting from a spring located in the NW¼ NE¼ Sec. 11 T 45 N, R 7 W (see map sheet 196).

The conduit is a buried pipe line, about 400 feet in length, conveying water to the Antone Brazil place, where it is used for domestic purposes and for the irrigation of 0.6 acre (see map sheet 196 and Acreage Table page 26).

The pipe line was not found until the survey was made in this area, during the latter part of October, 1923, and due to lack of time subsequent to that date no discharge measurements were obtained.

Diversion 599 is that of the J. Brazil Pumping Plant, located on an unnamed gulch in the SW¼ NE¼ Sec. 11 T 45 N, R 7 W (see map sheet 196).

The plant consists of a 1 1/4 inch centrifugal pump, driven

by an electric motor. The pump operates under suction and discharge lifts of about 12 feet and 25 feet, respectively. The plant serves an irrigated area of 0.7 acre (see map sheet 196 and Acreage Table page 26).

No discharge measurements were obtained on the pump for reasons given under Diversion 598.

Diversion 600 is that of the Solus Ditch, diverting from the east side of Yreka Creek in the SW¼ NW¼ Sec. 12 T 45 N, R 7 W (see map sheet 196).

The water is diverted by means of a buried drain, 250 feet in length, laid along the bed of Yreka Creek. From the end of the drain, the water is conveyed across the George B. Simmons ranch, for a distance of about one fourth of a mile, by an open culvert set below the ground surface, and thence by an earth ditch to a point near the quarter section corner common to sections 1 and 12 T 45 N, R 7 W. From this point the water is carried to the west side of the creek by means of a wooden flume, 1.4 feet wide by 0.75 feet deep and about 320 feet long, and thence northeasterly, by an earth ditch, to a point in the SE¼ NE¼ Sec. 1 T 45 N, R 7 W. The conduit has a total length of about one and one half miles. In its course across the George B. Simmons' ranch, the ditch picks up considerable drain water from irrigation on that ranch. This water is used, in common with that diverted at the head of the ditch, for the irrigation of 9.7 acres on the John Solus ranch (see map sheet 197 and Acreage Table page 239).

A float measurement was taken on the flume crossing Yreka Creek, on April 13, 1923, showing a discharge of 0.09 second foot. This discharge represents the available flow on that date.

Diversion 601 is that of the Simmons Lower Ditch, diverting from Yreka Creek in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 12 T 45 N, R 7 W (see map sheet 196).

The conduit is an earth ditch, diverting from the east bank of the creek. At a point about 400 feet below the intake, the ditch crosses to the west side of the creek, by means of a wooden flume, about 100 feet in length, and runs northeasterly along that side of the creek for a distance of about 750 feet. The ditch serves a part of an area of 12.3 acres, which is also irrigated from the Alves and Simmons Ditch (Diversion 584). The portions of this acreage irrigated under each ditch could not be segregated; the total area, therefore, has been alloted to the Alves and Simmons Ditch (see map sheet 196 and Acreage Table page 254).

A current meter measurement was taken on the ditch on April 13, 1923, showing a discharge of 1.50 second feet. This discharge represents the available flow on the above date. The maximum capacity of the ditch was computed and found to be 2.6 second feet.

Diversion 602 is that of the Solus Ditch, diverting from Yreka Creek in the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 12 T 45 N, R 7 W (see map sheet 196).

The conduit is an earth ditch, about three fourths of a mile in length, running northeasterly to the John Solus ranch, thence easterly along the south line of that ranch and terminating on the west bank of Shasta River at a point about 300 feet north of the southeast corner of section 1 T 45 N, R 7 W. The ditch serves an irrigated area of 31.2 acres (see map sheet 197 and Acreage Table page 240).

A current meter measurement was taken on the ditch on April 13,

1923, showing a discharge of 2.49 second feet. This discharge represents the maximum capacity of the ditch and also the normal irrigating head, as stated by John Solus.

Diversion 603 is that of the Solus Ditch, diverting from Yreka Creek in the SE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 1 T 45 N, R 7 W (see map sheet 197).

The conduit is an earth ditch, about one half of a mile in length, running parallel to and along the south bank of the creek. The ditch diverts the surface flow of the stream and also sub-surface flow, which is collected by a buried drain, laid along the bed of Yreka Creek, and discharged into the creek a short distance above the head of the ditch. Water from this latter source forms the main source of supply for the ditch during the greater part of the irrigation season. The ditch serves an irrigated area of 8.4 acres (see map sheet 197 and Acreage Table page 240).

A current meter measurement was taken on the ditch on April 13, 1923, showing a discharge of 2.36 second feet. This discharge represents the normal irrigating head, as stated by John Solus. The maximum capacity of the ditch was computed and found to be 7.6 second feet.

Diversion 604 is that of the Solus Ditch, diverting from Yreka Creek in the SW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 1 T 45 N, R 7 W (see map sheet 197).

The diversion conduit is a short wooden flume, 3.47 feet wide by 1.0 foot deep, heading on the west bank of the creek. From the end of the flume, the water is conveyed by an earth ditch to a point about 500 feet northeast of the intake of the ditch, and thence by two laterals, one of which runs easterly along the north bank of the creek, for a distance

of about 1100 feet, and the other of which runs northeasterly, for a distance of 1800 feet. The ditch serves an irrigated area of 18.0 acres (see map sheet 197 and Acreage Table page 240).

A current meter measurement was taken on the diversion flume on April 13, 1923, showing a discharge of 1.88 second feet. This discharge represents the flow available for diversion by the ditch on the above date. The maximum capacity of the flume was computed and found to be 3.6 second feet.

Diversion 605 is that of the California Oregon Power Company Canal diverting from Shasta River in the SE¼ NE¼ Sec. 1 T 45 N, R 7 W, and conveys water to the Shasta River Plant of that company, located in the NW¼ NE¼ Sec. 1 T 45 N, R 7 W, where it is used for generating electric power (see map sheet 197).

The diversion dam is a rock-filled timber-crib dam, about 200 feet long on top and about 4 feet high, constructed across Shasta River, at a point near the head of the rocky gorge, through which Shasta River discharges to the Kalamath River.

The conduit is an earth and rock cut canal, heading at the south end of the dam and running along the southwest bank of the river. The canal is about 1950 feet long, with top and bottom widths of about 14 feet, and is provided with two timber head gates, 10 feet wide by 6 feet high, at the intake.

At a point about 200 feet up stream from the end of the canal, a penstock header box has been constructed, from which two 48 inch diameter lap riveted steel pressure pipes lead to their respective turbines in the power house. Each pipe is about 81 feet in length, measured from

the intake to the center line of the turbine. Water diverted by the canal, in excess of that required for the operation of the plant, is returned to the river through the lower end of the canal by means of an automatic overflow gate at the lower end of the penstock header box, or through an overflow spillway, located on the canal up stream from the power house.

The plant was constructed during 1902 and 1903 by the Siskiyou Electric Power Company, to replace a smaller plant, containing a single 150 kilowatt generator, built by Frank Quinne in about 1895. In 1913, the plant was remodeled.

The present plant has two units, each of which consists of a 24 inch horizontal turbine, designed by the Stillwell-Bierce and Smith-Vaile Company, and rated at 250 horsepower, and a Westinghouse revolving field, 3 phase, 60 cycle, 2300 volt, 180 kilovolt-amperes alternating current generator, giving a total plant capacity of 360 kilovolt-amperes, or 480 horsepower. The generators are belt driven by their respective turbines. The exciters are 90 ampere, 125 volt, 11.25 kilowatt Westinghouse direct-current generators, one of which is driven by a 12 inch Victor turbine and the other by a 15 horsepower motor. The plant operates under a head of 37 feet.

A current meter measurement was taken on the canal on December 14, 1922, showing a discharge of 156.9 second feet. This discharge represents the normal operating head, when that quantity of water is available. The maximum capacity of the canal was computed and found to be 224 second feet.

From the results of the above measurement and the kilowatt hour output of the plant at the time the measurement was taken, and using

the head of 37 feet, the overall efficiency of the plant was computed and found to be 54.5 per cent.

Records of the annual kilowatt house output of the plant for the years 1912 to 1923, inclusive, and the monthly kilowatt hour output for 1922 and 1923, obtained through the co-operation of the California Oregon Power Company, are submitted at the end of this report in Tables 73 and 74, respectively.

Diversion 606 is that of the Ritter Mine Ditch, diverting from Shasta River in the SW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 36 T 46 N, R 7 W (see map sheet 198).

The conduit is an earth ditch, about one fourth of a mile in length, running along the east bank of the river to the Benjamin Ritter mine, in the NW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 36 T 46 N, R 7 W, where the water diverted by the ditch is used for mining purposes. From the mine, the water is returned to Shasta River.

On October 6, 1922, a current meter measurement was taken at a short flume section on the ditch, showing a discharge of 4.83 second feet. The maximum capacity of the ditch was computed and found to be 7.9 second feet. The ditch is normally operated at maximum capacity, when that amount of water is available, as stated by Benjamin Ritter.

Diversion 607 refers to a proposed diversion by William Gordon, from a small spring located in the SW$\frac{1}{4}$ NE$\frac{1}{4}$ Sec. 29 T 46 N, R 6 W.

The right was initiated by Application #3368, filed by William Gordon on April 21, 1923. On January 14, 1924, Permit #1605 was issued on this application, allowing the diversion of 0.05 second foot for agricultural and domestic purposes, but was cancelled on January 31,1925, on the request of the permittee.

Diversion 608 is that of the Gordon Pipe Line, diverting from a small spring in the NW¼ NW¼ Sec. 29 T 46 N, R 6 W.

The right to the use of the waters of the spring is based on Application #990, filed by Gilbert Jones on May 24, 1918, upon which Permit #462 and License #64 have been issued, allowing the diversion of 0.025 second feet for the irrigation of 0.5 acre and for domestic use, in the NE¼ NE¼ Sec. 30 T 46 N, R 6 W. On November 11, 1923, the right was assigned to William Gordon, who purchased the Gilbert Jones homestead in 1921.

A description of the system obtained from a report on a field investigation of Application #990, made by an engineer of the Division of Water Rights on September 20, 1919, follows.

A concrete dam, 2 1/2 feet high and 6 inches thick, with top and bottom widths of about 8 feet and about 4 feet, respectively, has been constructed across the gulch just below the spring. From this dam, there is a pipe line, about 1400 feet in length, leading to the house and garden. This pipe line is composed of about 20 feet of 2 1/2 inch pipe, about 50 feet of 2 inch pipe, about 100 feet of 1 1/2 inch pipe, about 50 feet of 1 1/4 inch pipe, about 200 feet of 1 inch pipe, about 400 feet of 3/4 inch pipe, and about 580 feet of 1/2 inch pipe. The total fall from inlet to outlet is about 100 feet, making the capacity of the pipe line about 3 gallons per minute or 0.0067 second foot. The water was being used on the above date for domestic purposes and for the irrigation of 0.5 acre of garden.

Due to its location, below all diversions from the Shasta River Stream System, and due to the fact that, while within the Shasta

River watershed, the flow of the spring is so small that it never reaches that stream, the diversion has no bearing on the determination of the other rights on Shasta River and its tributaries. For this reason, and also for the reason that the status of the right to the use of the water is known, as stated above, neither the diversion system or the irrigated area served thereby were surveyed during the investigation covered by this report and therefore are not shown on the map sheets or described in the Acreage Table, accompanying this report.

The point of diversion and the location of the place of use, however, have been plotted on the large map, accompanying this report, from data obtained by the Division of Water Rights in connection with Application #990.

In addition to the above numbered diversions, 1 to 608, inclusive, there are two diversions from Inconstance Creek, those of A. B. Throop and E. J. Murray, respectively. These diversions were not surveyed during the investigation covered by this report for the reasons that they have no bearing on the determination of the rights of the other diversions from the Shasta River Stream System and that sufficient data on the same for the purposes of this report, are available through information obtained by the Division of Water Rights in connection with investigations of Application #2316, filed by A. B. Throop.

Inconstance Creek, shown on the Mount Shasta Quadrangle, mapped in 1884 by the United States Geological Survey as Whitney Creek and locally known as Dry Creek, has its source in several small streams which are fed by the melting glaciers on the northwest slopes of Mount Shasta. These streams unite in section 13 T 42 N, R 4 W to form the main stream,

which flows in a northerly direction for some four miles and thence northwesterly toward Shasta River. At extremely high flood stages, water discharged by the creek reaches the river, but under normal conditions the water sinks and is lost in the sandy, glacial outwash plains, which occupy the area traversed by the stream.

The flow of the stream is intermittent in character. The stream usually begins flowing about the middle of June and stops about the middle of September of each year. The discharge varies throughout the day and also throughout the season, dependent on the temperature effects on the glaciers from which the stream is fed. For a twenty-four hour period, the flow may vary from a minimum of a few second feet to an estimated maximum of about 15 second feet, within the period of a few hours. The maximum flow is then sustained for a period of about seven hours, receding to the minimum almost as abruptly as it rose. During the season, the flow is usually at its maximum during the latter part of the season. The stream is also subject to variation in flow from year to year, dependent on the character of the preceeding wet season. This was evidenced in 1924 when, due to the light snow cover that fell on Mount Shasta during the season of 1923-1924, the glaciers were virtually breaking up in August and September of 1924, and in September of that year, water discharged by Inconstance Creek flowed into Shasta River near the J. L. Jones ranch in section 25 T 43 N, R 5 W.

During flood stages the stream carries large quantities of sand and silt, which makes it unfavorable for irrigation supply. J. L. Jones, who has used the water of Inconstance Creek for irrigation purposes at times when it has reached his ranch, stated that he considered it of

little importance as an irrigation supply due to the difficulty in maintaining his ditches and due to the intermittent flow of the stream.

These characteristics of the stream, however, have made it valuable for the production of sand for commercial purposes, and the waters of the stream have been utilized for that purpose by A. B. Throop and E. J. Murray, at their respective sand pits, located in section 34 T 43 N, R 4 W, near Hoey, on the Southern Pacific Railroad Klamath Falls Branch.

Data on these diversions, and the results of stream flow measurements taken on Inconstance Creek at the E. J. Murray diversion, available through a report on a field investigation on Application #2316, made by an engineer of the Division of Water Rights on August 8, 1921, follow.

The A. B. Throop System is located on Inconstance Creek within the NW$\frac{1}{4}$ SE$\frac{1}{4}$ Sec. 34 T 43 N, R 4 W. A V shaped flume, about 1200 feet long, constructed of 2 inch by 12 inch planking nailed together at right angles, conveys the water and sand held in suspension thereby, to a sand pit where the sand is washed and recovered, to be shipped for industrial use.

The capacity of the flume was measured by Jack Stewart of Dunsmuir, engineer for A. B. Throop, on July 10, 1921, and found to be 1.67 second feet. On August 8, 1921, the flow of the flume was estimated to be about 1.5 second feet.

The right to this use of the waters of Inconstance Creek was initiated by A. B. Throop on April 21, 1921 by the filing of Application #2316, upon which Permit #1871 has been issued, allowing the diversion

of 3.0 second feet for industrial use.

The E. J. Murray diversion consists of a dam constructed across the natural channel of Inconstance Creek, at a point about one fourth of a mile down stream from the A. B. Throop diversion, by means of which sand is recovered from the water. This sand, like that produced by the A. B. Throop system is sold and shipped for commercial purposes.

E. J. Murray claims a right to 6 second feet of the waters of the stream by appropriation and continued use for a period of ten years, prior to 1921.

Measurements of the flow of Inconstance Creek, at the E. J. Murray dam, for a twenty-four hour period, beginning at 4:15 P.M. on July 14 and ending at 4:10 P.M. on July 15, 1921, were made by C. T. Dailey, Civil Engineer of Klamath Falls, Oregon. Similar measurements were made by C. W. Watson, Civil Engineer of Montague, covering the period from 12:45 P.M. on July 16 to 12:45 P.M. on July 17, 1921. Reports, by the respective engineers, giving the results obtained by these measurements are contained in the above mentioned report on Application #2316. Hydrographs plotted from the records contained therein are shown on Plate LVI, submitted at the end of this report.

Mention is here made of diversions for irrigation purposes by the H. Sullivan ranch in section 19, T 42 N, R 4 W, the W. L. Hobbs ranch in section 14 T 42 N, R 5 W, the R. Coonrod ranch in section 30 T 44 N, R 4 W, and the Charles Cash ranch in section 20 T 44 N, R 4 W. These ranches occupy the sandy, glacial outwash area along the foot slopes of Mount Shasta and the range to the north thereof, and are served by diversions from springs, which rise on the respective ranches. These

springs, although within the Shasta River drainage basin, contribute no flow to that stream, the entire flow, even when not in use, being lost in the sandy plains intervening between the source of the springs and the river. The waters of these springs have been used on the respective ranches for a number of years past and the determination of the rights to their use would have no bearing on the rights of the diversions from Shasta River and its tributaries. For these reasons, the diversion systems and the irrigated areas on the above named ranches were not surveyed during the investigation, and are not included in this report.

METHODS OF IRRIGATION

The lands irrigated from the diversion systems described in this report range from the steep hillside pasture lands, found on the upper reaches of the streams, to the more moderately sloping lands on the valley floor. The continuity of the latter area, however, is badly broken by small volcanic buttes and ridges, rising from the valley floor, and the lands within this group may in turn range from steeply sloping, rolling hill lands, found throughout the area, to the comparatively level lands, the most extensive areas of which are located along the lower reaches of Parks and Willow Creeks and in the western end of Little Shasta Valley.

The wild flooding method of irrigation is used. By this method the water is diverted from the main supply ditch, which usually runs along the high contour of the land, by numerous takeouts, in most instances

made by shovel cuts in the ditch berm, and allowed to spread out at random over the area lying below the ditch. Alfalfa is irrigated in rotative periods with intervals of about ten days to two weeks between irrigations. On the meadow hay and pasture lands, both rotation and continuous flow use are practiced. Where rotation is in use, the intervals between irrigations are considerably shorter than in the case of alfalfa, it being considered necessary to keep the lands continuously damp. Under the continuous flow method, water is kept running on the fields throughout the irrigation season, except for a short interval during haying time. On both the alfalfa and the meadow lands it is the practice to use large irrigation heads.

The irrigated areas are individually owned in tracts varying in size from a fraction of an acre to several thousand acres. Regardless of the size of the tract or the amount of water to be distributed, rarely, if ever, are there more than one or two irrigators employed. In many instances, principally under the privately owned systems where the land is held in large tracts, the irrigation heads commonly used are greatly in excess of those which can be economically handled by the single irrigator, usually employed, and a considerable part of the water diverted is wasted. This condition is especially true on the extensive areas of meadow hay and pasture lands found throughout the Valley, but is not uncommon on the more highly developed areas devoted to the production of alfalfa.

DUTY OF WATER

The term "duty of water" as here used, represents the average

annual quantity, measured at the headgate, applied to the lands under the respective diversion systems to produce crops.

Records of the gross diversions on a number of representative systems were obtained during the irrigation seasons of 1922 and 1923. From these records, together with the acreages irrigated, as determined by the survey made during the period covered by the field investigation, the duty of water under the respective systems has been computed.

Descriptions of these systems, the use of water thereunder, and, excepting the Fiock Upper Ditch and the I. A. Martin Ditches, the manner in which the records of the total diversions were obtained, are given in this report under the chapter entitled Use of Water and Diversion Measurements. On the Fiock Upper Ditch the record of the total diversion for 1922, as shown on Table 67, has been corrected by the substraction of the amounts by which the recorded daily discharges exceeded 11.0 second feet, the maximum measured capacity of the ditch (see description of Diversion 503, pages 297 and 298 of this report). On the I. A. Martin Ditches the total diversion in acre feet was computed from the summation of the flows of Jim and Martin springs, as shown in Table 45, for the period from April 1 to October 1, 1922.

The results obtained are shown in Table 71, submitted at the end of this report.

These results show a wide variation in the duty of water under the several systems, ranging from a maximum of 198 acres to a minimum of 38 acres per second foot continuous flow. However, in analyzing the use under the different systems, it is found that the resulting duties, although based on the gross diversion in each case, may represent differen things, which have here been classed as net duty, net headgate duty, and gross headgate duty. A discussion of the results obtained under

each system follows:

Big Springs Water Company Pumping Plant.

The lands served by this system occupy a comparatively level area, within the scabland region, near Mayten, and are devoted to the production of alfalfa. The soil is a sandy loam underlain at variable depths by lava bed rock.

The water diverted by the plant is delivered to the main distribution laterals through a conduit, about one half of a mile in length, and is distributed to users under the system by a ditch tender. The transmission losses above the point of first use are negligible and there is little or no surface return flow from irrigation. The results shown in Table 71, therefore, represent the net headgate duties under the system.

Edmonds and Hudson Pumping Plant.

The lands served by this system are planted to alfalfa and occupy an area of rolling hill land on the east side of Shasta River, south of Montague. The soil is a clay loam.

The water diverted by the plant is discharged directly into the farm laterals, thereby entailing no transmission losses before being applied to the land. Distribution is very carefully handled and there is little or no return flow from irrigation. The results obtained under this system, therefore, represent the net duty of the water diverted.

Edson-Foulke Grenada Ditch.

The lands served by this ditch occupy a level area, lying adjacent to Shasta River, east of Grenada. The soil is a gravelly loam.

Alfalfa and meadow pasture lands are the principal irrigated crops.

The water diverted for use on these lands is conveyed by a ditch constructed through a lava foundation, and suffers a considerable loss of water before reaching the Edson and Foulke Company Grenada Ranch. This water is partly used in the sub-irrigation of lands having no conceded rights to its use and is partly returned to Shasta River. A considerable portion of the water diverted is also returned to Shasta River from surface drainage from irrigation on the Edson and Foulke Company Grenada Ranch. The resulting duties under this system, as shown in Table 71, represent the gross headgate duties.

Joe Enos Pumping Plant.

The area served by this system is rolling hill land, located on the west side of Shasta River, south of Montague. The soil is a sandy loam. Alfalfa is the principal irrigated crop.

The water diverted by the plant is delivered directly to the land by small laterals leading from the end of the discharge pipe and its distribution is very carefully handled. The duties shown for this system represent the net duty of the water diverted.

Flock Upper Ditch.

The lands served by this ditch are located on the east side of Shasta River, north of Montague. The topography varies from gently sloping hill lands to level areas lying adjacent to the river. The soil is a fine sandy loam. Alfalfa and meadow hay are the principal irrigated crops.

When water is available the ditch is usually operated at or near maximum capacity, and during such times there is a considerable

return flow to the river from irrigation. The result obtained under this ditch represents the gross headgate duty.

Grenada Irrigation District Pumping Plant.

The lands served by this system extend from Grenada to a point about five miles south thereof, and occupy an area of moderately sloping and level land, lying along the base of the mountains which border Shasta Valley on the west. The soil ranges from a gravelly loam to a sandy loam and is underlain by a deep pervious sub-soil. The area is devoted to the production of alfalfa.

During the seasons of 1922 and 1923, a water master was employed by the District, and the distribution of the water to the users under the system was very carefully administered, and all preventable losses were eliminated. A considerable loss of water, however, occurs in the some six miles of main canal leading to the second lift pumping plant, where distribution for irrigation begins. The results obtained under this system, therefore, represent the gross headgate duties.

Louie Brothers Main Canal.

The lands served by this ditch occupy a gently sloping area adjacent to Big Spring Creek. The soil is a fine sandy loam, underlain at variable depths by lava bed rock. Alfalfa and meadow hay and pasture are the principal irrigated crops.

A considerable portion of the water diverted is returned to the stream as surface drainage from irrigation. The result obtained represent the gross headgate duty under this system.

I. A. Martin Ditches.

The area included under these ditches occupies the moderately sloping meadow lands on the I. A. Martin ranch south of Table Rock. The soil is a clay loam underlain at shallow depths by bedrock. The area is devoted to the production of meadow hay and pasturage. The duty shown in Table 71 represents the gross duty.

The results of a duty of water study made on this system during 1912, and available through O.E.S. Bulletin 254, show an average application, on an area of 165 acres for the period from April 1 to October 1, of 7.35 acre feet per acre, or at the rate of one second foot for 41.6 acres.

Shasta River Water Users Association Pumping Plant.

This system serves an area of moderately sloping and rolling hill lands on the west side of Shasta River, east of Montague. The soil ranges from a deep gravelly sandy loam, found at the southern end of the project, to a sandy loam and a clay loam adobe, underlain by hardpan at depths of from 18 to 36 inches below the surface. The area is devoted to the production of alfalfa.

The water diverted by the plant is delivered directly to the main distribution laterals, leading from the ends of the High Line and Low Line discharge pipes, respectively, and is distributed to the users under the system by a ditch tender, who also operates the pumps. Due to the character of the lands irrigated and at times due to the carelessness of the users, a considerable portion of the water diverted is wasted. This waste water finds its way into numerous small ravines from which it is rediverted by users having no conceded rights under the system, or is

returned to Shasta River. The results shown in Table 71 include an area of 55.9 acres irrigated by this waste water, but since the greater portion of it is returned to Shasta River and not accounted for, the duties shown represent the gross headgate duties under the system.

Stallcup and Sons Pumping Plant.

The lands served by this system occupy a level area lying adjacent to Big Spring. The soil is a sandy loam underlain by lava bed rock, at a depth of about six feet below the surface. Alfalfa is the principal irrigated crop, but there is also a considerable area of rock covered grass pasture land served by the plant.

The water diverted by the plant is delivered directly to the distribution laterals and there is little or no surface return flow from irrigation. The results shown in Table 71, therefore, represent the net duties under the system.

The results of a duty of water study made on this system during 1912, and available through O.E.S. Bulletin 254, show an average application on an area of 310 acres of alfalfa for a period of 163 days, of 9.03 acre feet per acre, or at the rate of one second foot for 43.4 acres.

Webb Brothers Pumping Plant.

The lands served by this system occupy a comparatively level and gently sloping area located southwest of Montague. The soil ranges from a gravelly sandy loam to a gravelly clay loam and a clay adobe, there being about equal parts of each.

The water diverted by the plant is delivered directly to the farm laterals leading from the discharge pipe, and its distribution is

very carefully administered. The acreage served under this system includes an area of 2.3 acres irrigated by waste water from irrigation on the Webb Brothers ranch. The result shown in Table 71 represents the net duty under the system.

RETURN FLOW

Throughout this report there has been mention of considerable return flow from irrigation under the various diversion systems. Due to the character of the irrigated lands, most of which lie adjacent to the streams from which diversion is made, a considerable part of this water is returned to the streams. On the level areas which lie farther removed from the streams, this return flow seeps away in numerous small channels and is used by lower ranches having no conceded rights under the system. The amount of this return flow could not be measured, but from knowledge gained in the field, the conclusion is drawn that while this practice shows a wasteful use of water under a specific diversion system, the net use is not excessive. This practice, however, leads to an unequal distribution of the water, and in many instances, through an excessive diversion by an upper ditch, water is bypassed around lower appropriators and is made available to users having no conceded rights under the ditch or to lower diversions, whose rights are inferior to those around which the water was bypassed.

APPLICATIONS PENDING BEFORE DIVISION OF WATER RIGHTS

A record of the applications for permits to appropriate water from Shasta River and its tributaries pending before the Division of Water Rights as of June 15, 1925, and in two instances, of applications upon which permits have been issued, subsequent to the close of the field investigation, follow.

Application 1566.

This application was filed by the Grenada Irrigation District on December 10, 1919, requesting a permit to appropriate 23 second feet of the waters of Shasta River, in addition to the 40 second feet diversion allowed by Permit #501, for the irrigation of 3930 acres, included within the boundaries of the Grenada Irrigation District. The point of diversion is to be within the NE$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 6 T 43 N, R 5 W, the location of the dam serving the present pumping plant of the Grenada Irrigation District. The application was protested by Henry Fiock and five other lower users, and action has been withheld by the Division, pending a showing by the applicant that the additional water applied for was available and necessary. At a hearing held on the protests on June 9, 1925, a formal request was made by the applicant that the application be so ammended as to reduce the amount of water applied for to 10 second feet, and to reduce the period of use so as to cover the period from April 1 to July 1 only. Findings on this hearing are now being prepared by the Division.

Application 2904.

This application was filed by W. D. Duke on June 26, 1922,

requesting a permit to appropriate 160 second feet and 40 second feet, direct diversions from Shasta River and Parks Creek, respectively, and 50,000 acre feet per annum of the waters of the above named streams, to be collected between January 1 and December 31 of each season, for the irrigation of 25,000 acres as described in the application. This project, however, was abandoned, and on February 9, 1925 an ammended application was filed by W. D. Duke, which contained radical changes from the original application. Under the ammended application direct diversion from both Shasta River and Parks Creek was eliminated; the location of the storage reservoir and of the point of diversion to storage were changed; and the amount of land to be irrigated was not only greatly reduced but its location was radically changed. The ammended application requests a permit to appropriate 850 acre feet per annum of the waters of Parks Creek, to be collected between January 1 and December 31 of each season, for the irrigation of 2100 acres, as described in the ammended application and located entirely on the Duke Ranch. On request of the applicant and by his showing that a considerable expense had been incurred in investigations, necessary to the filing of the original application, the Division has allowed the ammended application to carry the same priority as that of the original application. The ammended application in this form was protected by G. W. Dwinnell, trustee of the Montague Irrigation District, and a hearing was held on June 11, 1925. Findings on this hearing are withheld by the Division, pending a legal decision relative to the priority of the ammended application.

Application 3544.

This application was filed by George W. Dwinnell, trustee for the proposed Montague Irrigation District, on July 23, 1923, and requests a permit to appropriate 150 second feet, direct diversion, and 60,000 acre feet per annum, to be collected between September 1 and July 1 of each season, of the waters of Shasta River, for the irrigation of 25,000 acres of land as described in the application. The point of diversion is to be located in the NW¼ SE¼ Sec. 35 T 43 N, R 5 W. The applicant has been allowed until September 1, 1925, to complete application.

Application 3455.

This application was filed by George W. Dwinnell, trustee for the proposed Montague Irrigation District, on July 30, 1923, and requests a permit to appropriate 150 second feet, direct diversion, and 15,000 acre feet per annum, to be collected between September 30 and July 1 of each season, of the waters of Parks Creek, to be diverted at a point in the NW¼ of the SW¼ Sec. 20 T 42 N, R 5 W and used for the irrigation of 25,000 acres of land, as described in the application. The applicant has been granted an extension of time, expiring September 1, 1925, to complete application.

Application 3952.

This application was filed by Samuel Alexander on April 12, 1924, requesting a permit to appropriate 140 acre feet per annum of the waters of Shasta River, to be collected between November 1 and April 1 of each season, for the irrigation of 40 acres of land, located in the

SE$\frac{1}{4}$ Sec. 17 T 42 N, R 5 W. The point of diversion to storage is to be located in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ Sec. 28 T 42 N, R 5 W. Protests were filed by J. L. Jones and John Soule. These protests, however, were withdrawn upon the consent of the applicant to shorten the period of storage, and on October 8, 1924, permit #1854 was issued, allowing the appropriation of 140 acre feet per annum, to be collected between December 1 and March 1 of each season.

Application 4165

This application was filed by E. C. Hart and Kate C. Hart on August 17, 1924, and requests a permit to appropriate 600 acre feet per annum of the waters of Little Shasta River, to be collected between November 1 and April 1 of each season, for the irrigation of 1724.6 acres as described in the application. The point of diversion is to be located within the NE$\frac{1}{4}$ SW$\frac{1}{4}$ Sec. 19 T 45 N, R 4 W. The application was protested by James B. Rohrer and fourteen other lower users. At a hearing held on June 10, 1925, the applicant formally requested that the application be so ammended as to reduce the time during which water was to be collected so as to cover the period from December 1 to February 15 of each season and the protests were withdrawn. Findings on this hearing are now being prepared by the Division.

Application 4191.

This application was filed by the Grenada Irrigation District on September 6, 1924, and an ammended application filed on April 20, 1925, requesting a permit to appropriate 12,000 acre feet per annum of the waters of Shasta River, to be collected between October 1 and April 1 of

each season and used for the irrigation of 4000 acres as described in the application. The point of diversion to storage is to be located on Shasta River within the SW¼ NE¼ Sec. 36 T 44 N, R 6 W. The point of re-diversion being located within the NW¼ NW¼ Sec. 6 T 43 N, R 6 W. The application was in form for advertisement on April 21, 1925, and on June 10, 1925, the applicant filed proof of publication of notice to appropriate under the above numbered application.

Application 4346.

This application was filed by J. R. and E. C. Eaton on December 1, 1924, requesting a permit to appropriate 0.44 second feet, direct diversion, and 10 acre feet per annum, to be collected between January 1 and December 31 of each season, of the waters of Oregon Slough, for the irrigation of 35 acres, located in the N½ SW¼ Sec. 22 T 45 N, R 6 W and for domestic purposes. The point of diversion is to be located within the NE¼ SW¼ Sec. 22 T 45 N, R 6 W. The application was unprotested and on May 8, 1925, Permit #2103 was issued thereon, allowing the diversion as applied for.

Application 4409.

This application was filed by J. L. Jones on January 3, 1925, requesting a permit to appropriate 200 acre feet per annum of the waters of Shasta River, to be collected between December 1 and April 1 of each season, for the irrigation of 152 acres, located in sections 25 and 36 T 43 N, R 5 W. The point of diversion to storage is to be located on Shasta River within the NW¼ SW¼ Sec. 25 T 43 N, R 5 W. The application was protested by the Grenada Irrigation District. This protest, however, was withdrawn and the application is now ready for permit.

Application 4521.

This application was filed by the Edson and Foulke Company on March 27, 1925, requesting a permit to appropriate 5290 acre feet per annum of the waters of Willow Creek and Kiernan Slough, to be collected between October 1 and July 1 of each season, for the irrigation of 650 acres as described in the application. The applicant has been granted an extension of time, expiring July 19, 1925, to complete application.

TABLES

TABLE 1

Climatological Data.

Montague and Sisson.

Mean Precipitation.

1889 - 1924.

Month	Mean Precipitation in Inches		
	Montague (Elevation 2450)	Sisson (Elevation 3555)	Mean
January	1.78	7.23	4.50
February	1.57	5.25	3.41
March	1.30	5.07	3.18
April	.60	2.29	1.44
May	.87	1.90	1.38
June	.70	.67	.68
July	.41	.15	.28
August	.21	.30	.26
September	.46	.93	.74
October	.82	2.33	1.57
November	1.73	3.98	2.86
December	1.76	5.70	3.73
Annual	12.17	35.79	23.98

TABLE 2

Climatological Data.

Montague and Sisson.

Temperature Records.

Month	Temperature in Degrees Fahrenheit									
	Montague (Elevation 2450)					Sisson (Elevation 3555)				
	Mean 11 yrs	Mean Max. 10 yrs	Mean Min. 10 yrs	Max.	Min.	Mean 27 yrs	Mean Max. 10 yrs	Mean Min. 10 yrs	Max. 19 yrs	Min. 19 yrs.
January	32.6	43.4	23.5	62	-10	34.0	39.9	24.2	62	-9
February	38.6	51.4	26.8	73	1	36.9	44.8	25.4	66	-3
March	42.4	57.9	28.2	82	10	39.8	51.2	28.3	73	10
April	49.5	65.5	33.9	88	18	47.2	59.1	33.6	90	21
May	54.2	70.9	37.5	99	16	54.6	66.6	37.7	101	23
June	62.7	79.8	45.6	105	31	62.5	74.0	41.9	103	28
July	71.2	90.5	51.9	108	34	69.9	84.2	48.9	108	33
August	70.6	90.4	50.0	107	28	68.6	84.9	46.2	106	33
September	61.0	80.1	42.0	105	22	58.4	74.0	40.7	95	28
October	51.4	70.1	32.7	94	15	51.3	66.5	35.3	87	22
November	41.2	53.8	28.6	76	4	41.3	53.9	29.5	83	7
December	33.6	44.1	23.2	65	-5	34.7	44.5	24.8	80	-4
Annual	50.8	66.5	35.3	108	-10	49.9	62.0	34.7	108	-9

TABLE 3

Climatological Data

Montague and Sisson

Dates of Killing Frosts.

Year	Montague: Date of Killing Frost: Last frost before July 15	Montague: Date of Killing Frost: First frost after July 15th	Montague: Length of Growing Season Days	Sisson: Date of Killing Frost: Last Frost before July 15	Sisson: Date of Killing Frost: First Frost after July 15	Sisson: Length of Growing Season Days.
1903	May 23	Oct. 7	137			
1904		Oct. 17				
1905		Sept. 29				
1906	Apr. 1	Oct. 22	204			
1907	June 14	Oct. 2	110			
1908	May 20	Aug. 29	101			
1909	May 9	Oct. 30	174			
1910	Mar. 12	Aug. 28	169			
1911	May 24	Sept. 27	116			
1912	May 2	Oct. 2	136			
1913	May 29	Oct. 4	128			
1914	Apr,29	Oct. 22	176			
1915	May 19	Sept. 28	132			
1916	May 30	Sept. 11	104			
1917	May 16	Sept. 24	131	June 12	Oct. 17	127
1918	May 27	Oct. 17	143	May 28	Sept. 23	118
1919	May 16	Oct. 3	140	June 1	Oct. 7	128
1920	May 31	Oct. 13	135	June 2	Sept. 25	115
1921	May 8			May 29	Sept. 12	106
1922	May 26	Sept. 28	125	May 27	Oct. 9	124
1923	May 18	Oct. 17	152	May 28	Oct. 3	128
Mean			140			121

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STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 803

TABLE 4

Daily discharge, in second feet, of Shasta River - Gage #10 - below jct. of Eddy Creek, for the year ending December 31, 1922.

Day	January	February	March	April	May	June	July	August	September	October	November	December
1						*123.0	22.0	7.6				
2						116.0	22.0	*8.5			*14.5	
3						*109.0	*22.0	7.3				
4						97.0	22.0	6.2				
5						* 85.0	*22.0	5.1				
6						83.0	*15.0	*4.0				
7						81.0	14.9	*4.0				
8					* 70.0	78.8	14.8	*3.0				
9					*138.0	76.6	14.7	3.0				
10					110.2	74.2	14.7	3.0				
11					* 82.5	72.0	14.6	*3.0				
12					70.8	69.8	*14.5					
13					* 59.0	67.6	11.8					
14					*153.5	65.4	* 9.0					
15					*123.0	63.2	8.8					
16					*138.0	* 61.0	8.7					
17					138.0	60.3	8.6					
18					138.0	59.6	* 8.5					
19					*138.0	* 59.0	8.5					
20					*123.0	54.8	8.5					
21					*123.0	50.6	8.5					
22					* 82.5	46.5	8.5					
23					117.5	42.3	* 8.5					
24					*153.5	38.2	7.6					
25					*123.0	34.1	6.7					
26					102.8	* 30.0	5.8					
27					* 82.5	28.0	4.9					
28					96.0	26.0	* 4.0					
29					109.5	24.0	4.9					
30					*123.0	* 22.0	5.8					
31					123.0		6.7					
Total Sec. Ft. Days					2718.3	1898.0	357.5	54.7				
Mean Sec. Ft.					113.3	63.3	11.5	5.0				
Max. Sec. Ft.					153.5	123.0	22.0	8.5				
Min. Sec. Ft.					59.0	22.0	4.0	3.0				
Total Ac. Ft.					5382	3767	707	109				

Remarks: *Discharge determined by applying gage heights to rating curve. Intermediate discharge interpolated.

Comp. by H. Smitherum

Ck. by H.S.

Date 4-4-24

Gage observer - I. H. Dow.

Year Period: 9965

20411 7-22 500

STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 691

TABLE

Daily discharge, in second feet, of Shasta River - Gage #10 - below jct. of Eddy Creek, for the year ending December 31, 1923.

Day	January	February	March	April	May	June	July	August	September	October	November	December
1				*39.0	29.4	21.5	33.0	8.0	3.0	6.6		
2				*39.0	30.7	21.5	32.0	7.8	*3.0	6.7		
3				30.9	32.0	21.5	31.0	7.6	3.1	6.9		
4				22.7	33.2	21.5	30.0	7.4	3.2	7.0		
5				*14.5	*34.4	*21.5	29.0	7.2	3.4	7.2		
6				*48.5	39.3	*30.0	28.0	7.0	3.5	7.3		
7				46.6	44.2	*21.5	27.0	6.8	3.6	7.5		
8				44.7	49.1	22.9	26.0	6.6	3.8	7.6		
9				42.8	54.0	24.3	25.0	6.4	3.9	7.8		
10				40.9	*59.0	25.7	24.0	6.2	4.0	* 8.0		
11				*39.0	*70.5	27.1	23.0	5.0	4.2	8.2		
12				*48.5	63.1	28.5	22.0	4.9	4.3	8.5		
13				50.6	55.8	*30.0	21.0	4.8	4.4	8.7		
14				52.7	*48.5	30.0	20.0	4.6	4.5	9.0		
15				54.8	*59.0	30.0	19.0	4.4	4.7	9.2		
16				56.9	*59.0	*30.0	18.0	4.3	4.8	9.4		
17				*59.0	55.2	32.2	17.0	4.2	4.9	9.7		
18				53.5	51.3	34.5	16.0	4.1	5.0	10.0		
19				47.9	47.4	36.7	15.0	4.0	5.1	10.2		
20				42.3	*43.5	39.0	14.0	3.9	5.2	10.4		
21				36.7	46.6	39.0	13.0	3.8	5.3	10.6		
22				31.1	49.7	39.0	12.0	3.7	5.4	10.8		
23				*25.5	52.8	39.0	11.0	3.6	5.6	*11.0		
24				*39.0	55.9	39.0	10.0	3.5	5.7			
25				*30.0	*59.0	*39.0	9.0	3.4	5.8			
26				*30.0	52.7	38.0	8.8	3.2	5.9			
27				*21.5	46.5	37.0	* 8.8	3.1	*6.0			
28				*25.5	40.2	36.0	* 8.8	3.0	6.1			
29				26.8	34.0	35.0	8.6	3.0	6.3			
30				28.1	27.7	34.0	8.4	3.0	6.4			
31					*21.5		8.2	3.0				
Total Sec. Ft. Days				1169.0	1445.2	924.9	576.6	151.5	140.1	198.3		
Mean Sec. Ft.				39.0	46.6	30.8	18.6	4.9	4.7	8.6		
Max. Sec. Ft.				59.0	70.5	39.0	33.0	8.0	6.4	11.0		
Min. Sec. Ft.				14.5	21.5	21.5	8.2	3.0	3.0	6.6		
Total Ac. Ft.				2318	2865	1833	1144	301	278	392		

Remarks

* Discharge determined by applying gage heights to rating curve.

Intermediate discharges interpolated.

Gage observer:- L. M. Dow.

Comp. by H. Smitherum

Ck. by

Date 3-27-24

Year Period

8951

20441 7-22 500

STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 801

TABLE 6

Daily discharge, in second feet, of Shasta River - Gage #19 - below jct. of Boles Creek, for the year ending December 31, 1922

Day	January	February	March	April	May	June	July	August	September	October	November	December	Remarks
1						84.0	8.5	8.5	5.0	8.5	23.0		Discharge determined by applying gage heights to rating curve. Gage observer:-Mrs.Geo.Behnke
2						99.0	8.5	6.5	5.0	12.5	23.0		
3						84.0	8.5	6.5	5.0	23.0	23.0		
4						71.0	8.5	6.5	5.0	23.0	23.0		
5						70.0	6.5	6.5	5.0	23.0	26.0		
6						59.0	6.5	6.5	5.0	23.0	30.0		
7						59.0	5.0	6.5	5.0	23.0	30.0		
8						59.0	5.0	6.5	5.0	23.0	38.0		
9						53.0	5.0	6.5	5.0	23.0	38.0		
10						48.0	8.5	6.5	5.0	23.0	39.0		
11						48.0	8.5	6.5	5.0	20.0			
12					31.0	38.0	9.0	6.5	5.0	20.0			
13					38.0	38.0	12.5	6.5	5.0	20.0			
14					84.0	38.0	9.5	6.5	5.0	20.0			
15					71.0	30.0	8.5	6.5	5.0	20.0			
16					91.0	23.0	8.5	6.5	5.0	20.0			
17					114.0	23.0	8.5	5.0	5.0	20.0			
18					116.0	23.0	8.0	5.0	5.0	20.0			
19					99.0	20.0	8.5	4.0	5.0	20.0			
20					99.0	18.0	8.5	4.0	5.0	20.0			
21					99.0	17.0	6.5	5.0	5.0	20.0			
22					84.0	16.5	8.5	5.0	5.0	20.0			
23					84.0	14.5	8.5	5.0	5.0	20.0			
24					84.0	12.5	6.5	5.0	5.0	23.0			
25					84.0	12.5	8.5	5.0	5.0	23.0			
26					71.0	8.5	8.5	5.0	5.0	23.0			
27					71.0	5.0	6.5	5.0	5.0	23.0			
28					59.0	5.0	6.5	5.0	5.0	23.0			
29					59.0	5.0	6.5	5.0	5.0	23.0			
30					71.0	8.5	8.5	5.0	5.0	23.0			
31					84.0		8.0	5.0		23.0			
Total Sec. Ft. Days					1593.0	1090.0	243.5	179.0	150.0	649.0	293.0		Year Period
Mean Sec. Ft.					79.6	36.3	7.9	5.8	5.0	20.9	29.3		
Max. Sec. Ft.					116.0	99.0	12.5	8.5	5.0	23.0	39.0		
Min. Sec. Ft.					31.0	5.0	5.0	4.0	5.0	8.5	23.0		
Total Ac. Ft.					3154	2160	486	357	298	1285	580		7798

Comp. by H.Smitherum

Ck. by H.S.

Date 4-4-24

20441 7-22 500

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS

Form 501

TABLE 7

Daily discharge, in second feet, of Shasta River - Gage #19 - below jct. of Boles Creek, for the year ending December 31, 1923

Day	January	February	March	April	May	June	July	August	September	October	November	December
1					* 9.5	14.8		*5.0	2.0	12.5		
2					9.5	*13.5		4.2	2.0	13.0		
3					* 9.5	*13.5		3.5	2.0	*13.5		
4					9.5	13.5		2.7	2.0	13.5		
5					* 9.5	*13.5		*2.0	2.0	13.5		*16.0
6				*42.5	* 9.5	11.5		2.1	2.0	13.5		
7				42.5	10.1	* 9.5		2.2	* 2.0	13.5		
8				42.0	10.8	8.8		2.3	2.0	*13.5		
9				41.5	*11.5	8.1		*2.5	2.0			
10				41.0	16.7	* 7.5		2.5	2.0			
11				40.5	21.9	7.5		2.5	2.0			
12				40.0	*27.0	* 7.5		*2.5	* 2.0			
13				39.5	29.2	7.0		2.4	2.0			
14				39.0	31.4	6.5		2.2	2.0			
15				38.5	*33.5	* 6.0		*2.0	2.0			
16				38.0	*33.5	7.9		2.0	2.0			
17				*37.5	*42.5	9.8		2.0	* 2.0			
18				37.5	*31.5	11.7		2.0	* 2.0			
19				*37.5	*36.5	*13.5		2.0	* 4.4			
20				35.5	*25.5	*19.0		2.0	* 6.0			
21				*33.5	*25.5			2.0	* 3.5			
22				23.5	*19.0			*2.0	* 2.0			
23				*13.5	*20.0			2.0	2.0			
24				13.5	19.0			2.0	2.0			
25				13.5	*18.0			2.0	* 2.0			
26				*13.5	*19.0			2.0	*10.0			
27				13.5	17.5			2.0	10.5			
28				*13.5	*16.0			2.0	11.0			
29				*11.5	*16.0			2.0	11.5			
30				10.5	16.0			*2.0	12.0			
31					*16.0			2.0				
Total Sec. Ft. Days				753.0	620.6	210.6		72.6	112.9	106.5		
Mean Sec. Ft.				30.1	20.0	10.5		2.3	3.8	13.3		
Max. Sec. Ft.				42.5	42.5	14.8		5.0	12.0	13.5		
Min. Sec. Ft.				10.5	9.5	6.0		2.0	2.0	12.5		
Total Ac. Ft.				1491	1230	417		141	224	211		

Year Period: 3714

Remarks: *Discharge determined by applying gage heights to rating curve. Intermediate discharges interpolated.

Gage observer:- Mrs. Geo. Behnke.

Comp. by H. Smitherum
Ck. by H.S.
Date 3-28-24

20122 7-22

STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 500

TABLE 8

Daily discharge, in second feet, of Shasta River - Gage #1 - 1 mile below Edgewood, for the year ending September 30, 1922

Day	October	November	* December	* January	* February	* March	* April	May	June	July	August	September
1				75.0	45.0	75.0	115.0	* 75.0	89.0	9.5	6.5	
2				59.0	45.0	75.0	115.0	* 75.0	84.0	9.0	7.0	
3				59.0	45.0	75.0	93.0	* 59.0	79.0	8.5	7.5	
4				59.0	45.0	75.0	93.0	* 75.0	74.0	8.0	*8.0	
5				59.0	45.0	59.0	93.0	* 75.0	69.0	7.5	7.7	
6				59.0	45.0	59.0	75.0	* 78.0	64.0	7.0	7.5	
7				59.0	196.0	59.0	75.0	* 93.0	*59.0	6.6	7.2	
8				59.0	294.0	59.0	59.0	*140.0	55.0	6.2	7.0	
9				45.0	336.0	59.0	59.0	* 75.0	51.0	5.8	6.7	
10				45.0	308.0	45.0	59.0	* 75.0	47.0	5.4	*6.5	
11				45.0	168.0	45.0	59.0	* 93.0	43.0	*5.0		
12				45.0	59.0	59.0	59.0	* 93.0	39.0	5.0		
13				40.0	59.0	75.0	59.0	*140.0	35.0	4.9		
14				40.0	59.0	75.0	35.0	*140.0	*31.0	4.9		
15				35.0	59.0	93.0	45.0	*140.0	29.3	4.9		
16				35.0	75.0	93.0	45.0	*140.0	27.5	4.8		
17				35.0	93.0	75.0	45.0	*140.0	25.8	4.8		
18				35.0	140.0	45.0	45.0	*140.0	24.0	4.8		
19				30.0	140.0	35.0	45.0	*140.0	22.2	4.8		
20			35.0	30.0	115.0	35.0	45.0	*140.0	20.4	4.7		
21			35.0	30.0	95.0	75.0	59.0	*140.0	18.6	4.7		
22			35.0	25.0	93.0	93.0	75.0	*140.0	16.8	4.7		
23			59.0	25.0	93.0	115.0	75.0	134.0	*15.0	4.6		
24			93.0	25.0	93.0	115.0	75.0	129.0	*13.0	4.6		
25			93.0	35.0	75.0	75.0	93.0	124.0	12.5	4.6		
26			45.0	35.0	75.0	75.0	93.0	119.0	12.0	4.6		
27			252.0	35.0	75.0	75.0	93.0	114.0	11.5	4.5		
28			252.0	45.0	75.0	75.0	75.0	109.0	11.0	*4.5		
29			93.0	45.0		75.0	75.0	104.0	10.5	5.0		
30			75.0	45.0		75.0	61.0	99.0	10.0	5.5		
31			59.0	45.0		93.0		94.0		6.0		
Total Sec. Ft. Days			1126.0	1338.0	3045.0	2211.0	2092.0	3432.0	1099.1	175.4	71.6	
Mean Sec. Ft.			93.8	43.2	109.0	71.4	69.7	110.7	36.6	5.6	7.2	
Max. Sec. Ft.			252.0	75.0	336.0	115.0	115.0	140.0	89.0	9.5	8.0	
Min. Sec. Ft.			35.0	25.0	45.0	35.0	35.0	59.0	10.0	4.5	6.5	
Total Acre Ft.			2230	2656	6054	4390	4147	6807	2178	344	142	

REMARKS

*Discharge determined by applying gage heights to rating curve.
Intermediate discharges interpolate

Gage observer:-H. Dinke A.P.P.Dev.

Comp. by H.Smitherum

Ck. by H.S.

Date 4-4-24

Year Period 28948

20141 7-22 500

STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 801

TABLE 9

Daily discharge, in second feet, of Shasta River - Gage #1 - 1 mile below Edgewood, for the year ending December 31, 1923

Day	January	February	March	April	May	June	July	August	September	October	November	December
1					*15.5	19.8	9.0	8.4	2.2			
2					*15.5	*19.5	8.5	7.6	2.2			
3					*20.5	16.5	* 8.0	6.8	2.2			
4					*20.5	*13.5	8.1	6.0	2.3			
5					*20.0	*13.5	8.2	5.2	2.4			
6				*75.0	*11.5	*18.0	8.3	4.4	2.4		*17.3	
7				71.0	*26.0	*16.0	8.4	*3.6	2.4			
8				66.9	*20.5	*15.0	8.5	3.6	2.4			
9				62.9	*26.0	*15.0	8.6	3.6	2.5			
10				58.8	*40.0	15.0	8.7	3.5	2.5			
11				54.8	*33.0	*15.0	8.8	3.5	2.5			
12				50.7	*40.0	*15.0	9.0	3.5	*2.5	*20.0		
13				46.6	*40.0	16.4	9.1	3.5	2.6			
14				42.6	*40.0	17.8	9.2	3.5	2.7			
15				38.5	*40.0	19.2	9.3	3.4	2.8			
16				*34.5	*40.0	*20.5	9.4	3.4	2.9			
17				*33.0	*40.0	24.0	9.5	3.4	* 3.0			
18				*33.0	*40.0	27.5	9.6	3.4	* 3.0			
19				*33.0	*58.0	31.0	9.7	3.4	* 6.8			
20				*26.0	*40.0	*34.5	9.8	3.3	*10.0			
21				*20.5	*26.0	32.5	10.0	3.3	* 5.9			
22				*15.5	*25.0	30.5	10.1	*3.3	* 3.0			
23				*19.5	*25.0	28.5	10.2	*2.5	3.0			
24				*11.5	*25.0	26.5	10.3	*2.0	3.0			
25				* 8.0	*24.5	24.5	10.4	2.0	* 3.0			
26				* 8.0	23.1	22.5	10.5	2.0	*20.0	Rain		
27				*15.5	21.8	*20.5	10.7	2.1	*20.0			
28				*20.5	*20.5	*20.5	10.8	2.1	*15.5			
29				*26.0	*20.5	15.0	*11.0	2.1	15.8			
30				*20.5	*20.5	* 9.5	10.2	2.1	16.1			
31					20.1		9.3	2.1				
Total Sec. Ft. Days				892.8	879.0	613.2	291.2	112.6	167.6			
Mean Sec. Ft.				35.7	28.4	20.4	9.4	3.6	5.6			
Max. Sec. Ft.				75.0	58.0	34.5	11.0	8.4	20.0			
Min. Sec. Ft.				8.0	15.5	9.5	8.0	2.0	2.2			
Total Ac. Ft.				1768	1746	1214	578	221	333			

Remarks

*Discharge determined by applying gage heights to rating curve. Intermediate discharges interpolated.

Gage observer.- Ted McMahon.

Comp. by H. Smitherum

Ck. by H.S.

Date 3-28-24

Year Period 5860

20441 7-22 500

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS

Form 501

DIVISION OF WATER RIGHTS

TABLE 10

Daily discharge, in second feet, of Shasta River - Gage #16 - above Big Spring Creek, for the year ending December 31, 192 2

Day	January	February	March	April	* May	* June	* July	August	September	October	November	December
1						100.0	15.0			16.5	41.4	63.2
2						100.0	15.0			*16.5	42.6	63.8
3						85.0	15.0			*21.0	43.8	64.5
4						71.0	15.0			*30.0	*45.0	65.1
5						71.0	15.0			*35.0	47.8	65.8
6						59.0	15.0			*25.0	50.6	66.4
7						71.0	15.0			25.0	53.4	67.1
8						71.0	15.0			25.0	56.2	67.7
9						85.0	16.0			*25.0	59.0	68.4
10					92.0	71.0	16.0			*25.0	61.8	69.0
11					71.0	58.0	16.0			27.2	64.6	69.7
12					58.0	46.0	15.0			29.5	67.3	70.3
13					58.0	46.0	16.0			31.7	*70.0	*71.0
14					71.0	46.0	16.0			*34.0	68.8	
15					85.0	35.0	16.0			34.0	67.6	
16					116.0	25.0	16.0			34.0	66.4	
17					132.0	25.0	16.0			*34.0	65.2	
18					149.0	25.0	16.0			*34.0	64.0	
19					168.0	25.0				*32.0	62.8	
20					265.0	25.0				*33.0	61.6	
21					205.0	18.0				33.0	60.4	
22					168.0	16.5				33.0	59.2	
23					132.0	16.5				33.0	*58.0	
24					149.0	16.5				33.0	58.6	
25					132.0	16.5			*16.5	*33.0	59.3	
26					116.0	16.5			16.5	34.2	59.9	
27					100.0	16.5			16.5	35.4	60.6	
28					100.0	16.5			16.5	36.6	61.2	
29					100.0	16.5			16.5	37.8	61.9	
30					100.0	16.5			16.5	39.0	62.5	
31					100.0					40.2		
Total Sec. Ft. Days					2667.0	1306.5	279.0		99.0	955.6	1761.5	872.0
Mean Sec. Ft.					121.0	43.5	15.5		16.5	30.9	58.7	67.1
Max. Sec. Ft.					265.0	100.0	16.0			40.2	70.0	71.0
Min. Sec. Ft.					58.0	16.5	15.0			16.5	41.4	63.2
Total Ac. Ft.					5281	2588	553			1900	3493	1726

Year Period: 15541

Remarks: *Discharge determined by applying gage heights to rating curve. Intermediate discharges inter-polated.

Comp. by H. Smitherum
Ck. by H.S.
Date 4-4-24

gage observer - John Louie.

STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 501

TABLE 11

Daily discharge, in second feet, of Shasta River -Gage #16 - above Big Spring Creek, for the year ending December 31, 1923.

Day	January	February	March	April	May	June	July	August	September	October	November	December
1					36.0	21.8	28.5	10.0	16.0			
2					35.5	21.0	24.2	*10.0	16.3			
3					35.0	20.2	19.8	10.2	16.6			
4					*35.0	19.4	*15.0	10.4	*17.0		*35.0	
5				*60.0	*35.0	18.6	15.0	10.6	17.0			*45.0
6				58.6	40.0	17.8	14.8	10.8	17.0			
7				57.2	*45.0	*17.0	14.6	11.0	17.0			
8				55.8	45.0	18.0	14.4	11.2	17.0			
9				54.4	45.0	19.0	14.2	11.4	17.0			
10				53.1	45.0	20.0	14.0	11.6	17.0			
11				51.7	45.0	21.0	14.0	11.8	17.0			
12				50.4	45.0	22.0	13.8	12.0	17.0			
13				49.1	45.0	23.0	13.6	12.2	17.0			
14				47.7	45.0	24.0	13.4	12.4	17.0			
15				46.4	45.0	*25.0	13.2	12.6	17.0			
16				*45.0	*45.0	28.7	13.0	12.8	17.0			
17				44.2	43.5	31.4	12.8	13.0	17.0		*45.0	
18				43.5	42.0	35.1	12.6	13.2	17.0			
19				42.8	40.5	39.8	12.4	13.4	17.0			
20				42.1	39.0	43.5	12.2	13.6	17.0			
21				41.4	37.5	47.2	12.0	13.8	17.0			
22				40.7	36.0	50.9	12.0	14.0	17.0			
23				*40.0	34.5	54.7	11.8	14.2	17.0			
24				39.5	33.0	*58.5	11.6	14.4	17.0			
25				39.0	31.5	54.0	11.4	14.6	17.0			
26				38.5	*30.0	50.3	11.2	14.8	17.0			
27				38.0	27.5	45.9	11.0	15.0	17.0			
28				37.5	*25.0	41.6	11.0	15.2	17.0			
29				37.0	24.2	37.2	10.8	15.4	17.0			
30				36.5	23.4	32.9	10.6	15.6	*17.0			
31					22.6		10.4	15.8				
Total Sec. Ft. Days				1190.1	1156.7	959.5	429.3	397.0	507.9			
Mean Sec. Ft.				45.8	37.3	32.0	13.8	12.8	16.9			
Max. Sec. Ft.				60.0	45.0	58.5	28.5	15.8	17.0			
Min. Sec. Ft.				36.5	22.6	17.0	10.4	10.0	16.0			
Total Ac. Ft.				2357	2294	1904	848	787	1006			

Remarks: *Gage height record applied to rating curve. Intermediate discharges interpolated.

Comp. by H. Smitherum

Ck. by H.S.

Date 3-28-24

Year Period: 9196

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Form 801

STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

TABLE 12

Daily discharge, in second feet, of Shasta River -Gage #12 -below Grenada Irrig.Dist.Pump, for the year ending December 31, 1922.

Day	January	February	March	April	May	June	July	August	September	October	November	December
1						109.5	49.2	41.5	41.5			
2						111.5	45.4	41.5	45.5			
3						126.0	40.7	39.5	33.0			
4						111.5	40.9	37.0	33.0			
5						96.0	43.3	37.0	31.5			
6						83.0	45.9	39.5	26.5			
7						83.0	45.7	39.5	26.5			
8						156.0	45.0	39.5	59.0			
9						174.0	46.1	37.0	59.0			
10						168.0	46.6	36.0	59.0			
11						168.0	46.5	37.0	33.0			
12						126.0	46.5	37.0	33.0			
13						109.5	44.9	37.0	29.0			
14						109.5	55.5	45.5	21.0			
15						88.0	54.5	33.0	21.0			
16						88.0	37.4	37.0	29.0			
17						88.0	43.4	37.0	29.0			
18						83.0	46.1	33.0	33.0			
19						78.0	43.9	33.0	29.0			
20						59.0	41.5	37.0	25.0			
21						45.5	48.0	37.0	23.5			
22						43.0	41.5	41.5	25.0			
23						43.0	45.5	41.5	33.0			
24						45.5	42.0	39.5	78.0			
25						50.0	37.0	45.5	78.0			
26						43.0	45.5	41.5	78.0			
27						41.5	42.0	37.0	78.0			
28						26.6	44.0	45.5	78.0			
29						40.7	45.5	41.5	78.0			
30					109.5	44.2	45.5	41.5	78.0			
31					109.5		39.5	41.5				
Total Sec. Ft. Days						2638.5	1385.0	1208.0	1324.0			
Mean Sec. Ft.					109.5	88.0	44.7	39.0	44.1			
Max. Sec. Ft.						174.0	55.5	45.5	78.0			
Min. Sec. Ft.						26.6	37.0	33.0	21.0			
Total Ac. Ft.						5236	2748	2398	2624			

Remarks

Discharge determined by applying gage heights to rating curve.

Comp. by H. Smitherum

Ck. by H.S.

Date 4-5-24

Gage observer:-H.F.Barnes.

Year Period 13006

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STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 501

TABLE 13

Daily discharge, in second feet, of Shasta River -Gage #12-below Grenada Irrig.Dist.Pump, for the year ending December 31, 1923

Day	January	February	March	April	May	June	July	August	September	October	November	December	Remarks
1					25.0	28.0	50.0	29.0	25.0				
2					13.5	25.0	39.5	29.0	25.0				
3					13.5	31.5	29.0	29.0	25.0				
4					17.5	50.0	21.0	25.0	21.0				
5					37.0	50.0	22.5	25.0	21.0				
6					25.0	59.0	22.5	25.0	21.0				
7					33.0	41.5	23.5	17.5	21.0				
8				126.0	45.5	25.0	21.0	17.5	21.0				
9				126.0	41.5	25.0	25.0	17.5	21.0				
10				82.5	45.5	21.0	33.0	17.5	21.0				
11				78.0	43.0	26.5	29.0	17.5	21.0				
12				73.0	40.5	24.0	33.0	17.5	21.0				
13				53.5	35.5	26.5	33.0	17.5	21.0				
14				54.5	29.0	29.0	33.0	21.0	21.0				
15				51.0	37.0	33.0	29.0	25.0	25.0				
16				55.5	45.5	33.0	29.0	25.0	21.0				
17				59.0	45.5	39.5	32.0	25.0	25.0				
18				68.5	50.0	50.0	33.0	25.0	29.0				
19				63.0	41.5	50.0	33.0	25.0	29.0				
20				59.0	54.0	59.0	30.5	25.0	93.0	Big Springs Pump Shut			
21				50.0	43.0	50.0	30.5	25.0	93.0		Down		
22				45.5	27.5	50.0	29.5	25.0	93.0				
23				43.0	21.0	57.0	29.5	25.0	93.0				
24				39.5	21.0	66.5	29.0	25.0	96.5				
25				50.0	20.5	76.0	27.5	25.0	98.5				
26				50.0	20.5	76.0	29.0	25.0	98.5				
27				33.0	17.5	80.0	33.0	25.0	98.5	No readings subsequent			
28				25.0	25.0	73.0	25.0	25.0		to Sept.27th.			
29				25.0	28.0	59.0	25.0	34.5					
30				25.0	33.0	54.0	25.0	29.0					
31					30.5		27.5	25.0					
Total Sec. Ft. Days				1335.5	1006.0	1368.0	913.0	744.0	1199.0				
Mean Sec. Ft.				58.0	32.5	45.6	29.5	24.0	44.4				
Max. Sec. Ft.				126.0	54.0	80.0	50.0	34.5	98.5				
Min. Sec. Ft.				25.0	13.5	21.0	21.0	17.5	21.0				
Total Ac. Ft.				2644	1998	2713	1814	1476	2374				13019

Discharge determined by applying gage heights to rating curves.

Gage observer:-H.F.Barnes

Date 3-28-24

Year Period

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STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 501

TABLE 14

Daily discharge, in second feet, of Shasta River, below Big Spring Creek, for the year ending December 31, 1922

Day	January	February	March	April	May	June	July	August	September	October	November	December
1						172	81	75	78			
2						174	90	69	82			
3						166	75	67	80			
4						152	75	64	84			
5						126	78	65	82			
6						122	82	68	76			
7						117	84	68	76			
8						189	85	68	107			
9						184	82	66	105			
10						168	82	65	103			
11						168	82	66	71			
12						126	82	67	74			
13						110	80	67	75			
14						110	91	82	68			
15						88	105	64	71			
16						88	71	68	74			
17						88	77	68	74			
18						83	80	64	78			
19						88	79	63	73			
20						90	79	66	61			
21						79	85	66	58			
22						76	71	79	60			
23						77	76	81	68			
24						78	71	76	98			
25						83	64	82	98			
26						66	68	78	90			
27						74	64	74	98			
28						68	66	82	98			
29						73	68	78	98			
30					148	76	70	78	98			
31					168		67	78				
Total Sec. Ft. Days						3359	2410	2202	2456			
Mean Sec. Ft.						112.0	77.8	71.0	81.9			
Max. Sec. Ft.						189.0	105.0	82.0	107.0			
Min. Sec. Ft.						66.0	64.0	63.0	60.0			
Total Ac. Ft.						6664	4784	4366	4873			

Remarks: Table compiled from summation of discharges of Shasta River - Gage #12, Grenada Irrig. Dist. Pump, Gage #29, and Grenada Ditch, Gage #23

Comp. by H. Smitherum

Ck. by H. S.

Date 4-22-24

Year Period: 20687

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

TABLE 15

Daily discharge, in second feet, of Shasta River, below Big Spring Creek, for the year ending December 31, 192 3

Day	January	February	March	April	May	June	July	August	September	October	November	December
1					85	76	95	74	77			
2					74	72	84	74	77			
3					74	79	74	74	77			
4					77	73	74	70	80			
5					90	73	67	70	80			
6					87	83	84	70	78			
7					95	90	85	63	76			
8				126	107	74	82	63	76			
9				126	103	74	86	63	76			
10				116	108	70	78	63	76			
11				116	106	76	74	63	76			
12				110	103	74	78	63	76			
13				88	98	76	78	64	76			
14				88	92	78	78	68	76			
15				88	80	82	74	72	66			
16				92	89	82	74	72	73			
17				98	89	89	78	72	74			
18				107	94	100	78	72	81			
19				102	104	100	78	72	81			
20				98	117	108	75	72	145			
21				95	106	100	75	72	145			
22				98	90	100	74	72	145			
23				92	84	106	74	72	145			
24				90	84	116	74	74	148			
25				101	84	121	73	75	150			
26				101	84	121	74	75	150			
27				83	80	133	78	75				
28				80	68	118	70	75				
29				86	76	104	70	86				
30				85	80	99	70	81				
31					78		70	77				
Total Sec. Ft. Days				2266	2786	2747	2376	2208	2480			
Mean Sec. Ft.				98.5	90.0	91.6	76.5	71.2	95.4			
Max. Sec. Ft.				126.0	117.0	133.0	95.0	86.0	150.0			
Min. Sec. Ft.				85.0	68.0	70.0	67.0	63.0	66.0			
Total Ac. Ft.				4485	5534	5451	4704	4378	4910			

Remarks: Table compiled from summation of discharges of Shasta River Gage #12, Grenada Irrig. Dist. Pump Gage #39, and Grenada Ditch Gage #22.

Comp. by H.Smitherum

Ck. by H.S.

Date 4-19-24

Year Period: 29462

20122 7-22

STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 500

TABLE 16

Daily discharge, in second feet, of Shasta River, near Montague, In N. ½ NE¼ S.33, T.45 N.R.6 W, for the year ending September 30, 1912.

Day	October	November	December	January	February	March	April	May	June	July	August	September	Remarks
1	96	167	227	207	180	140	72	570	283	180	88	41	Data from U.S.G.S. Water Supply Paper 361.
2	112	167	227	187	180	122	72	390	262	180	88	41	
3	112	187	227	187	180	122	72	390	262	180	88	72	
4	112	187	227	187	180	122	72	304	262	140	140	105	
5	112	187	227	187	160	140	72	304	262	105	140	105	
6	112	187	227	187	160	262	72	292	140	72	72	346	
7	112	187	227	187	160	262	72	280	140	72	72	390	
8	112	187	227	227	160	262	72	268	140	72	72	390	
9	147	187	227	290	180	180	72	256	304	41	72	325	
10	167	187	227	290	180	160	72	244	220	41	72	220	
11	147	207	227	290	180	180	72	232	220	41	72	140	
12	147	207	227	269	180	160	72	220	220	41	72	180	
13	147	207	227	269	160	180	88	180	220	72	72	180	
14	147	207	227	269	160	180	88	180	220	72	72	140	
15	147	207	227	290	160	180	105	180	220	72	72	140	
16	147	207	227	269	262	180	105	180	140	72	72	140	
17	147	207	227	269	434	180	72	140	140	72	72	140	
18	147	227	227	269	570	180	72	180	140	88	72	140	
19	147	207	227	269	390	180	72	220	72	72	56	105	
20	147	227	227	269	220	160	72	262	72	72	56	105	
21	147	207	207	227	220	160	72	346	140	105	41	88	
22	147	207	227	227	180	140	72	390	220	105	41	88	
23	147	227	227	227	180	160	72	346	346	122	41	88	
24	147	227	227	227	160	140	105	304	478	122	41	88	
25	147	227	227		140	140	105	283	390	88	41	88	
26	167	227	227		140	140	105	262	220	88	41	105	
27	167	227	227		140	105	72	262	283	88	41	105	
28	167	227	227	262	140	105	105	283	140	72	41	105	
29	167	227	207	262	140	105	304	283	140	72	41	105	Comp. by
30	167	227	207	220		88	434	283	180	72	56	105	Ck. by
31	167		207	220		72		283		72	56		Date
Total Sec. Ft. Days													Year Period
Mean Sec. Ft.	142	206	224		203	158	99.5	277	216	89.1	66.9	147	
Max. Sec. Ft.	167	227	227		570	262	434	570	478	180	140	390	
Min. Sec. Ft.	96	167	207		140	72	72	140	72	41	41	41	
Total Ac. Ft.	8730	12300	13800		11700	9720	5920	17000	12900	5480	4110	8750	110410

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STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 500

TABLE 17

Daily discharge, in second feet, of Shasta River, near Montague, In N½ NE¼ S.33.T.45 NR 6 W, for the year ending September 30, 1913.

Day	October	November	December	January	February	March	April	May	June	July	August	September	Remarks
1	105	140	220	262	262	262	304	283	220	262	220	140	Data from U.S.G.S. Water Supply Paper 361.
2	140	140	220	262	304	262	304	283	220	220	220	140	
3	140	140	220	262	304	262	283	283	220	220	180	140	
4	140	140	220	262	304	262	304	262	180	140	180	140	
5	140	140	220	180	304	262	304	262	180	140	180	140	
6	140	346	180	180	304	262	434	262	180	105	140	140	
7	140	434	180	140	304	262	304	180	346	72	140	140	
8	140	434	180	140	304	262	304	262	262	88	140	122	
9	105	434	180	180	304	262	283	262	346	88	140	105	
10	105	434	180	180	304	262	262	325	304	72	140	105	
11	105	390	180	180	304	262	241	346	262	72	140	105	
12	105	390	180	180	283	262	241	346	220	72	140	105	
13	105	390	180	180	283	304	262	304	220	72	140	105	
14	105	304	262	434	283	346	478	304	180	72	140	105	
15	105	304	346	570	283	346	434	304	180	72	140	105	
16	105	304	346	478	283	304	346	304	140	72	140	105	
17	105	262	304	346	283	283	304	434	105	72	105	105	
18	105	262	304	478	283	262	304	390	105	72	105	105	
19	105	262	304	712	283	262	304	390	220	72	105	105	
20	105	262	304	478	283	262	346	346	180	72	105	105	
21	88	262	304	346	283	262	346	346	180	72	105	105	
22	122	262	304	304	283	262	304	283	140	41	105	105	
23	140	262	304	304	283	262	304	283	140	41	105	105	
24	122	220	304	262	283	262	304	304	140	346	105	105	
25	105	220	304	262	262	241	304	304	140	346	105	105	
26	140	220	304	262	262	241	304	304	180	346	105	105	
27	140	220	220	262	262	241	304	304	434	304	105	105	
28	140	220	180	262	262	220	304	390	346	304	105	105	
29	140	220	180	262		220	283	346	304	220	140	105	
30	140	220	262	262		262	283	346	262	220	140	122	
31	140		262	262		262		220		220	140		
Total Sec. Ft. Days													Year Period
Mean Sec. Ft.	121	260	246	295	287	266	313	308	218	148	135	114	
Max. Sec. Ft.	140	434	346	712	304	346	478	434	434	346	220	140	
Min. Sec. Ft.	88	140	180	140	262	220	241	180	105	41	105	105	
Total Ac. Ft.	7440	15500	15100	18100	15900	16400	18600	18900	13000	9100	8300	6780	163120

Comp. by

Ck. by

Date

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STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 500

TABLE 18)

Daily discharge, in second feet, of Shasta River, near Montague, In N½ NE¼ S.33, T.45 N.R. 6 W., for the year ending September 30, 1917.

Day	October	November	December	January	February	March	April	May	June	July	August	September	Remarks
1	124	163	207	201			224	163	149	48	35	35	Data from U.S.G.S. Water Supply Paper 461.
2	111	163	233	207			224	192	149	48	48	48	
3	111	171	307	214			224	87	224	48	35	48	
4	111	171	335	240			224	135	135	48	56	65	
5	111	177	307	224			258	87	135	48	35	48	
6	111	177	270	233			258	111	111	48	48	35	
7	111	177	240	240			258	87	87	35	65	35	
8	157	171	207	240			224	111	111	48	48	48	
9	149	177	224	233			192	65	111	48	48	48	
10	135	171	224	214			192	87	192	48	48	48	
11	135	163	224	233			465	111	135	48	48	35	
12	135	177	224	224			335	192	111	35	25	48	
13	135	177	224	233			296	48	111	35	25	48	
14	135	177	207	214		244	258	48	111	35	35	48	
15	135	183	201	201			224	375	135	83	35	65	
16	149	192	201	177			224	335	111	48	25	48	
17	163	192	192	177			258	335	35	48	35	48	
18	149	192	192	177			192	335	65	35	65	65	
19	149	192	201	177			224	258	48	35	48	65	
20	149	201	207	177			135	224	65	35	48	65	
21	149	192	207				135	192	65	35	48	65	
22	149	192	207				192	192	48	35	35	83	
23	149	192	207				296	177	35	35	35	104	
24	149	192	214				296	192	83	35	35	126	
25	149	207	207				335	163	83	35	35	115	
26	149	214	201				335	135	65	48	35	126	
27	149	214	192				258	135	35	35	48	126	
28	149	207	192				258	224	35	25	35	149	
29	149	207	177				258	163	48	35	35	149	
30	149	207	201				192	177	65	25	48	149	
31	171		207					163		25	48		
Total Sec. Ft. Days													Year Period
Mean Sec. Ft.	140	186	221	212			248	171	96.4	41.0	41.7	72.8	
Max. Sec. Ft.	171	214	335	240			465	375	224	83	65	149	
Min. Sec. Ft.	111	163	177	177			135	48	35	25	25	35	
Total Ac. Ft.	8610	11100	13600	8410			14800	10500	5740	2520	2560	4330	82170

Comp. by

Ck. by

Date

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STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 500

TABLE 19.

Daily discharge, in second feet, of Shasta River, near Montague, In N½ NE¼ S.33 T.45 N.R. 6 W., for the year ending September 30, 1910

Day	October	November	December	January	February	March	April	May	June	July	August	September
1	149	177	315	277	207	177	177	25	25	8	25	33
2	149	240	315	240	177	177	177	25	35	17	65	25
3	149	277	277	207	177	177	149	25	83	16	48	30
4	149	207	240	207	177	177	126	25	83	17	30	35
5	126	207	207	177	177	207	65	25	65	14	25	33
6	104	207	207	207	207	177	83	25	65	10	23	30
7	104	177	207	177	355	177	1.5	35	48	10	25	30
8	94	207	177	207	315	207	1.5	25	48	16	35	42
9	83	177	177	207	207	207	3.0	25	35	25	21	48
10	48	177	207	207	177	149	6	25	35	48	25	56
11	25	207	207	207	207	149	6	35	25	51	23	65
12	6	240	177	240	177	177	6	35	17	45	25	83
13	35	207	177	240	149	177	149	25	17	25	21	94
14	65	207	177	207	149	177	126	25	25	14	17	115
15	104	207	207	207	149	207	126	25	25	14	25	177
16	104	207	207	240	149	177	83	42	35	25	35	163
17	115	177	207	207	177	177	104	35	35	21	65	149
18	126	177	207	207	177	177	83	42	25	17	65	149
19	138	149	240	207	177	440	104	48	25	14	48	126
20	149	149	240	177	207	315	83	35	25	14	45	126
21	177	177	207	207	177	177	65	35	25	16	42	126
22	149	177	240	207	207	149	48	35	25	33	35	126
23	126	149	177	177	177	177	48	35	65	27	30	133
24	104	149	207	207	177	207	35	35	48	65	33	122
25	177	149	240	207	207	207	48	48	35	27	48	124
26	177	149	240	207	177	207	48	48	35	25	56	122
27	207	149	240	207	177	240	48	35	17	45	65	115
28	177	207	207	207	177	240	35	25	14	27	62	126
29	83	277	207	207		207	25	25	10	27	56	126
30	83	207	296	207		207	25	25	21	25	65	128
31	177		277	177		207		25		17	35	
Total Sec. Ft. Days												
Mean Sec. Ft.	116	192	223	209	192	201	69.5	31.5	35.7	24.4	39.3	95.2
Max. Sec. Ft.	207	277	315	277	355	440	177	48	83	65	65	177
Min. Sec. Ft.	6	149	177	177	149	149	1.5	25	10	8	17	25
Total Ac. Ft.	7260	11400	13700	12900	10700	12400	4140	1940	2120	1500	2420	5660

Remarks

Data from U.S.G.S. Water Supply Paper 481.

Comp. by

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Date

Year Period

86140

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STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 500

TABLE 20

Daily discharge, in second feet, of Shasta River, near Montague, In N.½NE.¼S.33.T.45.N.R.6.W. for the year ending September 30, 19x19

Day	October	November	December	January	February	March	April	May	June	July	August	September
1	126	163	214	192	240	315	355	177	149	18	48	23
2	128	169	207	192	240	355	355	177	104	23	23	23
3	138	224	207	192	240	335	395	192	83	23	35	23
4	135	207	207	192	224	315	440	192	83	20	48	29
5	140	201	207	192	224	315	440	183	74	23	48	23
6	138	192	207	192	240	315	440	177	104	23	56	23
7	135	192	207	192	258	335	395	169	104	23	42	35
8	140	186	214	192	247	335	355	126	65	18	48	83
9	138	198	207	207	335	315	355	138	60	14	56	83
10	138	192	207	214	1490	296	277	131	51	35	42	74
11	138	192	214	315	1250	240	240	138	51	35	48	65
12	138	192	207	296	880	240	207	126	104	35	42	35
13	138	192	214	296	440	247	207	131	83	29	18	35
14	142	192	207	296	395	355	224	104	83	23	18	42
15	149	224	207	296	355	335	207	115	42	14	14	48
16	155	240	207	296	315	315	207	126	42	14	14	65
17	142	207	214	335	315	315	214	115	23	10	14	56
18	138	207	224	440	315	335	214	104	18	14	14	65
19	131	201	224	296	277	440	207	83	23	35	14	48
20	171	192	214	355	277	355	207	94	14	65	14	35
21	163	201	224	440	277	315	207	83	14	48	14	35
22	169	192	224	355	277	315	198	83	23	48	29	29
23	163	207	224	335	277	315	183	126	14	35	23	56
24	169	201	224	335	296	315	177	155	23	35	29	74
25	163	207	224	335	335	335	177	149	23	14	35	74
26	163	192	230	296	440	315	177	149	14	14	42	83
27	169	198	224	296	355	315	207	149	23	23	23	83
28	163	207	224	277	335	315	198	149	35	35	29	83
29	163	207	207	277		315	177	183	23	14	35	83
30	169	224	198	258		335	177	192	23	14	42	104
31	166		192	251		335		149		14	35	
Total Sec. Ft. Days												
Mean Sec. Ft.	149	200	213	278	398	320	261	141	52.5	25.4	32.0	53.9
Max. Sec. Ft.	171	240	224	440	1490	440	440	192	149	65	56	104
Min. Sec. Ft.	126	163	192	192	224	240	177	83	14	10	14	23
Total Ac. Ft.	9160	11900	13100	17100	22100	19700	15500	8670	3120	1560	1970	3210

Remarks

Data from U.S.G.S. Water Supply Paper 511.

Comp. by

Ck. by

Date

Year Period

127090

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STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 500

TABLE 21

Daily discharge, in second feet, of Shasta River near Montague, In N.½NE.¼S.33.T.45.N.R.6.W, for the year ending September 30, 1920

Day	October	November	December	January	February	March	April	May	June	July	August	September	Remarks
1	104	149	207	207	177	162	134	40	109	40	48	57	Data from U.S.G.S. Water Supply Paper 511.
2	104	149	192	207	177	162	121	40	76	76	48	48	
3	104	149	207	192	177	162	109	40	57	177	40	40	
4	104	149	207	192	177	162	109	34	28	177	40	40	
5	126	149	207	207	177	162	97	28	28	121	40	40	
6	126	163	207	192	177	162	86	28	28	109	34	40	
7	126	163	207	177	177	148	76	28	34	97	34	76	
8	126	149	192	192	162	148	66	28	40	76	40	76	
9	126	163	207	177	162	148	76	40	40	48	40	57	
10	138	177	207	177	162	148	121	121	40	40	40	66	
11	126	163	277	177	148	148	97	148	40	17	40	76	
12	126	177	277	177	148	148	97	121	40	17	40	76	
13	126	177	240	177	148	148	97	109	40	13	34	76	
14	126	177	192	177	148	177	86	97	40	9	34	57	
15	126	163	177	177	148	207	121	86	121	9	28	57	
16	126	177	192	192	148	207	97	76	86	4.0	28	48	
17	126	177	192	192	148	192	86	66	40	3.5	28	40	
18	126	177	192	192	148	177	76	57	40	4.0	34	40	
19	126	177	192	192	148	162	76	48	28	2.0	28	40	
20	138	177	315	192	148	148	76	40	28	3.5	28	40	
21	149	177	315	192	148	148	76	40	22	4.0	28	40	
22	138	177	240	207	148	148	76	40	22	4.0	34	40	
23	138	177	258	207	148	148	66	40	17	4.0	34	48	
24	126	183	258	207	148	148	66	40	17	3.5	40	57	
25	138	177	277	224	148	148	66	57	13	3.5	57	57	
26	138	177	258	207	148	148	57	57	9	40	76	57	
27	142	177	258	207	148	148	57	57	6.5	57	57	57	
28	149	177	258	192	148	148	57	48	6.5	66	40	57	
29	149	177	240	192	148	134	48	40	4.0	57	40	66	
30	149	177	240	177		148	48	48	6.5	48	40	66	
31	149		240	177		148		66		48	40		
Total Sec. Ft. Days													Year Period
Mean Sec. Ft.	130	169	230	192	156	158	84.0	58.3	36.9	44.5	39.1	54.5	
Max. Sec. Ft.	149	183	315	224	177	207	134	148	121	177	76	76	
Min. Sec. Ft.	104	149	177	177	148	134	48	28	4.0	2.0	28	40	
Total Ac. Ft.	7990	10100	14100	11800	8970	9720	5000	3580	2200	2740	2400	3240	81840

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Date

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Form 500

STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

TABLE 22

Daily discharge, in second feet, of Shasta River, near Montague, In N.½NE.¼S.33.T.45,N.R.6,W. for the year ending September 30, 1921.

Day	October	November	December	January	February	March	April	May	June	July	August	September	Remarks
1	57	148	355	660	660	660	277	177	149	48	3	35	Data from unpublished records of United States Geological Survey.
2	57	148	315	490	490	690	277	207	149	48	3	35	
3	57	148	277	395	395	720	296	224	163	48	5	35	
4	66	148	277	395	395	785	315	240	177	48	5	35	
5	97	148	240	660	375	1140	277	240	177	42	7	35	
6	148	162	207	990	355	990	277	258	177	42	7	35	
7	148	148	207	490	355	850	258	240	177	35	14	35	
8	148	148	240	315	355	818	258	207	163	35	14	23	
9	148	148	258	315	355	785	240	177	149	35	18	23	
10	148	148	258	315	440	752	240	149	177	23	23	23	
11	148	148	395	315	465	752	240	149	163	14	35	35	
12	162	177	660	315	545	720	224	149	149	7	35	56	
13	177	207	545	296	545	660	207	177	149	7	35	56	
14	177	207	395	296	660	660	207	240	149	7	35	65	
15	192	207	315	296	1960	660	207	240	138	7	35	65	
16	192	240	315	277	1290	630	207	315	138	7	23	94	
17	192	395	395	277	990	572	207	149	126	7	29	94	
18	192	395	395	1370	440	545	192	395	126	7	35	104	
19	177	990	355	990	395	490	177	490	126	5	35	104	
20	148	1220	315	660	630	465	163	545	115	5	35	104	
21	148	1220	395	355	3630	440	149	490	104	3	23	104	
22	148	990	355	315	2780	418	126	440	104	3	29	104	
23	148	395	315	315	1960	418	126	355	83	3	35	104	
24	148	395	315	315	990	395	126	315	83	5	35	104	
25	148	490	315	315	720	375	138	240	83	3	35	115	
26	148	490	315	355	660	355	126	240	83	7	35	115	
27	148	1370	315	1870	660	355	126	277	83	7	35	115	
28	148	545	315	990	660	355	138	296	65	7	35	115	
29	148	395	315	490		355	126	240	65	7	35	115	
30	148	395	315	920		335	126	224	48	7	29	115	
31	148		395	1060		315		177		3	29		
Total Sec. Ft. Days	4459	12365	10384	17417	24155	18460	6053	8262	3838	532	786	2197	Year Period
Mean Sec. Ft.	144	412	335	562	862	596	202	266	128	17.2	25.4	73.2	
Max. Sec. Ft.	192	1370	660	1870	3630	1140	315	545	177	48	35	115	
Min. Sec. Ft.	57	148	207	277	355	315	126	149	48	3	3	23	
Total Ac. Ft.	8854	24516	20598	34556	47873	36647	12020	16356	7617	1058	1562	4356	216013

Comp. by

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Date

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STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

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Form 500

TABLE 23

Daily discharge, in second feet, of Shasta River, near Montague, In N.½NE.¼S.33.T.45.N.R.6.W, for the year ending September 30, 1922

Day	October	November	December	January	February	March	April	May	June	July	August	September
1				193	226	261	339	92	92			
2				226	226	226	339	92	92			
3				261	226	226	339	114	114			
4				261	226	226	339	137	114			
5				226	193	226	299	163	92			
6				226	226	226	299	163	73			
7				226	226	193	261	193	73			
8				193	193	193	261	193	55			
9				193	299	193	261	193	73			
10				226	339	193	261	193	226			
11				261	339	193	261	163	226			
12				261	339	163	226	137	163			
13				299	339	163	226	137	92			
14				299	299	163	193	92	92			
15				299	299	137	163	92	73			
16				261	299	137	163	114	73			
17				261	299	114	137	193	55			
18				226	299	114	114	226	40			
19				226	427	114	92	530	40			
20				193	475	92	92	835	40			
21				193	427	92	92	585	27			
22				163	381	92	114	299	17			
23				163	339	339	193	261	17			
24				163	299	381	193	226	10			
25				193	299	299	193	226	10			
26				226	261	299	163	226	10			
27				193	261	299	137	193	4			
28				193	261	299	114	163	4			
29				261		299	114	137	4			
30				261		299	114	92	2			
31				226		261		92				
Total Sec. Ft. Days				7052	8322	6512	6092	6552	2003			
Mean Sec. Ft.				227	297	210	203	211	66.8			
Max. Sec. Ft.				299	475	381	339	835	226			
Min. Sec. Ft.				163	193	92	92	92	2			
Total Ac. Ft.				14000	16500	12900	12100	13000	3970			

Remarks

Comp. by: Data from unpublished records of

Ck. by: United States Geological Survey.

Date

Year Period: 72500

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STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

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TABLE 24

Daily discharge, in second feet, of Shasta River, near Montague, In N.½NE.¼S.33.T.45.N.R.6.W for the year ending September 30, 1923.

Day	October	November	December	January	February	March	April	May	June	July	August	September
1								48		40	6	17
2								44		30	4.8	16
3										23	13	14
4										13	7.5	12
5										7.5	4.2	11
6								35		10	21	10
7							143			21	4.2	7
8										9	4.6	6.5
9							119		21	3.9	5	6
10							93		17	8.5	5.5	8.5
11							67	40		14	6	10
12							58	35	17	13	5.5	10
13							46	30		19	7	12
14							38	30		15	7.5	15
15							35	46		15	10	18
16										13	13	20
17							58			13	11	15
18							44			13	10	19
19							40	54		19	10	16
20							44	53	58	12	10	18
21									52	15	10	42
22							25			9.5	10	102
23									73	9.5	7	112
24							33		98	9.5	9	102
25							21	17		9.5	9	110
26							33	37	89	12	6.5	151
27							35		83	13	15	128
28							21		61	15	38	123
29								30	51	13	46	128
30							47		45	23	38	133
31										10	32	
Total Sec. Ft. Days										450.9	386.3	1392.0
Mean Sec. Ft.										14.5	12.5	46.4
Max. Sec. Ft.										400	46.0	151.0
Min. Sec. Ft.										3.9	4.2	6.0
Total Ac. Ft.										89[illegible]	76[illegible]	2760

Remarks: Data from unpublished records of United States Geological Survey.

Comp. by

Ck. by

Date

Year Period

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STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS

Form 500

TABLE 25

Daily discharge, in second feet, of Shasta River, near Montague, In N½ NE¼ S 33 T 45 N, R 6 W., for the year ending September 30, 1924

Day	October	November	December	January	February	March	April	May	June	July	August	September
1	130	177	186	*190	*222	180	**50	** 9	5.5	13	5.5	20
2	130	174	189	*190	231	177	**50	** 9	4.0	12	6	40
3	130	171	186	*191	*244	193	**50	7.5	** 9	7	8	14
4	133	174	180	*192	*256	186	**50	**15	** 9	14	27	16
5	133	174	183	*192	*268	177	24	**15	** 9	11	17	17
6	148	168	*184	193	281	168	22	**15	** 9	8.5	6	23
7	146	174	*185	193	323	162	20	**15	** 9	11	4.0	27
8	138	171	186	196	507	156	**12	**15	20	12	4.5	27
9	135	171	171	203	460	151	**12	**15	20	*10	4.5	24
10	133	171	156	213	344	140	**12	**15	15	8	5.5	19
11	135	174	148	217	281	135	**12	40	**20	10	7	20
12	135	174	148	220	256	138	**12	35	**20	9.5	6.5	20
13	133	171	153	217	245	133	**12	**24	**20	6	4.2	25
14	130	177	153	206	234	133	3.2	**24	**20	8	6	30
15	130	183	183	203	220	133	** 4	**24	8.5	8	9	36
16	138	186	186	206	213	128	** 4	**24	15	8	11	41
17	148	186	183	213	206	126	** 4	4.5	9.5	7	13	46
18	146	183	180	*204	200	126	** 4	3.2	3.7	4.5	14	35
19	146	186	203	196	200	117	3.2	4.0	3.4	3.4	17	34
20	143	186	203	189	196	104	3.7	** 4.5	3.2	4.0	20	39
21	143	186	193	183	189	102	** 4.5	** 4.5	3.2	4.5	17	40
22	146	186	186	180	186	108	** 4.5	** 4.5	2.6	7	17	42
23	151	186	186	*182	186	104	** 4.5	** 4.5	2.6	13	20	48
24	156	186	183	183	186	104	** 4.5	** 4.5	3.2	14	20	73
25	156	186	183	183	186	106	18	1.8	9	13	18	84
26	156	183	*184	186	180	100	14	3.2	6	11	15	86
27	156	183	*186	196	180	98	14	** 9	7.5	11	11	87
28	156	183	*188	249	180	95	** 9	** 9	8	11	10	100
29	159	183	189	260	180	102	** 9	** 9	7	8.5	11	100
30	162	*184	189	206		** 85	** 9	** 9	7	13	11	86
31	177		*189	*214		** 85		** 9		6.5	10	
Total Sec. Ft. Days	4458	5377	5602	6246	7040	4039	455.1	385.7	288.9	287.4	355.7	129.9
Mean Sec. Ft.	144	179	181	201	243	130	15.2	12.4	9.63	9.27	11.5	43.3
Max. Sec. Ft.	177	186	203	260	507	193				14	27	100.0
Min. Sec. Ft.	130	168	148	180	180					3.4	4.0	14.0
Total Ac. Ft.	8850	10700	11100	12400	14000	7990	904	762	573	570	707	258.0

Remarks: Data from unpublished records of United States Geological Survey.
* Interpolated.
** Estimated.

Year Period: 71,100

Comp. by
Ck. by
Date

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STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 501

TABLE 26

Daily discharge, in second feet, of Shasta River - Gage #26 -above jct. of Yreka Creek, for the year ending December 31, 1922

Day	January	February	March	April	May	June	July	August	September	October	November	December
1							6	3	14	150	150	214
2							6	4	14	178	150	214
3							4	26	14	178	150	214
4						*103.4	4	2	10	178	150	178
5							11	3	10	150	150	178
6							4	3	6	150	126	178
7							6	2	6	150	150	214
8							6	2	14	126	150	214
9							6	2	14	126	178	214
10							12	2	26	126	178	214
11							[illegible]	2.6	26	126	178	195
12							[illegible]	2	10	126	150	214
13							[illegible]	2	10	150	150	
14							[illegible]	4	10	150	150	
15							12	4	14	150	150	
16							19	10	6	150	126	
17							10	14	14	150	126	
18							10	14	14	150	150	
19							6	14	26	150	150	
20							52	10	33	178	150	
21							75	10	33	150	150	
22							3	10	42	150	155	
23					*271.1		33	33	33	150	166	
24						* 18.6	3.	37	106	150	178	
25							3	33	150	150	178	
26							4	26	150	150	214	
27							6	26	150	150	214	
28						9	6	19	178	150	214	
29						10	14	[illegible]	178	150	178	
30						6	4	[illegible]	178	126	178	
31							3	[illegible]		126		
Total Sec. Ft. Days							404	[illegible]	1489	4594	4837	2441
Mean Sec. Ft.							13	[illegible]	49.6	148.2	161.2	203.4
Max. Sec. Ft.							75	33	178	178	214	214
Min. Sec. Ft.							3	2	6	126	126	178
Total Ac. Ft.							799	738	2951	9112	9592	4833

Remarks: Discharge determined by applying gage heights to rating curve.
*Discharge by current meter gaging.

Comp. by H. Smitherum

Ck. by H. S.

Date 4-5-24

Gage observer:- John Solus.

Year Period: 28025

20444 7-22 500

Form 501

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS

TABLE 27

Daily discharge, in second feet, of Shasta River - Gage #26 -above jct. of Yreka Creek, for the year ending December 31, 1923

Day	January	February	March	April	May	June	July	August	September	October	November	December
1						*1.0	*1.5	*1.5				
2					**37.1							
3								*3.0				
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20				**49.9								
21						*1.0						
22												
23					*52.0							
24												
25							*1.0					
26												
27												
28												
29												
30												
31												
Total Sec. Ft. Days												
Mean Sec. Ft.												
Max. Sec. Ft.												
Min. Sec. Ft.												
Total Ac. Ft.												

Remarks

* Discharge determined by applying gage heights to rating curve.
** Current meter gaging.

Comp. by H. Smitherum
Ck. by H.S.
Date 4-5-24
Gage observer:-Manuel Shelly

Year Period

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STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS

Form 501

TABLE 28

Daily discharge, in second feet, of Boles Creek - Gage #38 - At H. Behnke Ranch, for the year ending December 31, 1922

Day	January	February	March	April	May	June	July	August	September	October	November	December	Remarks
1						8.5	4.5	4.5					Discharge determined by applying gage heights to rating curve.
2						8.5	6.4	4.5					
3						6.4	6.4	4.5					
4						6.4	6.4	4.5					
5						6.4	6.4	4.5					
6						6.0	6.4	4.5					
7						6.4	8.5	4.5					
8						6.4	8.5	6.4					
9						6.4	8.5	6.4					
10						6.4	8.5	6.4					
11						8.5	8.5	6.4					
12					10.8	8.5	8.5						
13					10.8	8.5	8.5						
14					10.8	8.5	8.5						
15					8.5	8.5	8.5						
16					8.5	8.5	8.5						
17					8.5	8.5	8.5						
18					8.5	8.5	4.5						
19					8.5	6.4	4.5						
20					13.4	5.6	4.5						
21					10.8	4.5	4.5						
22					8.9	6.4	4.5						
23					10.8	6.4	4.5						
24					10.8	6.4	4.5						
25					13.4	6.4	4.5						
26					10.8	4.5	4.5						
27					8.5	4.5	4.5						
28					10.8	4.5	4.5						
29					10.8	4.5	4.5						
30					8.5	4.5	4.5						
31					8.5		4.5						
Total Sec. Ft. Days					200.9	200.4	193.0	57.10					Year Period
Mean Sec. Ft.					10.0	6.7	6.2	5.2					
Max. Sec. Ft.					13.4	8.5	8.5	6.4					
Min. Sec. Ft.					8.5	4.5	4.5	4.5					
Total Ac. Ft.					398	397	381	113					1289

Comp. by H.Smitherum
Ck. by H.S.
Date 4-3-24
Gage observer:- John Reidel

26111 7 22 50

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS

Form 501

TABLE 29

Daily discharge, in second feet, of Boles Creek - Gage #38 - At H. Behnke Ranch, for the year ending December 31, 1923

Day	January	February	March	April	May	June	July	August	September	October	November	December
1					6.9	6.9	*4.9	3	4.9			
2					6.9	6.9	3	3	4.9			
3					6.9	6.9	*3	3	4.9			
4					6.9	6.9	3	3	4.9			
5					6.9	6.9	3	*3	4.9			11.5
6				11.5	*4.9	6.9	3	3	4.9			
7				*11	3	6.9	3	3	4.9			
8				*10.5	3	6.9	*3	3	4.9			
9				*10.1	3	6.9	3	3	*4.9			
10				* 9.7	3	6.9	4.9	3	4.9			
11				* 9.3	6.9	6.9	4.9	3	4.9			
12				* 8.9	6.9	6.9	3	3	4.9			
13				* 8.5	3	6.9	3	3	4.9			
14				* 8.1	3	6.9	3	3	4.9			
15				* 7.7	3	6.9	*3	3	4.9			
16				* 7.3	3	6.9	3	3	*5.9			
17				6.9	3	6.9	3	3	6.9			
18				3	3	6.9	3	3	6.9			
19				11.5	3	6.9	3	3	6.9			
20				6.9	3	6.9	3	3	6.9			
21				6.9	3	6.9	3	3	6.9			
22				6.9	3	6.9	*3	4.9	6.9			
23				6.5	3	6.9	3	4.9	6.9			
24				6.9	3	6.9	3	3	6.9			
25				6.9	3	6.9	3	3	6.9			
26				11.5	3	6.9	3	3	6.9	Rain		
27				6.9	*3	6.9	3	3	11.5			
28				6.9	3	4.9	3	3	11.5			
29				* 6.9	3	4.9	*3	3	11.5			
30				* 6.9	3	6.9	3	3	11.5			
31					3		3	3				
Total Sec. Ft. Days				204.1	122.2	203.0	98.7	96.8	194.4			
Mean Sec. Ft.				8.2	3.9	6.8	3.2	3.1	6.5			
Max. Sec. Ft.				11.5	6.9	6.9	4.9	4.9	11.5			
Min. Sec. Ft.				3	3	4.9	3	3	4.9			
Total Ac. Ft.				404	240	402	197	191	387			

Year Period: 1821

Remarks: Discharge determined by applying gage heights to rating curve. *No gage reading, discharge interpolated.

Comp. by H. Smitherum

Ck. by H.S.

Date 3-26-24

Gage observer:-Mrs. E.H. Johnson

20441 7-22 500

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
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Form 501

TABLE 30

Daily discharge, in second feet, of Boles Creek - Gage #4 - just above jct. with Shasta River for the year ending December 31, 1922

Day	January	February	March	April	May	June	July	August	September	October	November	December
1						3.8	2.8	2.8				
2						3.8	3.8	3.8				
3						3.8	3.8	3.8				
4						2	3.8	3.8				
5						2	3.8	3.8				
6						2	3.6	3.8				
7						2	3.8	3.8				
8					4.7	2	3.8	3.8				
9					5.6	2	3.8	3.8				
10					5.6	2	5.6	3.8			13.4	
11					5.6	3.8	5.6	3.8				
12					5.6	4.7	5.6	2.5				
13					3.8	5.6	5.6	2.8				
14					5.6	5.6	5.6	2.8				
15					5.6	3.8	5.6	2.8				
16					5.6	2	5.6	2.8				
17					5.6	2	5.6	2.8				
18					5.6	2	5.2	2.8				
19					5.6	2	5.6	2				
20					5.6	1.6	4.7	2				
21					3.8	1.6	3.8	2.8				
22					3.8	1.6	2.8	2.8				
23					3.8	1.6	3.8	3.4				
24					3.8	1.6	3.8	3.6				
25					3.8	1.4	4.7	3.6				
26					3.8	1.4	4.7	2.8				
27					3.8	1.2	3.8	2.8				
28					3.8	1	3.8	2				
29					3.8	1	3.8	2				
30					3.8	2	2.8					
31					3.8		2.8					
Total Sec. Ft. Days					111.9	72.9	133.9	89.9				
Mean Sec. Ft.					4.7	2.4	4.3	3.1				
Max. Sec. Ft.					5.6	5.6	5.6	3.8				
Min. Sec. Ft.					3.8	1.0	2.8	2.0				
Total Ac. Ft.					222	143	264	178				

Remarks

Comp. by H. Smitherum

Ck. by

Date 4-3-24

Discharge determined by applying gage heights to rating curve.

Gage observer: Mrs. Geo. Behnke

Year Period 807

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Form 501

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS

TABLE 31

Daily discharge, in second feet, of Boles Creek - Gage #4 - just above jct. with Shasta River, for the year ending December 31, 1923

Day	January	February	March	April	May	June	July	August	September	October	November	December
1					4.1	*3		1	2.1			
2					4.1	*4.1		1	2.1			
3					*4.1	*3		1	2.2			
4					3	*3		1	2.2			
5					*2	*3		*1	2.3			*11.2
6				*11.2	*4.1	2.5		1	2.3			
7				10.7	4.1	*2		1	*2.4			
8				10.2	*4.1	2		1	2.4	*8.2		
9				9.7	4.1	2		*1	2.3			
10				9.2	4.1	*2		1	2.2			
11				8.8	*4.1	2		1	2.1			
12				8.3	*2	*2		*1	*2			
13				7.9	3	2		1	2			
14				7.4	*4.1	2		1	2			
15				7	4.1	*2		*1	2			
16				6.5	*4.1	2		1.2	2			
17				* 6.1	*4.1	*2		1.4	2			
18				* 6.1	*1	2		1.6	*2			
19				5.7	*4.1	*2		1.7	*4.5			
20				5.4	*6.1	*4.1		1.8	*6.1			
21				* 5.1	*6.1	3.0		1.9	*3.5			
22				4.6	*2	*2		*2	*2			
23				* 4.1	*4.1	2		*2	2			
24				4.1	3.3	2		2	2			
25				4.1	*2.4	2		2	*2			
26				4.1	*4.1	2		2	*7.1	Rain		
27				4.1	4.1	2		2				
28				* 4.1	*4.1	2		2				
29				4.1	*3	2		2				
30				* 4.1	3	2		*2				
31					3			2				
Total Sec. Ft. Days				162.7	113.7	69.7		44.6	67.8			
Mean Sec. Ft.				6.5	3.7	2.3		1.4	2.6			
Max. Sec. Ft.				11.2	6.1	4.1		2				
Min. Sec. Ft.				4.1	2	2		1				
Total Ac. Ft.				322	225	137		86	135			

REMARKS

*Discharge determined by applying gage heights to rating curve. Intermediate discharge interpolated.

Comp. by H. Smitherum
Ck. by H.S.
Date 3-26-24
Gage observer:-Mrs. Geo. Behnke

Year Period 905

TABLE 32

Beaughan Creek

Summation of the flow of springs tributary to Beaughan Creek.

Date	Name of Stream	Location	Discharge c.f.s.
7-15-22	Beaughan Spring	At division weir.	*8.12
7-11-23	Weed Lumber Co. Sp.72	Combined flow of 4 springs 1/4 mi. west of Beaughan Sp.	0.166
7-11-23	Deep Cut near Little Beaughan Sp.		0.017
	Little Beaughan Sp.	Not measured.	
		Total normal flow of Beaughan Creek 8.3 c.f.s	

* Weir measurement. Total flow of spring at head.

TABLE 33

Jackson Creek

Summation of the flow of springs tributary to Jackson Creek.

Date	Name of Stream	Location	Discharge c.f.s.
5-31-23	S. H. Jackson Sp.	Head of S. Fork of Jackson Cr.	0.330
7-21-23	S. H. Jackson Spgs.	Combined flow of three springs at head of N. Fork of Jackson Cr.	0.386

Total normal flow of Jackson Creek 0.716 c.f.s.

TABLE 3:

Carrick Creek.

Summation of the flow of springs tributary to Carrick Creek.

Date	Name of Stream	Location	Discharge c.f.s.
7-15-22	Carrick Creek	Above intake of Albee Ditch	*6.97
6-1-23	Carrick Creek	Above intake of Albee Ditch	*7.00
6-27-23	Spring in Carrick Field	Diversion #120	0.12
6-27-23	Spring in Albee Field	Diversion #133	0.0135
6-27-23	Spring in Albee Field	Diversion #134	0.0145
6-27-23	W.O.Stone House Sp.	Diversion #130	0.028
6-27-23	W.O.& F.E.Stone Sp.	Diversion #129	0.870
7-15-22	A.B.Hoy & F.E.Stone Sp.	Diversion #124	1.18
6-1-23	A.B.Hoy & F.E.Stone Sp.	Diversion #124	1.23
5-25-23	A.B. Hoy Sp.	Diversion #126	0.15
6-28-23	F.E.Stone Sp.	Diversion #123	0.12
6-28-23	F.F.Stone Sp.	Diversion #125	0.023
9-4-23	S.H.Jackson Sp.	Diversion #141	0.101

Total normal flow of Carrick Creek 9.63 c.f.s.

*Total flow of springs at head of creek.

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Form 509

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS

TABLE 35

Daily discharge, in second feet, of Parks Creek -Gage #6 -1/2 mi. above L. Dennis' Ranch, for the year ending September 30, 1922.

Day	October	November	December	January	February	March	April	May	June	July	August	September
1									48.4	10.5	3.9	
2									49	10	3.8	
3									49.6	9.5	3.8	
4									50.3	9	3.7	
5									*51	8.5	3.7	
6								* 88.5	51	8	3.6	
7								* 88.5	51	7.5	3.6	
8								* 65	*51	7	3.5	
9								* 51	45.5	6.5	3.5	
10								* 43	40	6	3.4	
11								* 43	34.5	5.5	3.4	
12								* 43	*29	*5	3.3	
13								* 58.5	26.7	4.9	3.3	
14								* 73	24.5	4.8	3.2	
15								*103	22.2	4.8	3.2	
16								*133	*20	4.7	3.1	
17								121.8	*17	4.7	3.1	
18								110.7	17	4.6	3	
19								99.6	17	4.6	*3	
20								* 88.5	*17	4.5		
21								76.8	16.5	4.5		
22								* 65	15	4.4		
23								* 43	*14.5	4.4		
24								43.6	14	4.3		
25								44.2	13.5	4.3		
26								44.8	13	4.2		
27								45.4	12.5	4.2		
28								46	12	4.1		
29								46.6	11.5	4.1		
30								47.2	11	4		
31								47.8		4		
Total Sec. Ft. Days								1760.5	845.2	176.8	65.1	
Mean Sec. Ft.								67.7	28.2	5.7	3.4	
Max. Sec. Ft.								133	51	10.5	3.9	
Min. Sec. Ft.								43	11	4	3	
Total Ac. Ft.								3486	1678	350	129	

Remarks

*Discharge determined by applying gage heights to rating curve. Intermediate discharges interpolated.

Comp. by H.Smitherum

Ck. by H.S.

Date 3-31-24

Gage observer:-Lemuel Dennis

Year Period 5643

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STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 500

TABLE 36

Daily discharge, in second feet, of Parks Creek - Gage #6 - 1/2 mi. above L. Dennis' Ranch, for the year ending September 30, 1923

Day	October	November	December	January	February	March	April	May	June	July	August	September
1			7.5	19.6	10.5	*12.5		*43.0	15.1	12.8		
2			7.5	18.9	10.5	12.4		*35.5	*14.0	12.8		
3			*7.5	18.2	10.5	12.2		38.0	14.0	12.7		
4			8.5	17.5	10.5	12.0		40.6	13.9	12.7		
5			9.5	16.9	10.5	11.8		43.1	13.9	12.6		
6			*10.5	16.3	10.5	11.6		45.7	13.8	12.6		
7			9.5	15.7	10.5	11.4		48.2	13.8	12.5		
8			8.6	15.1	10.5	11.2		50.8	13.8	12.1		
9			7.7	*14.5	*10.5	11.0		53.3	13.7	11.7		
10			6.8	14.1	10.5	10.8		55.9	13.7	11.3		
11			5.9	13.7	10.5	10.6		*58.5	13.6	10.9		
12			* 5.0	13.4	10.5	*10.5		55.9	13.6	10.5		
13			9.4	13.0	10.5	10.9		53.2	13.6	10.1		
14			13.8	12.7	10.5	11.3		*50.5	13.5	9.7		
15			18.2	12.3	*10.5	11.8		47.8	13.5	9.3		*2.5
16			22.6	12.0	10.0	12.2		45.2	13.4	8.9		
17			27.0	11.7	10.5	12.7		42.6	13.4	8.5		
18			31.5	11.4	10.5	13.1		*40.0	13.4	8.1		*2.5
19		*10.5	36.0	11.1	10.5	13.6	*29.0	35.6	13.3	7.7		
20		10.1	40.5	10.8	10.5	14.0	29.0	31.3	13.3	7.3		
21		9.7	45.0	*10.5	10.5	*14.5	*29.0	*27.0	13.2	6.9		
22		9.4	49.5	10.5	10.5		30.4	26.0	13.2	6.5		
23		9.0	54.0	10.5	10.5		31.8	25.0	13.2	6.1		
24		8.6	*58.5	10.5	10.5		33.2	23.9	13.1	5.7		
25		8.3	93.3	*10.5	*10.5		34.6	22.8	13.1	5.3		
26		7.9	128.1	10.5	11.0		36.0	21.7	13.0	4.9		
27		* 7.5	*163.0	10.5	11.5		37.4	20.6	13.0	4.5		
28		7.5	127.3	10.5	12.0		38.8	19.5	13.0	4.4		
29		7.5	91.7	10.5			40.2	18.4	12.9	4.1		
30		7.5	56.1	10.5			41.6	17.3	12.9	3.8		
31			* 20.5	10.5				16.2		* 3.5		
Total Sec. Ft. Days		103.5	1180.5	404.4	297.0	252.1	411.0	1153.1	417.7	270.5		
Mean Sec. Ft.		8.6	38.0	13.0	10.6	12.0	34.2	37.2	13.9	8.7		
Max. Sec. Ft.			163.0	19.6	12.0	14.5		58.5	15.1	12.8		
Min. Sec. Ft.			5.0	10.5	10.5	10.5		16.2	12.9	3.5		
Total Ac. Ft.		205.0	2336.0	799.0	589.0	499.0	814.0	2287.0	827.0	535.0		

Remarks

*Discharge determined by applying gage heights to rating curve.
Intermediate discharges interpolated.

Gage observer: Lemuel Dennis.

Comp. by H. Smitherum

Ck. by H.S.

Date 3-27-24

Year Period 8891

20422 7-22

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS

Form 500

TABLE 37

Daily discharge, in second feet, of Parks Creek - Gage #2 - At Dukes Ranch, for the year ending September 30, 1922

Day	October	November	*December	* January	* February	* March	* April	May	June	July	August	September
1				63	18	9	34.5	*40.5	35.4	2.9		
2				63	18	9	34.5	55	32.5	2.8		
3				55	18	9	34.5	55	29.7	2.6		
4				55	23	9	34.5	97	26.8	2.5		
5				48	23	9	34.5	97	24	2.4		
6				48	23	9	34.5	103.5	21.2	2.2		
7				48	23	9	23	143	**18.4	2.1		
8				41	50	9	23	143	17.3	*2		
9				34.5	71	9	23	124	16.2	2		
10				34.5	50	9	16.5	97	15.2	2		
11				34.5	34.5	9	23	97	14.2	2		
12				34.5	34.5	9	23	105.5	13.2	1.9		
13				34.5	34.5	9	23	105.5	12.2	1.9		
14				34.5	34.5	9	23	105.5	11.2	1.9		
15				28.5	50	18	23	105.5	10.2	1.8		
16				28.5	71	23	23	105.5	9.2	1.8		
17				23	50	34.5	18	105.5	8.2	1.8		
18				23	50	23	18	124	7.2	*1.8		
19				18	49.5	10	18	115	6.2			
20			21	13	44	9	28.5	143	5.2			
21			21	13	48	9	28.5	143	** 4.2			
22			21	9	48	28.5	33.5	143	4.1			
23			34	9	34.5	23	40.5	127	4			
24			34	9	28.5	28.5	33.5	111	** 3.9			
25			40	9	34.5	28.5	33.5	95	3.7			*1.9
26			40	9	28.5	28.5	55	79	3.5			
27			144	9	23	34.5	55	63	3.4			
28			87.5	9	9	34.5	55	*47	3.3			
29			71	9		34.5	47.5	44.1	3.2			
30			55	9		34.5	44.5	41.2	3.1			
31			55	9		34.5		38.3				
Total Sec. Ft. Days			623.5	865	1023.5	562	939.5	2998.6	370.1	38.4		
Mean Sec. Ft.			52	27.9	36.6	18.1	31.3	96.7	12.3	2.1		
Max. Sec. Ft.				63	71	34.5	55	143	35.4			
Min. Sec. Ft.				9.0	9.0	9.0	16.5	38.3	3.1			
Total Ac. Ft.			1235	1716	2033	1113	1862	5946	732	76		

Comp. by H.Smitherum
Ck. by H.S.
Date 4-7-24

REMARKS
*Discharge determined by applying gage heights to rating curve.
**Discharge by current meter gaging.
Intermediate discharges interpolated.
Gage observer:- E.H.Day & W.D.Duke

YEAR PERIOD 14713

20411 7-22 500

Form 501

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS

TABLE 38

Daily discharge, in second feet, of Parks Creek - Gage #2 - At Dukes Ranch, for the year ending December 31, 1923.

Day	January	February	March	April	May	June	July	August	September	October	November	December
1					*12.3							
2						**9.0						
3												
4												
5												
6												
7					*36.9							
8					40							
9												
10												
11												
12					*35.2							
13												
14												
15						*6.0						
16												
17												
18												
19												
20												
21												
22												
23				*15.3								
24												
25					**14.0							
26												
27												
28												
29												
30												
31												
Total Sec. Ft. Days												
Mean Sec. Ft.												
Max. Sec. Ft.												
Min. Sec. Ft.												
Total Ac. Ft.												

Remarks

*Discharge by current meter gaging.
**Discharge by applying gage reading to rating curve.

Comp. by H.Smitherum
Ck. by H.S.
Date 3-27-24

Note:-Gage readings lost by observer.

Year Period

20441 7-22 500

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS

Form 501

TABLE 39

Daily discharge, in second feet, of Big Spring Creek-above jct. with Shasta River, for the year ending December 31, 1922.

Day	January	February	March	April	May	June	July	August	September	October	November	December
1						72	66	59	62			
2						74	74	53	66			
3						81	60	51	64			
4						81	60	48	68			
5						55	63	49	66			
6						63	68	52	60			
7						46	69	52	60			
8						118	70	52	91			
9						99	66	50	89			
10						97	66	49	87			
11						110	66	50	55			
12						80	67	51	58			
13						64	64	51	59			
14						64	75	66	51			
15						53	89	48	51			
16						63	55	58	58			
17						63	61	52	58			
18						58	64	48	62			
19						63	63	47	57			
20						65	63	50				
21						61	69	50				
22						60	55	63				
23						60	60	65				
24						62	55	60	82			
25						66	48	66	82			
26						50	52	62	82			
27						58	48	58	82			
28						52	50	66	82			
29						56	52	62	82			
30					48	60	54	62	82			
31					68		51	62				
Total Sec. Ft. Days					116	2054	1923	1712	1796			
Mean Sec. Ft.						68.5	62	55.2	69.1			
Max. Sec. Ft.						118	89	66	82			
Min. Sec. Ft.						50	48	47	51			
Total Ac. Ft.						4076	3812	3394	3557			

Remarks: Compiled from difference of discharges for Shasta River above and below Big Spring Creek as shown by Tables 7 and 11, respectively.

Comp. by H.Smitherum
Ck. by H.S.
Date 4-21-24

Year Period: 14839

STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 501

TABLE 40

Daily discharge, in second feet, of Big Spring Creek -above jct.with Shasta River, for the year ending December 31, 1923

Day	January	February	March	April	May	June	July	August	September	October	November	December
1					49	54	67	64	61			
2					38	51	60	64	61			
3					38	59	54	64	60			
4					*58	54	59	60	*54			
5					55	54	52	59	63			
6					47	65	69	59	61			
7					*58	73	70	52	59			
8				70	62	56	66	52	59			
9				72	58	55	72	52	59			
10				63	63	50	64	51	59			
11				64	61	55	60	51	59			
12				60	58	52	64	51	59			
13				39	53	53	64	52	59			
14				40	47	54	65	56	59			
15				42	35	57	61	59	49			
16				47	44	53	61	59	56			
17				54	45	58	65	59	57			
18				63	52	65	65	59	64			
19				59	64	60	66	59	64			
20				56	78	64	63	58				
21				54	68	53	63	58				
22				50	54	49	62	58				
23				52	50	51	62	58				
24				50	51	58	62	60				
25				62	52	67	62	60				
26				63	54	71	63	60				
27				45	52	87	67	60				
28				42	43	76	59	60				
29				49	52	67	59	71				
30				49	57	66	59	65				
31					55		60	61				
Total Sec. Ft. Days				1245	1651	1787	1945	1811	1122			
Mean Sec. Ft.				54.1	53.3	59.6	63	58.5	59.1			
Max. Sec. Ft.				70	78	87	70	71	64			
Min. Sec. Ft.				39	35	49	52	51	49			
Total Ac. Ft.				2466	3277	3546	3874	3597	2222			

Remarks

Compiled from difference of discharges for Shasta River above and below Big Spring Creek as shown by Tables 7 & 11, respectively.
*Current meter gaging.

Comp. by H.Smitherum

Ck. by H.S.

Date 4-19-23

Year Period 18982

TABLE 4

Analysis of the flow of Big Spring and Little Spring Creeks.

1922 and 1923.

Discharges in c.f.s.

No. of Measurement.	Date	I Big Spring Creek Gage #21	II Big Sp. Water Co's. Diversion Gage #35	III Louie Bros. Main Canal Diversion Gage #40	IV Louie Bros. Small Canal Diversion	V Stallcup & Sons Diversions Gage #3	VI Total Diversion from Big Springs	VII Little Spring Cr. Diversions	VIII Total flow of Big Spring Creek & Little Sp. Creek.	IX Flow of Little Spring Creek	X Flow of Big Spring Creek above confluence of Little Sp. Cr.	XI Flow of Big Springs above Louie Bros. Dam	XII Flow of Big Spring Creek below Louie Bros. Dam.
1	5-24-22	112.2	0.	1.4	0.	0.	1.4		113.6	7.6	106.0		
2	6-6-22	80.5	28.2	6.4	2.0	7.4	44.0	0.	124.6	7.6	116.9	44.0	
3	6-21-22	79.9	28.1	7.4	2.8	7.4	45.7	0.	125.6	7.6	118.0	45.7	
4	10-12-22	108.5	0.	0.	0.	0.	0.	2.2	110.7	7.6	103.1		
5	10-12-22	104.4	0.	0.	0.	0.	0.	2.2	106.6	7.6	99.0		
6	10-17-22	118.5	0.	0.	0.	0.	0.	4.0	122.5	7.6	114.9		
7	10-17-22	96.5	0.	0.	0.	0.	0.	4.0	100.5	7.6	92.9		
8	10-21-22	114.0	0.	0.	0.	0.	0.	3.8	117.8	7.6	110.2		
9	10-21-22	99.9	0.	0.	0.	0.	0.	3.8	103.7	7.6	96.1		
10	11-4-22	117.3	0.	0.	0.	0.		4.8	122.1	7.6	114.5		
11	5-4-23	58.2	31.8	7.6	*2.0	7.2	48.6	**7.6	114.4	7.6	106.8	48.6	
12	5-7-23	54.8	31.6	7.6	*2.0	7.2	48.4	**7.6	110.8	7.6	103.2	48.4	
13	5-7-23	61.1	31.6	7.6	*2.0	7.2	48.4	**7.6	117.1	7.6	109.5	48.4	
14	9-4-23	54.1	34.8	5.4	*2.0	7.2	49.4	**7.6	110.5	7.6	102.9	49.4	
Mean									114.3	7.6	106.7	47.3	59.4

Column VIII = Summation of I to VII (incl.)
Column X = VIII minus IX
Column XI = Summation of II to V (incl.)
Column XII = X minus XI

By: H. Smitherum
Date: 4-24-24

* Estimated.
** Little Spring Creek noted dry at road crossing. Total flow (7.60 c.f.s. as measured by P. L. Beck in 1922) being diverted.

TABLE 42

Big Spring Creek

Summation of the flow available for diversion by existing ditch systems in the Big Springs Area.

Date	Name of Stream	Location	Discharge c.f.s.
1922 & 1923	Big Spring	SW¼ SE¼ S.3 T.43 N R 5 W	*47.3
7-27-22	Little Spring	NE¼ NE¼ S.9 T.43 N R 5 W	7.6
7-27-22	Hole in the Ground Spring	SE¼ SW¼ S.15 T.43 N R 5 W	2.1
		Total	57.0

*Mean of 6 measurements above Louie Bros. Dam. Column X1, Table #38.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS

TABLE 43

Daily discharge, in second feet, of Little Shasta River-Gage #13-In NE¼,NE¼,S.16T 45N R 4 W for the year ending December 31, 1922

Day	January	February	March	April	May	June	July	August	September	October	November	December
1						49	13.9		6.5	*7.5	7.9	
2						46	13.5		6.5	7.3	8.2	
3						*43	13		6.5	7.1	8.6	
4						41.9	12.6		6.5	6.8	*9	
5						40.8	12.1		6.5	6.5	9.1	
6						39.7	11.7		6.5	6.3	9.2	
7						38.6	11.2		6.5	6.1	9.3	
8						*37.5	10.8		7	5.9	9.4	
9						36.2	10.3		7	5.7	9.5	
10						34.8	9.9		7	5.5	9.6	
11						33.4	9.4		7	5.3	9.7	
12						32	9		7	5.1	9.8	
13					*58.5	30.6	* 8.5		7	4.9	10	
14					62.3	29.2	8.2		7	4.7	10.1	
15					66.1	27.8	8		*7	*4.5	10.3	
16					*70	26.4	7.7		7	4.5	*10.5	
17					*108	25	7.5		7	4.5		
18					100.3	23.6	7.3	*6	7	4.5		
19					92.6	22.2	7.1	6	*7	4.5		
20					84	20.8	6.9	6	7	4.5		
21					77.4	19.4	6.7	6	7	4.5		
22					69.7	*18	6.5	*6	7	4.5		
23					*62	17.5	6.3	6	7	*4.5		
24					66	17	6.1	6	*7	4.9		
25					*70	16.6	5.9	6	7	5.3		
26					67	16.1	5.7	6	7	5.7		
27					64	15.7	* 5.5	6	7	6.1		
28					61	15.3	"	6	7.5	*6.5		
29					58	14.8	"	6	7.5	6.8		
30					55	14.4		6	7.5	7.2		
31					52		"	6.5		7.5		
Total Sec. Ft. Days					1343.9	843.3	241.3	84.5	208	175.2	150.2	
Mean Sec. Ft.					70.8	28.1	8.9	5.6	6.9	5.7	9.4	
Max. Sec. Ft.					100.3	49	13.9	6.5	7.5	7.5		
Min. Sec. Ft.					52	14.4	5.5	6	6.5	4.5		
Total Ac. Ft.					2662	1672	478	167	411	350	297	

Remarks

*Discharge determined by applying gage heights to rating curve. Intermediate discharges interpolated.

Comp. by H.Smitherum
Ck. by H.S.
Date 4-3-24

Year Period 6037

20441 7-22 500

Form 501

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS

TABLE 44

Daily discharge, in second feet, of Little Shasta River-Gage #13-In NE¼.NE¼.S.16T 45N R 4W, for the year ending December 31, 1923.

Day	January	February	March	April	May	June	July	August	September	October	November	December
1					*19.5	*16						
2					19.5	*13						
3					*19.5	13						
4					20.7	*13						
5				*19.5	21.9	13						
6				19.7	*23	*13						
7				20	23	12.8						
8				20.2	23	12.6						
9				20.5	*23	12.4						
10				20.7	22.5	12.3						
11				21	22	12.2						
12				21.2	*21.5	12.1						
13				21.5	20.8	*12						
14				21.7	20.1	11.8						
15				22	*19.5	11.6						
16				22.2	19.4	11.4						
17				22.5	19.2	11.2						
18				22.7	19	*11						
19				*23	18.8	10.8						
20				22.2	18.6	10.5						
21				*21.5	18.4	10.2						
22				20.8	18.2	9.9						
23				20.1	*18	9.6						
24				*19.5	17.7	9.3				*3.0		
25				19.5	17.4	* 9						
26				19.5	17.2							
27				19.5	17							
28				19.5	16.8							
29				19.5	16.6							
30				*19.5	16.4							
31					16.2							
Total Sec. Ft. Days				539.5	604.4	293.7						
Mean Sec. Ft.				20.8	19.5	11.7						
Max. Sec. Ft.				23	23	16						
Min. Sec. Ft.				19.5	16.2	9						
Total Ac. Ft.				1068	1199	581						

Remarks

*Discharge determined by applying gage heights to rating curve.
Intermediate discharges interpolated.
Gage observer:-D.C. Shelley

Comp. by H.Smitherum
Ck. by H.S.
Date 3-27-24

Year Period

2848

TABLE 45

Little Shasta River

Summation of the flow of springs tributary to Little Shasta River below Gage #13.

Date	Name of Stream	Location	Discharge c.f.s.
7-27-22	Cleland Spring	NW¼ NW¼ S.20 T.45 N R 4 W	8.75
9-8-22	Jim Spring	NE¼ SE¼ S.20 T.45 N R 4 W	2.33
9-8-22	Martin Spring	NW¼ NE¼ S.29 T.46 N R 4 W	1.03
8-18-22	Bassy Branch Sp.	SW¼ NW¼ S.29 T.45 N R 4 W	3.59
8-18-22	Kegg Spring	NE¼ NE¼ S.30 T.45 N R 4 W	0.29
8-18-22	Evans Spring	NE¼ NE¼ S.30 T.45 N R 4 W	2.36
		Total	18.35

20122 7-22

STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

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Form 500

TABLE 46

Daily discharge, in second feet, of Little Shasta River-Gage #5-At H.E.Jones Ranch, for the year ending September 30, 192 2

Day	October	November	December	January	February	March	April	* May	* June	July	August	September
1									9.5			
2									3.5			
3									3.5			
4									3.5			
5								47	3.5			
6								47	5			
7								43	5			
8								39	11.5			
9								47	54.5			
10								47	32.5			
11								26.5	32.5			
12								26.5	26.5			
13								26.5	22			
14								26.5	18.5			
15								26.5	12			
16								26.5	12.			
17								18.5	9.5			
18								18.5	9.5			
19								18.5	7.			
20								18.5	3.5			
21								18.5	3.5			
22								47	2.5			
23								47	2			
24								39	2			
25								37.5				
26								26.5				
27								26.5				
28								18.5				
29								15				
30								15				
31								15				
Total Sec. Ft. Days								808.5	295			
Mean Sec. Ft.								29.9	12.3			
Max. Sec. Ft.								47	54.5			
Min. Sec. Ft.								15	2			
Total Ac. Ft.								160.1	584			

Remarks: *Discharge determined by applying gage heights to rating curve. Intermediate discharges interpolated. Gage observer:-H.E.Jones.

Comp. by H.Smitherum

Ck. by H.S.

Date 4-3-24

Year Period: 2185

20122 7-22

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS

Form 500

TABLE 47

Daily discharge, in second feet, of Little Shasta River - Gage #5 - At H.E.Jones' Ranch, for the year ending September 30, 1923

Day	October	November	December	January	February	March	April	May	June	July	August	September
1			*47	167.	*32.5	47	*18.5	5				
2			45.9	143	*32.5	47	*18.5	1				
3			44.7	119	*32.5	47	*18.5	1				
4			43.6	95	*32.5	47	*18.5	2				
5			42.4	71	*32.5	47	17.7	2				
6			41.3	* 47	*32.5	39	17	5				
7			40.1	47	*32.5	39	16.3	3.5				
8			*39	47	33.8	39	15.7	2				
9			39	47	35.1	39	15	1				
10			39	* 47	36.4	39	14.3	1				
11			39	44.1	37.7	28.8	13.6	1				
12			39	41.2	39	18.5	12.7	1				
13			39	38.3	40.3	18.5	12	1				
14			39	35.4	41.6	18.5	11.3	1				
15			*39	* 32.5	42.9	18.5	10.6	1.5				
16			51.6	32.5	44.2	18.5	9.9	1				
17			64.2	32.5	45.6	18.5	9.2	1				
18			76.8	32.5	*47	26.5	* 8.5	1	No readings subsequent to			
19	*7.0		89.4	32.5	*47	26.5	*12		this date			
20			102	32.5	*47	26.5	* 7					
21			114.6	* 32.5	*47	26.5	* 5					
22			127.2	32.5	*47	26.5	* 7					
23			139.8	32.5	*47	26.5	* 5					
24			152.4	32.5	*47	26.5	* 5					
25	*11.0		165	32.5	*47	26.5	* 1					
26			177.6	32.5	*47	26.5	* 1					
27			*190	32.5	*47	26.5	* 1					
28			190	32.5	*47	26.5	* 1					
29			190	32.5		26.5	* 7					
30			190	* 32.5		26.5	* 9.5					
31			*190	32.5		26.5						
Total Sec. Ft. Days			3169.6	1541.5	1141.1	940.8	319.3	32				
Mean Sec. Ft.			102.2	49.7	40.8	30.3	10.6	1.8				
Max. Sec. Ft.			190	167	47	47	18.5	5				
Min. Sec. Ft.			39	32.5	32.5	18.5	1	1				
Total Ac. Ft.			6284	3056	2266	1863	631	58				

Remarks: *Discharge determined by applying gage heights to rating curve. Intermediate discharges interpolated. Gage observer:-H.E.Jones.

Comp. by H.Smitherum
Ck. by H.S.
Date 3-27-24

Year Period: 14158

20111 7-22 500

STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 801

TABLE 48

Daily discharge, in second feet, of Edson-Foulke Yreka Ditch-Gage #15-1/4 mi.below intake, for the year ending December 31, 1922

Day	January	February	March	April	May	June	July	August	September	October	November	December	Remarks
1					23.3	25.3	24.7						
2					23.4	26.1	21				9.1		
3					23.5	26.9	*17.3						
4					23.6	27.7	17.3						
5					23.7	*28.5	*17.3						
6					*23.8	28.2	*14.6						
7					23.8	28	14.2						
8					*23.8	27.8	13.7						
9					23.4	27.6	13.2						
10					22.9	27.4	12.7						
11					22.4	27.2	12.2						
12					21.9	27	*11.7						
13					21.4	26.7	10.6						
14					20.9	26.5	* 9.6						
15					20.4	26.3	9.3						
16					20	*26.1	9.1						
17					19.5	27	8.9						
18					19.1	27.9	* 8.7						
19					18.6	28.8		*2.8					
20				*22.6	18.2	*29.8							
21				22.7	17.7	29.8							
22				22.7	*17.3	29.8							
23				22.8	18.1	29.8			*1				
24				22.9	18.9	29.8							
25				22.9	19.7	*29.8							
26				23	20.5	29.5							
27				23.1	21.3	29.2							
28				23.1	22.1	29							
29				23.2	22.9	28.7							
30				23.2	23.7	*28.5							
31					24.5								
Total Sec. Ft. Days				252.2	664.3	840.7	246.1						Year Period
Mean Sec. Ft.				22.9	21.4	28	13.7						
Max. Sec. Ft.					23.8	29.8	24.7						
Min. Sec. Ft.					17.3	25.3	8.7						
Total Ac. Ft.				499	1316	1666	487						3968

*Discharge determined by applying gage heights to rating curve. Intermediate discharges interpolated.

Comp. by H.Smitherum

Ck. by H.S.

Date 4-8-24

20444 7-22 500

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
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Form 501

TABLE 49

Daily discharge, in second feet, of Edson-Foulke Yreka Ditch-Gage #15-1/4 mi.below intake, for the year ending December 31, 1923

Day	January	February	March	April	May	June	July	August	September	October	November	December
1					23.5	18.4						
2					24.2	18.2			*2			
3					25	18						
4					25.7	17.8						
5					*26.5	*17.6						
6				*22	27	*22						
7				22.7	27.5	23.1						
8				23.3	28	*24.2						
9				24	28.5	24.2						
10				24.6	*29.1	24.2				*6.6		
11				25.3	29.1	24.2						
12				25.9	29.1	24.2						
13				26.6	29	*24.2						
14				27.3	*29	24.6						
15				27.9	29.1	25						
16				28.6	*29.2	25.4						
17				*29.2	29	25.8						
18				27.7	28.8	26.2						
19				26.1	28.6	26.6						
20				24.5	*28.5	27						
21				22.9	27.8	27.4						
22				21.3	27.2	27.8						
23				*19.7	26.6	28.2				*10		
24				18.1	26	28.6						
25				*16.5	25.4	*29						
26				*22	24.8							
27				21.4	24.2		*8.2		*5			
28				*20.8	23.6		*8.2					
29				*22	*23							
30				22.7	20.8							
31					*18.6							
Total Sec. Ft. Days				593.1	822.4	601.9						
Mean Sec. Ft.				23.7	26.5	24						
Max. Sec. Ft.				29.2	29.2	29						
Min. Sec. Ft.				16.5	18.6	17.6						
Total Ac. Ft.				1174	1629	1191						

REMARKS

*Discharge determined by applying gage heights to rating curve. Intermediate discharges interpolated

Comp. by H.Smitherum

Ck. by H.S.

Date 3-29-24

Gage observer:-I.M.Dow

YEAR PERIOD 3994

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS

TABLE 10

Daily discharge, in second feet, of Edson-Foulke Yreka Ditch-Gage #7-Above Parks Creek X'ing for the year ending December 31, 1922

Day	January	February	March	April	May	June	July	August	September	October	November	December
1												
2												
3					*25							
4												
5						*15.2						
6					*25							
7												
8					*25							
9												
10					*18.2	*15.2						
11												
12							**10.9					
13												
14												
15					*28.6							
16					*28.6							
17												
18												
19					*28.6							
20					*21.5	**23.8						
21												
22					*15.2							
23												
24					*15.2							
25												
26												
27					*15.2							
28												
29												
30					*21.5							
31												
Total Sec. Ft. Days												
Mean Sec. Ft.												
Max. Sec. Ft.												
Min. Sec. Ft.												
Total Ac. Ft.												

Remarks

*Discharge determined by applying gage heights to rating curve.
**Discharge by current meter gaging.

Comp. by E.Smitherum
Ck. by H.S.
Date 4-7-24

Year Period

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Form 501

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
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TABLE 51

Daily discharge, in second feet, of Edson-Foulke Yreka Ditch-Gage #7-Above Parks Creek Crossing, for the year ending December 31, 1923.

Day	January	February	March	April	May	June	July	August	September	October	November	December
1												
2					**25.4	**20.5						
3							**21.8					
4						**15.3						
5												
6												
7							*20.3					
8												
9												
10												
11												
12				**28.5								
13												
14					*24.5							
15									*3.0			
16					*26.0							
17												
18												
19				**28.4	**27.4							
20												
21					*26.5							
22												
23												
24												
25												
26												
27							**10.4					
28												
29												
30												
31												
Total Sec. Ft. Days												
Mean Sec. Ft.												
Max. Sec. Ft.												
Min. Sec. Ft.												
Total Ac. Ft.												

Remarks

*Discharge determined by applying gage heights to rating curve.
**Discharge by current meter measurement.

Comp. by H. Smitherum
Ck. by H.S.
Date 3-29-24

Year Period

26441 7 22 500

STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

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Form 501

TABLE 54

Daily discharge, in second feet, of Edson-Foulke Yreka Ditch-Gage #8-Below Parks Creek X'ing for the year ending December 31, 1922

Day	January	February	March	April	May	June	July	August	September	October	November	December
1						38.7	26.2					
2						39.3	24.8					
3					*39	39.9	23.4					
4					39	40.5	22					
5					39	*41.2	20.6					
6					*39	*32.6	19.2					
7					39	33.8	17.8					
8					*39	*35	16.4					
9					36.5	34.4	15					
10					*34	*33.8	13.6					
11					34	33.3	12.2					
12					*34	32.8	*10.8					
13					36.5	32.3						
14					39	31.8						
15					*41.5	31.3						
16					*41.5	30.8						
17					41.5	30.3						
18					41.5	29.8						
19					*41.5	*29.3						
20					*37.5	*32.6						
21					36.2	34.2						
22					*35	35.8						
23					33.8	*37.5						
24					*32.6	36.1						
25					32.6	34.7						
26					32.6	33.3						
27					*32.6	31.9						
28					34.2	30.5						
29					35.8	29						
30					*37.5	27.6						
31					38.1							
Total Sec. Ft. Days					1074	1014.1	222					
Mean Sec. Ft.					37.1	33.8	18.5					
Max. Sec. Ft.					41.5	41.2	26.2					
Min. Sec. Ft.					32.6	29	10.8					
Total Ac. Ft.					2127	2011	440					

Remarks

*Discharge determined by applying gage heights to rating curve. Intermediate discharges interpolated.

Comp. by H.Smitherum

Ck. by H.S.

Date 4-8-24

Year Period

4578

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STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 503

TABLE 13

Daily discharge, in second feet, of Edson-Foulke Yreka Ditch-Gage #8-Below Parks Creek Crossing, for the year ending December 31, 192 3

Day	January	February	March	April	May	June	July	August	September	October	November	December	Remarks
1					31.3	26	26.6						*Discharge determined by applying gage heights to rating curve. Intermediate discharges interpolated.
2					*31.2	*25.5	26.2						
3					31.3	26.5	*25.8						
4					31.4	27.5	25.8						
5					31.5	28.5	25.7						
6					31.5	29.6	25.6						
7					31.6	30.6	*25.5						
8					31.7	31.6	24.6						
9					31.8	32.6	23.8						
10					31.8	33.6	23						
11					31.9	*34.7	22.2						
12				*35	31.9	34.2	21.4						
13				34.6	32	33.8	20.6						
14				34.2	*32	33.4	19.8						
15				33.8	32.2	33	19		*2.2				
16				33.3	*32.3	32.6	18.2						
17				32.9	32	32.2	17.4						
18				32.4	*31.7	31.8	16.6						
19				*32	*32.3	31.4	15.8						
20				32	31.9	31	15						
21				31.9	*31.5	30.6	14.2						
22				31.9	31	30.2	13.4						
23				31.8	30.5	29.8	12.6						
24				31.8	30	29.4	11.8						
25				31.7	29.5	29	11						
26				31.6	29	28.6	10.2						
27				31.6	28.5	28.2	* 9.4						
28				31.5	28	27.8							
29				31.4	27.5	27.4							
30				31.4	27	27							
31					26.5								
Total Sec. Ft. Days				616.8	954.3	908.1	521.2						Year Period
Mean Sec. Ft.				32.5	30.8	30.3	19.3						
Max. Sec. Ft.				35	32.3	34.7	26.6						
Min. Sec. Ft.				31.4	26.5	25.5	9.4						
Total Ac. Ft.				1222	1894	1803	1032						5951

Comp. by H.Smitherum

Ck. by H.S.

Date 3-28-24

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Form 501

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS

TABLE 54

Daily discharge, in second feet, of Edson-Foulke Parks Creek Ditch, at Lower End, for the year ending December 31, 192 2.

Day	January	February	March	April	May	June	July	August	September	October	November	December
1												
2												
3					14							
4												
5						26						
6					14							
7												
8					14							
9												
10					15.8	18.6						
11												
12												
13												
14												
15					12.9							
16					12.9							
17												
18												
19					12.9							
20					16	8.8						
21												
22					19.8							
23												
24					17.4							
25												
26												
27					17.4							
28												
29												
30					16							
31												
Total Sec. Ft. Days												
Mean Sec. Ft.												
Max. Sec. Ft.												
Min. Sec. Ft.												
Total Ac. Ft.												

Remarks: Difference between discharges at Gages #7 and #8 for the dates on which simultaneous measurements were taken at the respective gages.

Comp. by H. Smitherum
Ck. by H.S.
Date 11-24-24

Year Period

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Form 501

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS

TABLE 55

Daily discharge, in second feet, of Edson-Foulke Parks Creek Ditch, at Lower End, for the year ending December 31, 1923

Day	January	February	March	April	May	June	July	August	September	October	November	December
1												
2					5.8	5						
3							4					
4						12.2						
5												
6												
7							5.2					
8												
9												
10												
11												
12				6.5								
13												
14					7.5							
15												
16					6.3							
17												
18												
19				3.6	4.9							
20												
21					5							
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
Total Sec. Ft. Days												
Mean Sec. Ft.												
Max. Sec. Ft.												
Min. Sec. Ft.												
Total Ac. Ft.												

Remarks: Difference between discharges at Gages #7 and #8 for the dates on which simultaneous measurements were taken at the respective gages.

Comp. by H. Smitherum
Ck. by H. S.
Date 11-24-24

Year Period

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS

Form 501

TABLE 56

Daily discharge, in second feet, of Edson-Foulke Willow Creek Ditch (Diversion 301) at gage #37, near head, for the year ending December 31, 1922.

Day	January	February	March	April	May	June	July	August	September	October	November	December
1						2.3	1.2					
2						2.8	1.2					
3						3.2	1.2					
4						3.2	.8					
5						3.2	.8					
6						3.2	.8					
7						3.2	.8					
8						4.0	.8					
9						3.2	.8					
10						3.2	.8					
11						2.8	.8					
12					4.0	2.3	.8					
13					4.0	2.3	.8					
14					4.0	2.3	.7					
15					4.0	2.3	.5					
16					3.2	2.3						
17					3.2	2.3						
18					3.2	1.9						
19					3.2	1.8						
20					3.2	1.9						
21					3.2	1.55						
22					3.2	1.55						
23					3.2	1.55						
24					4.0	1.55						
25					4.0	1.55						
26					4.0	1.55						
27					3.2	1.55						
28					3.2	1.2						
29					3.2	1.2						
30					3.2	1.2						
31					3.2							
Total Sec. Ft. Days					69.6	60.15	12.8					
Mean Sec. Ft.					3.5	2.3	0.8					
Max. Sec. Ft.					4.0	4.0	1.2					
Min. Sec. Ft.					3.2	1.2	.5					
Total Ac. Ft.					138	135	25					

Remarks: Discharge determined by applying gage heights to rating curve.

Gage observer: Mrs. Scoggins

Comp. by H. Smitherum

Ck. by H.S.

Date 4-7-24

Year Period 298

26141 7-22-500

STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 501

TABLE 57

Daily discharge, in second feet, of Edson-Foulke Willow Creek Ditch(Diversion 301) at gage #37,near head, for the year ending December 31, 192 3

Day	January	February	March	April	May	June	July	August	September	October	November	December
1					1.9	1.50	1.90	.80	.15	1.50		
2					1.9	1.50	1.90	.80	.15	1.50		
3					1.9	1.50	1.90	.80	.15	1.50		
4					1.9	1.50	1.90	.40	.15	1.50		
5					1.9	1.90	1.90	.40	.15	1.50		
6				2.4	1.9	1.90	1.90	.40	.15	1.90		
7				*2.4	1.5	1.90	1.90	.40	.15	1.50		
8				*2.5	1.5	1.50	1.90	.40	.15	1.50		
9				*2.5	1.5	1.50	1.90	.15	.15	1.20		
10				*2.6	1.5	1.90	1.90	.15	* .15	1.20		
11				*2.7	1.5	1.90	1.90	.0	.15	*1.20		
12				2.8	1.5	1.90	1.90	.0	.15	1.20		
13				2.8	1.5	1.90	1.90	.0	.15	1.20		
14				2.8	1.5	1.90	1.90	.0	.15	1.20		
15				2.8	1.5	1.90	1.50	.15	.0	1.20		
16				2.8	1.5	1.90	1.50	.15	.15	1.20		
17				2.8	1.5	2.80	1.20	.0	.15	1.20		
18				2.8	1.5	2.80	1.20	.15	.0	*1.20		
19				2.8	1.9	3.60	1.20	.15	.15	*1.20		
20				2.8	1.9	1.90	1.20	.0	.15	1.20		
21				2.8	1.5	1.90	1.20	.15	.40	1.20		
22				2.8	1.5	2.80	1.20	.0	.80	1.20		
23				2.8	1.5	2.80	1.20	.0	.80	1.20		
24				1.9	1.5	1.90	.80	.0	.80	1.20		
25				1.9	1.5	1.90	.80	* .20	* .80	1.20		
26				1.9	1.5	1.90	.80	.40	.80	1.20		
27				1.9	1.5	1.90	.80	.15	1.20	1.20		
28				1.9	1.5	1.90	.40	.15	*1.20	1.20		
29				1.9	1.5	1.90	.40	1.90	1.20	1.20		
30				1.9	1.5	1.90	.40	.40	*1.35	1.20		
31					1.5		.40	.15		1.20		
Total Sec. Ft. Days				62.0	49.7	59.9	42.8	8.8	12.05	40.0		
Mean Sec. Ft.				2.5	1.6	2.0	1.4	0.3	0.4	1.3		
Max. Sec. Ft.				2.8	1.9	3.6	1.9	1.9	1.4	1.9		
Min. Sec. Ft.				1.9	1.5	1.5	0.4	.0	.0	1.2		
Total Ac. Ft.				123	98	119	85	18	24	799		

Year Period: 1266

Remarks:

Discharge determined by applying gage heights to rating curve.

*Discharge interpolated.

Note:Subsequent to July 20th water used by Workman Ranch.

Gage observer: Mrs. Scoggins

Comp. by H. Smitherum

Ck. by H.S.

Date 3-28-24

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS

TABLE 58

Daily discharge, in second feet, of Total Diversion by Edson-Foulke Yreka Ditch-below Parks Creek, for the year ending December 31, 1922.

Day	January	February	March	April	May	June	July	August	September	October	November	December
1						41.0	27.4					
2						42.1	26.0					
3						43.1	24.6					
4						43.7	22.8					
5						44.4	21.4					
6						35.8	20.0					
7						37.0	18.6					
8						39.0	17.2					
9						37.6	15.8					
10						37.0	14.4					
11						36.1	13.0					
12					38.0	35.1	11.6					
13					40.5	34.6						
14					43.0	34.1						
15					45.5	33.6						
16					43.7	33.1						
17					43.7	32.6						
18					43.7	31.7						
19					43.7	31.1						
20					40.7	33.5						
21					39.4	35.8						
22					38.2	37.4						
23					37.0	39.1						
24					36.6	37.7						
25					36.6	36.3						
26					36.6	34.9						
27					35.8	33.5						
28					37.4	31.7						
29					39.0	30.2						
30					40.7	28.8						
31					41.3							
Total Sec. Ft. Days					801.1	1081.6	232.8					
Mean Sec. Ft.					40.0	36.1	19.4					
Max. Sec. Ft.					45.5	44.4	27.4					
Min. Sec. Ft.					35.8	28.8	11.6					
Total Ac. Ft.					1586	2148	461					

Remarks: Summation of discharges of Edson-Foulke Yreka Ditch-below Parks Creek and Edson-Foulke Yreka Ditch Diversion from Willow Creek - Gage #37

Comp. by H. Smithburn
Ck. by H. S.
Date 11-24-24

Year Period: 4195

STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

TABLE 59

Daily discharge, in second feet, of Total Diversion by Edson-Foulke Yreka Ditch -below Parks Creek, for the year ending December 31, 1923

Day	January	February	March	April	May	June	July	August	September	October	November	December	Remarks
1					33.2	27.5	28.5						Summation of discharges of Edson-Foulke Yreka Ditch-Gage #8 and Edson-Foulke Yreka Ditch Diversion from Willow Creek -Gage #57
2					33.1	27.0	28.1						
3					33.2	28.0	27.7						
4					33.3	29.0	27.7						
5					33.4	30.4	27.6						
6					33.4	31.5	27.5						
7					33.1	32.5	27.4						
8					33.2	33.1	26.5						
9					33.3	34.1	25.7						
10					33.3	34.5	24.9						
11					33.4	36.6	24.1						
12				37.8	33.4	36.1	23.3						
13				37.4	33.5	35.7	22.5						
14				37.0	33.5	35.3	21.7						
15				36.6	33.7	34.9	20.5						
16				36.1	33.8	34.5	19.7						
17				35.7	33.5	36.0	18.6						
18				35.2	33.2	34.6	17.8						
19				34.8	34.2	35.0	17.0						
20				34.8	33.8	32.9	16.2						
21				34.7	33.0	32.5							
22				34.7	32.5	33.0							
23				34.6	32.0	32.6							
24				33.7	31.5	31.3							
25				33.6	31.0	30.9							
26				33.5	30.5	30.5							
27				33.5	30.0	30.1							
28				33.4	29.5	29.7							
29				33.3	29.0	29.3							
30				33.3	28.5	28.9							
31					28.0								
Total Sec. Ft. Days				[illegible]	1000.0	968.0	473.0						Year Period
Mean Sec. Ft.				34.0	32.4	32.3	23.6						
Max. Sec. Ft.				37.8	34.2	36.6	28.5						
Min. Sec. Ft.				33.3	28.0	27.0	16.2						
Total Ac. Ft.				1314	1992	1922	937						6165

Comp. by H. Smitherum

Ck. by H. S.

Date 11-24-24

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STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 501

TABLE 60

Daily discharge, in second feet, of Big Springs Water Co's. Canal-Gage 135-below 1st lift pump discharge for the year ending December 31, 192_3.

Day	January	February	March	April	May	June	July	August	September	October	November	December	Remarks
1					*31.8	*28.1	30.1	28.7	34.2				Discharge determined by applying gage height to rating curve. * No gage reading. Discharge interpolated. Gage observer: John H. Snyder
2					*31.8	28.0	30.1	*30.1	*34.2				
3					31.8	28.0	*30.1	31.5	34.2				
4					31.8	29.5	30.1	*31.5	34.2				
5					34.3	*30.0	*30.1	*31.5	*34.2				
6					*33.0	30.5	20.1	31.5	34.2				
7					31.6	30.5	*30.1	*31.5	*34.2				
8					30.2	*31.0	30.1	31.5	*34.2				
9					*30.1	31.6	*30.8	*31.5	34.2				
10					30.0	31.6	31.5	31.5	*34.2				
11					*30.5	*31.6	*32.0	*31.5	34.2				
12		Pumps started 9:50 AM		15.7	31.0	31.5	34.2	31.5	*34.2				
13				26.5	*31.0	*30.4	31.5	*31.5	*34.2				
14				26.5	31.0	29.2	*31.5	29.6	34.2				
15				26.5	*30.9	*29.0	31.5	*31.5	*34.2				
16				26.5	30.8	28.7	*31.5	31.5	34.2				
17				26.5	*30.7	32.8	31.5	*31.5	*34.2				
18				26.5	*30.6	*32.8	*31.5	36.9	34.2				
19				26.5	30.5	32.8	*31.5	36.9	34.2				
20				*27.1	27.8	*32.2	31.5	36.9	0.	Pumps Closed Down			
21				27.7	*28.1	31.5	*30.8	*36.9					
22				27.7	*28.4	*31.5	30.1	36.9					
23				26.5	28.8	31.5	*29.4	*35.6					
24				8.3	*28.3	*31.5	28.7	34.2					
25				0.0	*27.8	21.4	*28.7	*34.2					
26				14.7	27.3	0.	28.7	34.2					
27				34.6	30.0	0.	*28.7	34.2					
28				34.6	*29.6	0.	*28.7	34.2					
29				*33.2	*29.1	0.	28.7	22.1					
30				31.8	*28.7	21.8	*28.7	34.2					
31					28.2		*28.7	34.2					
Total Sec. Ft. Days				467.4	935.5	779.0	932.1	1011.0	649.8				Year Period
Mean Sec. Ft.				24.6	30.2	26.0	30.1	32.6	34.2				
Max. Sec. Ft.				34.6	34.3	32.8	34.2	36.9	34.2				
Min. Sec. Ft.				0.	27.3	0.	28.7	22.1	34.2				
Total Ac. Ft.				926	1857	1547	1851	2004	1287				9472

Comp. by H. Smithman

Ck. by H. S.

Date 3-25-24

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS

TABLE 61

Daily discharge, in second feet, of Louie Bros. Main Canal-Gage #40 At Big Springs, for the year ending December 31, 192-2-

Day	January	February	March	April	May	June	July	August	September	October	November	December
1						*5.7	*6.6	8.4	*8.8			
2						6.1	6.5	* 8.0	8.8			
3						*6.4	*6.4	7.2	*8.8			
4						6.4	6.8	* 6.4	7.6			
5						*6.4	*7.2	6.4	*6.4			
6						6.4	7.2	* 6.4	7.2			
7						*6.4	*7.2	6.8	*8.0			
8				Began		9.8	7.2	* 7.2	8.0			
9				Irrigating		*13.2	*7.2	7.2	*8.0			
10				Apr.8th.		10.2	6.8	* 7.2	8.0			
11					*6.4	* 7.2	*6.4	7.6	*8.0			
12					6.8	7.2	5.7	* 8.0	8.4			
13					*7.2	* 7.2	*5.0	8.0	*8.8			
14					*7.2	6.4	6.1	* 8.0	8.8			
15					*7.2	* 5.7	*7.2	8.0	*8.8			
16					*7.2	6.1	7.2	* 8.0	9.6			
17					*7.2	* 6.4	*7.2	7.2	*10.4			
18					*8.8	8.9	8.8	* 6.4	9.2			
19					*8.8	*11.4	*10.4	7.2	* 8.0			
20					*8.8	9.4	9.2	* 8.0	8.4			
21					*1.4	* 7.3	* 8.0	8.4	* 8.8			
22					1.3	7.6	7.6	* 8.8	8.8			
23					1.3	* 8.0	* 7.2	8.8	* 8.8			
24					*1.2	8.4	6.8	* 8.8	8.8			
25					1.8	* 8.8	* 6.4	9.4	* 8.8			
26					2.4	8.0	7.6	*10.0				
27					3.0	* 7.2	* 8.8	10.2				
28					*3.6	6.8	8.8	*10.4				
29					3.3	* 6.4	* 8.8	10.4				
30					*3.0	6.5	8.8	*10.4		Stopped irrigating Sept.30		
31					4.4		* 8.8	9.4				
Total Sec. Ft. Days					102.5	327.9	229.9	252.6	212.0			
Mean Sec. Ft.					4.9	7.6	7.4	8.1	8.5			
Max. Sec. Ft.					8.8	13.2	10.4	10.4	10.4			
Min. Sec. Ft.					1.3	5.7	5.0	6.4	6.4			
Total Ac. Ft.					202	452	455	500	420			

Remarks: *Discharge determined by applying gage heights to rating curve. Intermediate discharges interpolated.

Gage observer: Louie Bros.

Comp. by E.Smitherum

Ck. by H.S.

Date 4-8-24

Year Period 2029

29411 7-22 500

STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 501

TABLE 62

Daily discharge, in second feet, of Louie Bros. Main Canal - Gage #40 -At Big Spring, for the year ending December 31, 1923

Day	January	February	March	April	May	June	July	August	September	October	November	December
1						*7.1						
2								**5.4				
3												
4												
5												
6												
7					**7.6							
8												
9												
10					*6.8							
11												
12												
13												
14												
15					*6.4							
16				*5.4								
17												
18												
19				*6.4								
20												
21												
22												
23				**6.5	*6.4							
24												
25												
26												
27												
28				*6.8	*6.4							
29												
30												
31												
Total Sec. Ft. Days												
Mean Sec. Ft.												
Max. Sec. Ft.												
Min. Sec. Ft.												
Total Acre Ft.												

Remarks

*Discharge determined by applying gage heights to rating curve.

**Discharge by current meter gaging.

Gage observer:- Louie Bros.

Comp. by H. Smitherum

Ck. by H.S.

Date 3-25-24

Year Period

20444 7 22 500

STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 501

TABLE 63

Daily discharge, in second feet, of Grenada Irrig. Dist. Canal - Gage #39-1st. lift pump discharge, for the year ending December 31, 1922.

Day	January	February	March	April	May	June	July	August	September	October	November	December	Remarks
1						46.5	23.0	23.0	24.5				Discharge determined by applying gage heights to rating curve. Gage observer: W.E.Barnes.
2						46.0	23.0	17.0	24.5				
3						24.5	23.0	17.0	24.5				
4						24.5	23.0	17.0	39.0				
5						24.5	23.5	17.0	39.0				
6						24.5	24.0	17.0	39.0				
7						20.5	24.0	17.0	37.5				
8						21.5	24.0	17.0	36.0				
9						0	24.0	17.0	31.5				
10						0	24.0	17.0	34.0				
11						0	24.0	17.0	38.5				
12						0	24.0	17.0	38.5				
13						0	24.0	17.0	41.0				
14						0	24.0	23.5	36.0				
15						0	40.0	17.0	36.0				
16						0	23.5	17.0	36.0				
17						0	23.5	17.0	36.0				
18						0	23.5	17.0	36.0				
19						0	23.0	17.0	36.0				
20							24.5	17.0	36.0				
21						21.5	23.5	17.0	35.0				
22						23.0	18.0	25.0	35.0				
23						23.5	19.0	24.5	35.0				
24					46.5	24.0	19.0	24.5	20.5				
25					46.5	23.0	18.5	24.5	20.5				
26					46.5	23.0	22.5	24.5	20.5				
27					46.5	23.0	22.5	24.5	20.5				
28					43.5	33.0	22.5	24.5	20.5				
29					29.5	23.0	22.5	24.5	20.5				
30					24.5	23.0	22.5	24.5	20.5				
31					43.5		17.0	24.5					
Total Sec. Ft. Days					327.0	472.5	717.0	615.0	948.0				Year Period
Mean Sec. Ft.					40.9	15.7	23.1	19.8	31.6				
Max. Sec. Ft.						46.5	40.0	25.0	41.0				
Min. Sec. Ft.						0	17.0	17.0	20.5				
Total Ac. Ft.						934	1420	1218	1880				5452

Comp. by H.Smitherman

Ck. by H.S.

Date 4-22-24

20141 7-22 500

Form 501

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS

TABLE 64

Daily discharge, in second feet, of Grenada Irrig. Dist. Canal-Gage #39 -1st lift pump discharge, for the year ending December 31, 1923

Day	January	February	March	April	May	June	July	August	September	October	November	December
1					38.5	24.5	24.5	25.0	31.5			
2					38.5	24.5	24.5	25.0	31.5			
3					38.5	24.5	24.5	25.0	31.5			
4					38.5	0	32.5	25.0	43.5			
5					30.5	0	24.5	25.0	43.5			
6					38.5	0	41.0	25.0	43.5			
7					39.5	24.5	41.0	25.0	41.0			
8					39.5	24.5	41.0	25.0	41.0			
9					39.5	24.5	41.0	25.0	41.0			
10	Started 12:30 A.M.			34.0	39.5	24.5	24.5	25.0	41.0			
11				37.5	39.5	24.5	24.5	25.0	41.0			
12				37.5	39.5	24.5	24.5	25.0	41.0			
13				34.0	40.0	24.5	24.5	26.5	41.0			
14				34.0	40.0	24.5	24.5	26.5	41.0			
15				36.5	20.5	24.5	24.5	26.5	20.5			
16				36.5	20.5	24.5	24.5	26.5	31.5			
17				38.5	20.5	24.5	24.5	26.5	31.5			
18				38.5	20.5	24.5	24.5	26.5	31.5			
19				38.5	40.0	24.5	24.5	26.5	31.5			
20				39.0	40.0	24.5	24.5	26.5	31.5			
21				39.0	40.0	24.5	24.5	26.5	31.5			
22				39.0	40.0	24.5	24.5	26.5	31.5			
23				38.5	40.0	24.5	24.5	26.5	31.5			
24				38.5	40.0	24.5	24.5	29.0	31.5			
25				39.0	40.0	24.5	25.5	30.0	31.5			
26				39.0	40.0	24.5	24.5	30.0	31.5			
27				36.0	40.0	24.5	25.0	30.0	Closed down			
28				38.5	20.5	24.5	25.0	0				
29				38.5	24.5	24.5	25.0	31.5				
30				38.5	24.5	24.5	25.0	31.5				
31					24.5		25.0	31.5				
Total Sec. Ft. Days				789.0	1076.0	661.5	837.0	805.0	920.0			
Mean Sec. Ft.				37.6	34.7	22.0	27.0	26.0	35.4			
Max. Sec. Ft.				39.0	40.0	24.5	41.0	31.5	43.5			
Min. Sec. Ft.				34.0	20.5	0	24.5	0	20.5			
Total Ac. Ft.				1563	2134	1309	1660	1599	1822			

Remarks

Discharge determined by applying gage heights to discharge curve.

Gage observer:-T. B. Barnes

Comp. by H. Smithrum

Ck. by H. S.

Date 3-27-24

Year Period

20411 7 22 500

STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 501

TABLE 65

Daily discharge, in second feet, of Edson-Foulke Grenada Ditch-Gage #23-below G.I.D. pump, for the year ending December 31, 1922

Day	January	February	March	April	May	June	July	August	September	October	November	December
1						*16.0	* 8.7	10.5	12.3			
2						16.0	*21.1	10.5	12.3			
3						16.0	*11.7	10.5	12.3			
4						16.0	11.5	*10.5	*12.3			
5						*16.0	*11.3	10.8	11.6			
6						14.8	12.6	11.0	10.8			
7						*13.5	14.2	11.3	10.0			
8						11.8	*16.0	11.5	9.2			
9						*10.0	*11.7	11.8	8.4			
10						0	11.5	12.1	7.6			
11						0	*11.3	12.3	* 6.8			
12						0	*11.1	12.6	7.2			
13						0	11.1	12.9	7.7			
14						0	*11.1	13.2	8.1			
15						0	10.8	13.5	8.6			
16						0	10.4	13.8	* 9.1			
17						0	*10.0	*14.1	8.8			
18						* 6.2	10.9	13.5	8.5			
19						*10.0	11.8	12.9	* 8.1			
20						10.0	12.7	*12.3				
21						10.0	*13.7	12.3				
22						*10.0	11.5	12.3				
23						* 9.7	11.3	12.3				
24						9.8	10.0	12.3				
25						*10.0	* 8.8	12.3				
26						10.0	0	12.3				
27						*10.0	0	12.3				
28						9.6	0	12.3				
29						9.3	0	12.3				
30					*14.40	9.0	* 1.9	12.3				
31					*15.00		10.5	12.3				
Total Sec. Ft. Days						253.7	309.2	376.9	179.7			
Mean Sec. Ft.						8.5	10.0	12.2	9.5			
Max. Sec. Ft.						16.0	21.1	14.1	12.3			
Min. Sec. Ft.						0	0	10.5	6.8			
Total Ac. Ft.						503	615	750	355			

REMARKS

*Discharge determined by applying gage heights to rating curve. Intermediate discharges interpolated.

Gage observer:-W.E.Barnes.

Comp. by H.Smitherum

Ck. by H.S.

Date 4-8-24

YEAR PERIOD

2223

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS

TABLE 66

Daily discharge, in second feet, of Mason-Foulke Granada Ditch-Gage #23 -below G.I.D. pump, for the year ending December 31, 1923

Day	January	February	March	April	May	June	July	August	September	October	November	December
1					21.2	23.0	20.3	20.3	20.3			
2					22.1	23.0	20.3	20.3	20.3			
3					22.1	23.0	20.3	20.3	20.3			
4					22.1	23.0	20.3	20.3	15.3			
5					22.1	23.0	20.3	20.3	15.3			
6					23.3	24.0	20.3	20.3	13.7			
7					22.1	23.6	20.3	20.3	13.7			
8					22.1	24.0	20.3	20.3	13.7			
9					22.1	24.4	20.3	20.3	13.7			
10					23.0	24.0	20.3	20.3	13.7			
11					23.0	25.0	20.3	20.3	13.7			
12					23.0	25.0	20.3	20.3	13.7			
13					23.0	25.0	20.3	20.3	13.7			
14					23.0	25.0	20.3	20.3	13.7			
15					23.0	25.0	20.3	20.3	20.3			
16					23.0	25.0	20.3	20.3	20.3			
17					23.0	25.0	20.3	20.3	20.3			
18					23.0	25.0	20.3	20.3	20.3			
19					23.0	25.0	20.3	20.3	20.3			
20					23.0	25.0	20.3	20.3	20.3			
21				5.6	23.0	25.0	20.3	20.3	20.3			
22				13.4	23.0	25.0	20.3	20.3	20.3			
23				10.8	23.0	25.0	20.3	20.3	20.3			
24				12.2	23.0	25.0	20.3	20.3	20.3			
25				12.2	23.0	20.3	20.3	20.3	20.3			
26				12.2	23.0	20.3	20.3	20.3	20.3			
27				13.7	23.0	20.3	20.3	20.3	20.3			
28				16.9	23.0	20.3	20.3	20.3				
29				22.1	23.0	20.3	20.3	20.3				
30				21.2	23.0	20.3	20.3	20.3				
31					23.0		20.3	20.3				
Total Sec. Ft. Days				140.3	705.2	706.8	629.3	629.3	478.7			
Mean Sec. Ft.				14.0	22.8	23.6	20.3	20.3	17.7			
Max. Sec. Ft.					23.3	25.0	20.3	20.3	20.3			
Min. Sec. Ft.					23.0	20.3	20.3	20.3	13.7			
Total Ac. Ft.				278	1402	1404	1249	1248	948			

Remarks

Discharge determined by applying gage heights to rating curve.

Comp. by E.Smitherman
Ck. by H.S.
Date 5-30-24
Gage observer: W. J. Barnes

Year Period: 6528

20141 7 22

STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 601

TABLE 67

Daily discharge, in second feet, of Flock Ditch - Gage #50 - At head, for the year ending December 31, 1922

Day	January	February	March	April	May	June	July	August	September	October	November	December	Remarks
1						*13.9	* 3.2	* 8.3	* 6.8				
2						13.9	* 3.0	7.8	* 6.9				
3						13.9	* 5.8	7.4	* 6.9				
4						13.9	* 6.7	7.0	* 6.8				
5						13.9	* 5.2	6.5	* 6.8				
6						13.9	4.3	6.1	* 4.5				
7						*13.9	* 3.4	5.7	* 3.3				
8						*13.7	4.5	5.2	4.1				
9						12.8	* 5.6	4.8	4.9				
10						12.0	* 7.0	4.4	5.7				
11						11.2	*10.4	* 4.0	6.5				
12						10.4	* 6.6	5.1	* 7.4				
13						9.6	* 9.4	6.2					
14						8.8	9.6	* 7.4					
15						8.0	9.8	5.9					
16						7.2	10.1	* 4.4					
17						6.4	10.3	5.7					
18						5.6	10.6	7.1					
19						4.8	*10.8	8.4					
20						4.0	9.2	9.7					
21						3.2	7.6	*11.1					
22						2.4	* 6.0	*11.6					
23						1.6	6.2	*10.8					
24						* .8	6.4	*10.1					
25						1.1	6.6	*10.1					
26						1.5	6.8	9.4					
27						1.8	7.0	8.7					
28						2.2	7.2	* 8.1					
29					*10.1	* 2.6	7.4	* 6.8					
30						* 1.3	7.6	6.8					
31							* 7.8	* 6.8					
Total Sec. Ft. Days						230.3	222.1	227.4	70.6				Year Period
Mean Sec. Ft.						7.7	7.2	7.3	5.9				
Max. Sec. Ft.						13.9	10.8	11.6	7.4				
Min. Sec. Ft.						.8	3.0	4.0	3.3				
Total						458	443	449	140				1490

Comp. by H. Smitherum *Discharge determined by applying gage heights to rating curve.

Ck. by H.S.

Date 4-8-24 Intermediate discharges interpolated.

20411 7-22 500

STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

Form 601

TABLE 68

Daily discharge, in second feet, of Flock Ditch - Gage #50- At head, for the year ending December 31, 1923

Day	January	February	March	April	May	June	July	August	September	October	November	December
1												
2					*14.2	*10.8						
3												
4												
5												
6					*13.9							
7												
8												
9							* 3.6					
10												
11					*14.2							
12					*14.2				*9.4			
13												
14				* 4.5	*13.6			*6.2				
15												
16								*8.1				
17				*12.3								
18				*10.1								
19												
20				*10.8				*6.2				
21												
22				* 8.1								
23												
24												
25					* 9.4							
26				* 7.4								
27				* 8.4								
28												
29												
30				*13.1								
31												
Total Sec. Ft. Days												
Mean Sec. Ft.												
Max. Sec. Ft.												
Min. Sec. Ft.												
Total Ac. Ft.												

REMARKS

*Discharge determined by applying gage heights to rating curve.

Comp. by H. Smitherum

Ck. by H.S.

Date 3-27-24

YEAR PERIOD

STATE OF CALIFORNIA

DEPARTMENT OF PUBLIC WORKS

DIVISION OF WATER RIGHTS

TABLE 69

Daily discharge, in second feet, of Antonio Ditch - Gage #22 - 1/2 mi. below head, for the year ending December 31, 1922

Day	January	February	March	April	May	June	July	August	September	October	November	December
1						*3.3						
2						*3.2						
3						*2.9						
4							*4.4					
5						*3.5						
6												
7												
8												
9												
10							*2.9					
11							*4.1					
12						*1.3	*6.0					
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24						* .6		*5.1				
25												
26												
27					*3.5							
28					*3.5							
29					*2.8	* .9						
30					*3.8							
31							*2.4					
Total Sec. Ft. Days												
Mean Sec. Ft.												
Max. Sec. Ft.												
Min. Sec. Ft.												
Total Ac. Ft.												

Remarks

*Discharge determined by applying gage heights to rating curve.

Note: Unknown quantity of return water from Dunnell System enters ditch below gage.

Comp. by H. Smitherum

Ck. by H.S.

Date 4-5-24

Year Period

26111 7-22 500

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RIGHTS

Form 501

TABLE 70

Daily discharge, in second feet, of Antonio Ditch - Gage #22 - 1/2 mi. below head, for the year ending December 31, 1923

Day	January	February	March	April	May	June	July	August	September	October	November	December
1												
2						*10.2						
3												
4												
5												
6				*8.2	*7.9							
7												
8												
9												
10												
11					*8.7							
12												
13				*4.0								
14				*5.0	*8.2			*3.0				
15												
16												
17				*8.2								
18				*5.3								
19												
20				*6.1								
21												
22				*4.6								
23												
24												
25					*9.7							
26												
27				*3.5								
28												
29												
30				*7.3								
31												
Total Sec. Ft. Days												
Mean Sec. Ft.												
Max. Sec. Ft.												
Min. Sec. Ft.												
Total Ac. Ft.												

Remarks

*Discharge determined by applying gage heights to rating curve.

Note. Unknown quantity of return water from Dwinell System enters ditch below gage.

Comp. by H. Smitherum

Ck. by H. C.

Date 3-26-24

Year Period

TABLE 71

SUMMARY OF RESULTS OF DUTY OF WATER STUDY

Name of Diversion System	Season of 1922					Season of 1923				
	Period in Days	Acreage Irri-gated.	Water Diverted Acre Ft.	DUTY Acre Ft. per acre	DUTY Acres per Sec. Ft.	Period in Days	Acreage Irri-gated.	Water Diverted Acre Ft.	DUTY Acre Ft. per Acre	DUTY Acres per Sec.Ft.
Big Springs Water Co. Pump	154	2276.3	7907	3.48	87.8	161	2276.3	9120	4.01	79.7
Edmonds and Hudson Pump	(b)183	125.4	241	1.92	188.8	(b)179	125.4	240	1.91	185.5
Edson-Foulke Grenada Ditch	(a)111	531.8*	2223	4.19	52.5	(a)160	531.8*	6528	12.30	25.8
		781.1**	2223	2.86	77.2		781.1**	6528	8.35	38.0
Joe Enos Pump	173	87.3	178	2.04	168.0	(b)179	87.3	156	1.79	198.0
Fiock Upper Ditch	(a)104	266.2	1337	5.02	41.0		No	record		
Grenada Irrigation District Pump.	173	2205.3	8334	3.78	90.3	170	2379.5	9981	4.19	80.0
Louie Brothers Main Canal	(a)138	388.5	2029	5.22	52.2		No	record		
I.A.Martin Ditches (Jim and Martin Springs)	183	169.5#	1217	7.19	50.4		No	record		
Shasta River Water Users Association Pump	165	3456.6##	10600	3.07	106.3	173	3456.6##	11983	3.47	98.8
Stallcup and Sons Pump	166	336.6	1970	5.85	56.3	(b)178	336.6	1500	4.46	79.4
Webb Brothers Pump	113	371.4	529	1.43	157.0	Pump	not	operated		

* Acreage owned by Edson and Foulke Company.
** Total acreage under ditch, including area sub-irrigated by leakage from ditch.
\# Includes acreage irrigated under the I. A. Martin Ditches (Diversions 458, 459,461,462,and 463).
Includes acreage irrigated by waste water by non-members of the Association.
(a)Period of record.
(b)Period estimated.

TABLE 72

SUMMARY OF DIVERSION SYSTEMS DIVERTING FROM
SHASTA RIVER AND ITS TRIBUTARIES.
(arranged alphabetically)

Name of Diversion System	Diversion Number	Stream Diverted from	Acreage Irrigated Irr	Acreage Irrigated sub-irr	Acreage Irrigated Total
Abbie C. Albee Ditch	113	Carrick Creek	243.3		243.3
Abbie C. Albee Spring	133	Spring	2.3		2.3
Abbie C. Albee Domestic Spring.	133A	Spring	0.0		0.0
Abbie C. Albee Spring	134	Spring	13.1	4.5	17.6
S. Alexander Ditch	69	Shasta River	66.5	3.7	70.2
A. Allison Ditch	552	Unnamed Fork Greenhorn Cr.	0.0		0.0
J.H.Almeder Upper Ditch	394	Guys Gulch.	3.5		3.5
J.H.Almeder Middle Ditch	395	Guys Gulch	7.1		7.1
J.H.Almeder Lower Ditch	396	Guys Gulch	0.9		0.9
Alves and Simmons Ditch	584	Yreka Creek	35.4		35.4
Alves and Simmons Drain	585	Yreka Creek			
Mary Antonio Ditch	502	Shasta River	173.1		173.1
Arbaugh Ditch (Company)	108	Shasta River	678.2	1.5	679.7
G.W.Arbaugh Ditch	79	Beaughan Cr.	2.2		2.2
G.W.Arbaugh Ditch	80	Beaughan Cr.	3.9		3.9
G.W.Arbaugh Ditch	81	Unnamed Fork Beaughan Cr.	0.6	0.9	1.5
Robt.Archibald Pump	570	Well near Yreka Creek.	3.5		3.5
Robt.Archibald Pump	571	Well on Yreka Creek.			
Babcock-Martin-C.W.Soule Ditch.	473	Little Shasta River.	758.1	5.8	763.9
H.D.Bagley Domestic Pipe Line.	184	Spring	0.0		0.0

TABLE 72 (cont.)

Name of Diversion System	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	sub-irr	Total
H.D.Bagley Ditch	185	Unnamed gulch	0.0		0.0
Behnke-Chase-Cavanaugh Ditch.	27	Shasta River	48.5		48.5
Behnke-Chase-Cavanaugh Ditch.	63	Boles Creek	63.0		63.0
Gussie Behnke Ditch	25	Shasta River	1.9		1.9
Gussie Behnke Upper Ditch	32	Unnamed Fork Shasta River.	2.1		2.1
Gussie Behnke Lower Ditch	33	Unnamed Fork Shasta River.	1.4		1.4
Gussie Behnke Ditch	64	Boles Creek.	37.1		37.1
H.Behnke Upper Ditch	55	Boles Creek	)		
H.Behnke Upper Ditch Feeder.	56	Spring	) 52.7		52.7
H.Behnke Upper Ditch Feeder.	57	Spring	)		
H.Behnke Pipe Line	58	Spring	0.0		0.0
H.Behnke Lower Ditch	59	Boles Creek	6.1		6.1
Big Springs Water Co. Pump.	240	Big Spring	2270.2	6.1	2276.3
Wm. Black Ditch	412	Schulmeyer Gulch.	2.2		2.2
G.K.Bray Ditch	403	Schulmeyer Gulch.	5.8		5.8
G.K.Bray Ditch	404	Schulmeyer Gulch.	5.4		5.4
G.K.Bray Ditch	405	Schulmeyer Gulch.	5.6		5.6
G.K.Bray Ditch	406	Schulmeyer Gulch.	2.1		2.1
G.K.Bray Ditch	407	Schulmeyer Gulch.	4.6		4.6
G.K.Bray Ditch	408	Schulmeyer Gulch.	12.0		12.0
Antone Brazil Pipe Line	598	Spring	0.6		0.6
John Brazil Pump	599	Unnamed gulch	0.7		0.7

TABLE 72 (cont.)

Name of Diversion System	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	sub-irr	Total
A.A.Brown Ditch	255	McCloud Slough	42.0		42.0
A.A.Brown Ditch	256	McCloud Slough	6.4		6.4
A.A.Brown Ditch	257	Branch of McCloud Slough	18.2		18.2
A.A.Brown Ditch	258	Branch of McCloud Slough	0.8		0.8
H.Brown Ditch	560	Greenhorn Cr.	38.8		38.8
H.Brown Pump	561	Well near Yreka Creek.	1.2		1.2
M.L.Brown Ditch	259	McCloud Slough	33.8	92.8	126.6
Miles Buckner Ditch	558	Greenhorn Cr.	38.2		38.2
Burgess-Castro-O'Donnell Ditch.	589	Long Gulch	4.8		4.8
F.C.Burton Ditch	517	Yreka Creek	27.4		27.4
F.C.Burton Ditch	518	Yreka Creek	5.8		5.8
F.C.Burton Ditch	519	Yreka Creek	21.5		21.5
F.C.Burton Ditch	520	Yreka Creek	19.8		19.8
F.C.Burton Ditch	521	Yreka Creek	12.2		12.2
F.C.Burton Ditch	522	Canan Gulch	1.2		1.2
F.C.Burton Ditch	523	Canan Gulch	1.6		1.6
F.C.Burton Ditch	524	Canan Gulch	1.4		1.4
F.C.Burton Ditch	525	Yreka Creek	6.0		6.0
F.C.Burton Ditch	526	Yreka Creek	4.4		4.4
F.C.Burton Ditch	527	Yreka Creek	7.4		7.4
F.C.Burton Ditch	528	Lime Gulch	7.7		7.7
F.C.Burton Ditch	529	Lime Gulch	61.9		61.9

TABLE 72 (cont.)

Name of Diversion System	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	sub-irr	Total
F.C.Burton Ditch	530	Lime Gulch	50.9		50.9
E.H.Buscombe Pump	247	Shasta River	34.5		34.5
E.H.Buscombe (no ditch)		Buscombe Lake		20.3	20.3
A.J.Caldwell Ditch	516	Walters Gulch	29.4		29.4
California Oregon Power Company Canal.	605	Shasta River	0.0		0.0
J.B.Carrick Ditch	117	Carrick Creek	237.0		237.0
J.B.Carrick Ditch	120	Small Spring	32.9		32.9
Joe Bell Castro Ditch	83	Beaughan Cr.	21.9		21.9
R.E.Cavanaugh Ditch	65	Shasta River	23.5		23.5
R.E.Cavanaugh Slough Ditch.	66	Unnamed Slough Shasta River.	8.4		8.4
R.E.Cavanaugh Drain Ditch	67	--	0.0		0.0
R.E.Cavanaugh Spring Ditch.	68	Spring	10.4		10.4
R.E.Cavanaugh Upper Ditch	82	Beaughan Cr.	7.7		7.7
R.E.Cavanaugh Pipe Line	85	Beaughan Cr.	7.8		7.8
R.E.Cavanaugh Middle Ditch.	90	Beaughan Cr.	10.1		10.1
R.E.Cavanaugh Lower Ditch	91	Beaughan Cr.	6.2		6.2
R.E.Cavanaugh (no ditch)		Beaughan Cr.		3.7	3.7
Geo.E.Chase Ditch	34	Unnamed Fork	8.6		8.6
J.W.Chastain Ditch	329	Macks Gulch	10.2		10.2
Churchill Company Pump	573	Well near Yreka Creek.	0.9		0.9

TABLE 72 (cont.)

Name of Diversion System	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	Sub-irr	Total
Irma S. Clark (Colwell) Ditch.	182	Parks Creek	202.1	7.7	209.8
Irma S. Clark Ditch	188	Parks Creek	39.3		39.3
Irma S. Clark Ditch	189	Parks Creek	6.1		6.1
Irma S. Clark Ditch	190	Parks Creek	179.7		179.7
Irma S. Clark Ditch	191	Unnamed channel Parks Creek.			*
Irma S. Clark Ditch	192	Unnamed Fork Parks Creek.	2.7		2.7
P. H. Clark Ditch	173	Parks Creek	38.1		38.1
Company Ditch	472	Little Shasta River.	1555.3		1555.3
John Cordoza Pump	579	Well near Yreka Creek.	12.2		12.2
John Cordoza Domestic Pipe Line.	580	Spring.	0.2		0.2
Tom Cordoza Upper Ditch	586	Long Gulch	35.7		35.7
Tom Cordoza Middle Ditch	587	Long Gulch	3.2		3.2
Tom Cordoza Lower Ditch and Pump.	588	Long Gulch	19.9		19.9
I. Davis Ditch	466	Bassy Spring	194.8		194.8
I. Davis Upper Ditch	487	Davis Gulch	32.3		32.3
I. Davis Lower Ditch	489	Davis Gulch	36.2		36.2
A. Dennis Ditch	93	Shasta River	21.1	5.3	26.4
A.Dennis Upper Ditch	101	Jackson Creek	57.2		57.2

*Under I. S. Clark Ditch (Diversion 189).

TABLE 72 (cont.)

Name of Diversion System	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	sub-irr	Total
A.Dennis Lower Ditch	103	Jackson Creek	5.7		5.7
A.Dennis		Jackson Ranch		3.7	3.7
J.W.Dennis Upper Ditch	158	Shasta River	150.7		150.7
J.W.Dennis Spring Ditch	160	Spring	)		
J.W.Dennis Spring Ditch	161	Spring	) 13.3		13.3
J.W.Dennis Lower Ditch	164	Shasta River	17.5	5.3	22.8
L.Dennis Ditch	174	Parks Creek	)		
L.Dennis Ditch	175	Parks Creek	) 43.3		43.3
L.Dennis Ditch	176	Unnamed Fork Parks Creek.	1.0		1.0
L.Dennis Ditch	177	Unnamed Fork Parks Creek.	1.0		1.0
L.Dennis Ditch	178	Parks Creek	0.3		0.3
L.Dennis Ditch	179	Parks Creek	2.6		2.6
L.Dennis Hydraulic Ram	180	Spring	0.0		0.0
L.Dennis Ditch	181	Unnamed Fork Parks Creek.	0.2		0.2
E.D.Dimmick Ditch	456	Little Shasta River.	6.0		6.0
J.M.Dobkins Ditch	4	Shasta River	29.1		29.1
J.M.Dobkins Ditch	5.	Shasta River	4.3		4.3
J.M.Dobkins Ditch	7	Shasta River	14.8		14.8
J.M.Dobkins Ditch	10	Unnamed Fork Dale Creek.	0.5		0.5
J.M.Dobkins Ditch	15	Shasta River	17.1		17.1
J.M.Dobkins Ditch	17	Shasta River	0.0		0.0
J.M.Dobkins Ditch	19	Shasta River	20.2		20.2
J.M.Dobkins Ditch	20	Unnamed Fork Shasta River.	21.2		21.2

TABLE 72 (cont.)

Name of Diversion System	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	sub-irr	Total
J.M.Dobkins Ditch	21	Unnamed Fork Shasta River.	9.6		9.6
J.M.Dobkins Ditch	22	Unnamed Fork Shasta River.	5.7		5.7
J.M.Dobkins Ditch	45	Middle Fork Boles Creek.	47.5		47.5
J.W.Doty Ditch	94	Shasta River.	7.1	1.3	8.4
J.W.Doty Slough Ditch	105	Unnamed slough Shasta River.	1.0		1.0
Ira M.Dow Ditch	6	Shasta River.	73.8		73.8
R.Dow Ditch	11	Eddy Creek	74.9		74.9
R.Dow Ditch	16	Shasta River	5.1		5.1
W.D.Duke Ditch	221	Parks Creek	176.5	2.0	178.5
W.D.Duke Ditch	222	Parks Creek	231.6		231.6
W.D.Duke Ditch	223	Spring	15.2	19.1	34.3
W.D.Duke Ditch	224	Parks Creek	120.8	9.2	130.0
W.D.Duke Ditch	225	Parks Creek	163.5	7.3	170.8
W.D.Duke Ditch	226	Parks Creek	461.2*	8.1*	469.3
W.D.Duke Ditch	227	Parks Creek			**
W.D.Duke Ditch	228	Parks Creek			***
W.D.Duke Spring	229	Spring			***
W.D.Duke Ditch	230	Parks Creek	142.6	8.3	150.9
W.D.Duke Ditch	231	Parks Creek	82.6		82.6
W.D.Duke Ditch	232	Spring			***
W.D.Duke Ditch	233	Parks Creek	60.1	17.4	77.5
W.D.Duke Spring	234	Spring	5.2		5.2
W.D.Duke Spring and Swamp	234A	Spring and Swamp.		114.8	114.8

*Includes acreage under Diversions 228, 229, and 232.
**Under Diversion 230.
***Under Duke Ditch (Diversion 226).

TABLE 72 (cont.)

Name of Diversion System	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	sub-irr	Total
W.D.Duke (no ditch)		--		59.3	59.3
W.D.Duke Ditch	260	McCloud Slough	20.8	23.5	44.3
W.D.Duke Ditch	348	Willow Creek			
			84.4		84.4
W.D.Duke Ditch	349	Willow Creek			
W.D.Duke Ditch	350	Willow Creek			
W.D.Duke Ditch	351	Willow Creek	4.4	81.0	85.4
W.D.Duke Ditch	352	Willow Creek	1.5		1.5
W.D.Duke Ditch	353	Willow Creek	35.3		35.3
W.D.Duke Ditch	361	Orr Slough	86.7		86.7
W.D.Duke Ditch	362	Orr Slough	2.3		2.3
W.D.Duke Ditch	363	Orr Slough	69.0	8.9	77.9
W.D.Duke Ditch	364	Willow Creek	2.2		2.2
W.D.Duke Ditch	366	Willow Creek	1.8	7.3	9.1
Edmonds and Hudson Ditch	416	Shasta River	91.7	1.3	93.0
Edmonds and Hudson Pump	418	Shasta River	125.4		125.4
Edmonds and Hudson Ditch	420	Leakage from S.R.W.U.A.pipes	4.6		4.6
Edmonds and Hudson Ditch	423	Return flow S.R.W.U.A.system	5.9		5.9
Edmonds and Hudson (no ditch)		Return flow S.R.W.U.A.system	3.3		3.3
Edson-Foulke Yreka Ditch	18	Shasta River	3341.3	594.4	3935.7
Edson-Foulke Parks Creek Ditch.	183	Parks Creek			*
Edson-Foulke Grenada Ditch	250	Shasta River	489.5	291.6	781.1

*Under Edson-Foulke Yreka Ditch (Diversion 18).

TABLE 72 (cont.)

Name of Diversion Systems	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	Sub-irr	Total
Edson-Foulke Ditch	251	McCloud Slough			**
Edson-Foulke Ditch	252	McCloud Slough			**
Edson-Foulke Ditch	253	McCloud Slough			**
Edson-Foulke Ditch	254	McCloud Slough			**
Edson-Foulke Ditch	265	Kiernan Slough			**
Edson-Foulke Willow Creek Ditch	301	Willow Creek			**
Edson-Foulke Ditch	311	Willow Creek			**
Edson-Foulke Ditch	320	Willow Creek			**
Edson-Foulke Ditch	321	Willow Creek			**
Edson-Foulke Ditch	322	Willow Creek			**
Edson-Foulke Ditch	323	Willow Creek			**
Edson-Foulke Ditch	324	Willow Creek			**
Edson-Foulke Ditch	325	House Creek			**
Edson-Foulke Ditch	326	House Creek			**
Edson-Foulke Ditch	327	House Creek			**
Edson-Foulke Ditch	328	House Creek			**
Edson-Foulke Ditch	332	Macks Gulch			**
Edson-Foulke Ditch	333	Macks Gulch			**
Edson-Foulke Ditch	334	Macks Gulch			**
Edson-Foulke Ditch	335	Macks Gulch			**
Edson-Foulke Ditch	336	Macks Gulch			**
Edson-Foulke Ditch	337	Macks Gulch			**
Edson-Foulke Ditch	338	Macks Gulch			**

**Under Edson-Foulke Yreka Ditch (Diversion 18).

TABLE 72 (cont.)

Name of Diversion Systems	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	sub-irr	Total
Edson-Foulke Ditch	339	Macks Gulch			**
Edson-Foulke Ditch	341	Willow Creek			**
Edson-Foulke Ditch	374	White Slough	92.4		92.4
Edson-Foulke Ditch	375	White Slough	3.1		3.1
Edson-Foulke Ditch	376	White Slough	2.8		2.8
Edson-Foulke Ditch	377	White Slough	27.9		27.9
Edson-Foulke Ditch	378	White Slough	6.7		6.7
Edson-Foulke Ditch	379	White Slough	1.2		1.2
Edson-Foulke (no ditch)		White Slough		198.0	198.0
E.Ellison Upper Ditch	142	Spring	13.3		13.3
E.Ellison Middle Ditch	143	Spring	3.3		3.3
E.Ellison Lower Ditch	144	Spring	4.4		4.4
Joe Enos Pump	417	Shasta River	82.1	5.2	87.3
J.V.Enos Upper Ditch	206	Parks Creek	18.0	5.1	23.1
J.V.Enos Lower Ditch	208	Parks Creek	37.6		37.6
A.E.Farraher Upper Ditch	296	Squaw Creek	25.2		25.2
A.E.Farraher Domestic Pipe Line.	296A	Spring	0.0		0.0
A.E.Farraher Lower Ditch	297	Squaw Creek	0.8		0.8
Farraher-Finnerty Ditch	298	Squaw Creek	8.9		8.9
Jose Fillippe Ditch	590	Canal Gulch	2.9		2.9
M.Finnerty Upper Ditch	292	Willow Creek	0.7		0.7
M.Finnerty Spring	293	Spring	0.4		0.4

**Under Edson-Foulke Yreka Ditch (Diversion 18).

TABLE 72 (cont.)

Name of Diversion Systems	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	Sub-irr	Total
M. Finnerty Ditch	294	Unnamed Fork Willow Creek.			*
M. Finnerty Ditch	295	Unnamed Fork Willow Creek.			*
M. Finnerty Ditch	299	Squaw Creek.	45.7		45.7
M. Finnerty Ditch	300	Squaw Creek.	2.4		2.4
M. Finnerty Ditch	302	Small draw	4.2		4.2
M. Finnerty Ditch	309	Willow Creek	9.9		9.9
M. Finnerty Ditch	310	Willow Creek	0.2		0.2
M. Finnerty Ditch	316	Finnerty Sp.	10.8		10.8
M. Finnerty Ditch	317	Unnamed Slough	39.4		39.4
M. Finnerty Ditch	318	McGraw Gulch	34.5		34.5
H.Fiock Upper Ditch	503	Shasta River	259.1	7.1	266.2
H. Fiock Lower Ditch	507	Shasta River	2.8		2.8
H. Fiock Spring Ditch	508	Spring	1.6		1.6
William Gordon (proposed)	607	Unnamed Spring			
William Gordon Pipe Line	608	Unnamed Spring	0.5**		0.5**
Grenada Irrigation District Pump.	249	Shasta River	2379.5		2379.5
Laura Griffin Ditch	76	Beaughan Cr.	54.6		54.6
Laura Griffin House Ditch	77	Beaughan Cr.	0.0		0.0
Grisez Ditch	479	Little Shasta River.	207.2		207.2
Grisez Ditch	480	Little Shasta River.	119.2		119.2
Grisez Ditch	481	Unnamed Slough Little Shasta River.			***

*Farraher-Finnerty Ditch (Diversion 298).
**Not included in Acreage Table.
***Under Grisez Ditch (Diversion 479).

TABLE 72 (cont.)

Name of Diversion Systems	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	Sub-irr	Total
C. S. Hammond Ditch	1	Shasta River	43.8		43.8
C. S. Hammond Ditch	2	Shasta River	25.7		25.7
C. S. Hammond (Durney Mill) Ditch.	3	Shasta River	0.0		0.0
C. S. Hammond Ditch	7A	Dobkins Lake			*
C. S. Hammond Ditch	8	Dale Creek	84.4		84.4
C. S. Hammond Ditch	9	Dale Creek	63.7	12.1	75.8
C. S. Hammond (Scott)Ditch	12	Eddy Creek	423.6		423.6
C. S. Hammond Ditch	13	Eddy Creek	9.0		9.0
C. S. Hammond Ditch	14	Unnamed Fork Eddy Creek.	0.1		0.1
C. S. Hammond Domestic Pipe Line.	186	Spring.	0.0		0.0
C. S. Hammond Domestic Pipe Line.	187	Spring	0.0		0.0
T. Hanley Ditch	380	Fork of Guys Gulch.	4.7		4.7
M. E. Harris Ditch	303	Willow Creek.	47.2		47.2
M. E. Harris Ditch	304	Long Gulch (Willow Creek)	7.0		7.0
M. E. Harris Ditch	305	Willow Creek.	43.7		43.7
M. E. Harris Ditch	312	Small streams tributary to Willow Creek.	5.9		5.9
M. E. Harris Ditch	313		2.5		2.5
M. E. Harris Ditch	314		1.6		1.6
M. E. Harris Ditch	315		4.8		4.8
Hart-Haight-Prather Ditch	474	Little Shasta River.	1720.6		1720.6
E. C. Hart Ditch	467	Evans Spring	297.8		297.8

*Under Hammond ditches (Diversions 8 and 12).

TABLE 72 (cont.)

Name of Diversion Systems	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	Sub-irr	Total
E.C.Hart and A. Haight Ditch	471	Little Shasta River.	83.3		83.3
E.C.Hart and C.V.Smith Ditch.	476	Little Shasta River.	94.3		94.3
K. C. Hart Ditch	478	Little Shasta River.	303.3		303.3
L.J.Hebbering Ditch	340	Spring.	35.3		35.3
Hoy Brothers Upper Ditch	122	Carrick Creek	84.3		84.3
Hoy Brothers Ditch	126	Spring	17.5		17.5
Hoy Brothers Lower Ditch	127	Carrick Creek	8.5		8.5
Hoy Brothers Ditch	132	Hoy Creek	36.8	7.3	44.1
A.B.Hoy Domestic Pipe Line	126A	Spring	0.6		0.6
A.B.Hoy Ditch	131	Hoy Creek	6.7		6.7
M.T.Hoy Ditch	128	Carrick Creek	7.8		7.8
M.T.Hoy Domestic Pipe Line	128A	Spring	0.0		0.0
M.T.Hoy Upper Ditch	135	Albee Creek			*
M.T.Hoy Middle Ditch	136	Albee Creek			*
M.T.Hoy Lower Ditch	137	Albee Creek	21.9		21.9
H.H.Hudson Ditch	446	Little Shasta River.	12.7		12.7
H.H.Hudson Ditch	447	Little Shasta River.	12.2		12.2
S.H.Jackson Ditch	84	Beaughan Creek	90.0		90.0
S.H.Jackson Ditch	86	Beaughan Creek	17.6		17.6
S.H.Jackson Ditch	87	Beaughan Creek	4.4		4.4
S.H.Jackson Ditch	88	Beaughan Creek	2.4		2.4
Jackson and Wholey Ditch	89	Beaughan Creek	27.4		27.4
S.H.Jackson Ditch	95	Spring	6.1		6.1

*Under Hoy Brothers Upper Ditch (Diversion 122).

TABLE 72 (cont.)

Name of Diversion Systems	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	Sub-irr	Total
S.H.Jackson Ditch	96	Spring		18.8	18.8
S.H.Jackson Ditch	97	Spring	24.2	2.1	26.3
S.H.Jackson Ditch	98	North Fork of Jackson Creek.	43.1		43.1
S.H.Jackson Ditch	99	Spring	37.1		37.1
S.H.Jackson Upper Ditch	138	Carrick Creek	114.1		114.1
S.H.Jackson Middle Ditch	139	Carrick Creek	32.3		32.3
S.H.Jackson Lower Ditch	140	Carrick Creek	23.3		23.3
S.H.Jackson Ditch	141	Spring	11.2		11.2
E.Jones Ditch	484	Little Shasta River.	45.4		45.4
J.L.Jones Main Ditch	149	Shasta River	105.7	0.4	106.1
J.L.Jones Spring Ditch	151	Lower Elting Spring.	76.3	0.6	76.9
J.L.Jones Pump *	152	Slough of Shasta River.	0.0		0.0
J.L.Jones Power Ditch	155	Shasta River.		0.6	0.6
Octavia Julian Pump	401	Julian Creek	83.9		83.9
Octavia Julian Ditch	402	Unnamed Fork Julian Creek.	55.3		55.3
Octavia Julian Ditch	414	Cottonwood Cr.	162.4		162.4
Octavia Julian Ditch	415	Julian Creek	43.5		43.5
C.A.Kasshafer East Side Ditch.	23	Shasta River	3.1		3.1
C.A.Kasshafer West Side Ditch.	24	Shasta River	132.7		132.7
C.A.Kasshafer Ditch	26	Unnamed Fork Shasta River.	8.0		8.0
C.A.Kasshafer Ditch	28	Unnamed Fork Shasta River.	5.2		5.2
C.A.Kasshafer Ditch	29	Unnamed Fork Shasta River.	8.4		8.4

*Pump not in operation.

TABLE 72 (cont.)

Name of Diversion Systems	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	Sub-irr	Total
C.A.Kasshafer Ditch	30	Unnamed Fork Shasta River.	7.7		7.7
C.A.Kasshafer Ditch	31	Unnamed Fork Shasta River.	16.5		16.5
C.A.Kasshafer Ditch	199	Unnamed Fork Parks Creek.	26.3		26.3
C.A.Kasshafer Ditch	200	Unnamed Fork Parks Creek.			
Annie Kegg Ditch	468	Kegg Spring.	129.1		129.1
Geo. A. Kellogg and Son Ditch.	35	South Fork of Boles Creek.	24.9	4.2	29.1
Geo. A. Kellogg and Son Ditch.	37	Spring	0.9		0.9
Geo. A. Kellogg and Son Ditch.	38	Unnamed Fork Boles Creek.	0.9		0.9
Geo. A. Kellogg and Son Ditch.	42	Kellogg Spring	6.1		6.1
Geo. A. Kellogg and Son Flume.	43	Middle Fork Boles Creek.	0.0		0.0
Geo. A. Kellogg and Son Ditch.	44	Middle Fork Boles Creek.	0.6		0.6
Geo. A. Kellogg (no ditch)		South Fork of Boles Creek.		83.8	83.8
Geo. A. Kellogg (no ditch)		Kellogg Spring		8.2	8.2
B.Kiernan Ditch	217	Stone Creek (Parks Cr.Tributary).	13.7		13.7
B.Kiernan Ditch	319	Spring	10.6	6.1	16.7
J.N.Kiernan Ditch	218	Spring	0.0		0.0
W.T.Kiernan Ditch	207	Walker Slough	135.4	26.9	162.3
W.T.Kiernan Ditch	207A	Walker Slough			
W.T.Kiernan (no ditch)		Walker Slough		11.0	11.0
W.T.Kiernan Spring	264	Head of Kiernan Slough.			*

*Under Edson-Foulke Yreka Ditch (Diversion 18).

TABLE 72 (cont.)

Name of Diversion Systems	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	Sub-irr	Total
G.W.King Ditch	421	Shasta River	67.0		67.0
G.W.King Ditch	422	Shasta River	3.3		3.3
G.W.King (no ditch)		Shasta River		5.7	5.7
G.W.King Ditch	424	Return flow from Shasta River Water Users Association System.	3.0		3.0
G.W.King Ditch	425		16.1		16.1
G.W.King Ditch	426		1.0		1.0
G.W.King Ditch	427		1.6		1.6
G.W.King Ditch	428		2.2		2.2
G.W.King Ditch	491	Little Shasta River.	82.0	2.9	84.9
G.W.King Ditch	492	Little Shasta River.	29.5		29.5
G.W.King Pump	493	Shasta River.	37.2		37.2
G.W.King Ditch	494	Coyote Ravine	13.2		13.2
G.W.King Ditch	495	Coyote Ravine	1.9		1.9
H.Kirkendall Pump	235A	Parks Creek	0.0		0.0
Harold Lang Ditch	581	Yreka Creek	39.9		39.9
Joe Leal Drain Ditch	595	Unnamed Gulch	0.3		0.3
Joe Leal Ditch	596	Unnamed Gulch	0.0		0.0
Joe Leal Ditch	597	Unnamed Gulch	4.1		4.1
George Lemos Dam	499A	Shasta River	15.4		15.4
George Lemos Upper Pump	500	Shasta River	14.9		14.9
George Lemos Lower Pump	501	Shasta River	2.0		2.0
J.A.Lemos Ditch	209	Parks Creek	41.8		41.8
Joe Lemos Ditch	591	Rocky Gulch	15.3		15.3

TABLE 72 (cont.)

Name of Diversion Systems	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	Sub-irr	Total
Joe Lemos Domestic Pipe Line	592	Spring	0.3		0.3
Joe Lemos Domestic Pipe Line	593	Spring			
Amy Lewis Ditch	498	Shasta River	43.5	3.3	46.8
Amy Lewis Ditch	499	Return flow Webb Ranch.			*
Loosley Mill Ditch	444	Little Shasta River.	0.0		0.0
Loosley Mill Ditch	445	Little Shasta River.	0.0		0.0
Louie Brothers Ditch	167	Hole-in-the-Ground Creek.	30.9		30.9
Louie Brothers Ditch	168	Hole-in-the-Ground Creek.	89.3	2.3	91.6
Louie Brothers Ditch	169	Hole-in-the-Ground Creek.	0.6		0.6
Louie Brothers Ditch	170	Hole-in-the-Ground Creek.	1.3		1.3
Louie Brothers Ditch	171	Hole-in-the-Ground Creek.	0.5		0.5
Louie Brothers Ditch	172	Hole-in-the-Ground Creek.	0.1		0.1
Louie Brothers (no ditch)		Hole-in-the-Ground Creek.		26.2	26.2
Louie Brothers Main Canal	241	Big Spring	388.5		388.5
Louie Brothers Small Ditch	242	Big Spring	63.4		63.4
Louie Brothers (no ditch)		Big Spring		34.8	34.8
Louie Brothers Ditch	243	Little Spring	110.7		110.7
Louie Brothers Ditch	244	Little Spring Creek.	16.7		16.7
Louie Brothers Ditch	245	Little Spring Creek.	49.3		49.3
Louie Brothers Ditch	246	Little Spring Creek.	76.8		76.8
Louie Brothers (no ditch)		Little Spring Creek.		82.4	82.4
E. Lovelace Ditch	381	Guys Gulch.	4.4		4.4
E. Lovelace Ditch	382	Spring	2.7		2.7

*Under Webb Brothers Pump (Diversion 497).

TABLE 72 (cont.)

Name of Diversion Systems	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	Sub-irr	Total
E.Lovelace Ditch	383	Guys Gulch	1.3		1.3
E.Lovelace Ditch	384	Guys Gulch	1.7		1.7
E.Lovelace Ditch	385	Guys Gulch	1.3		1.3
E.Lovelace Ditch	386	Guys Gulch	0.5		0.5
E.Lovelace Ditch	387	Guys Gulch	0.9		0.9
E.Lovelace Ditch	388	Guys Gulch	0.4		0.4
Lower Greenhorn Ditch	559	Greenhorn Cr.	75.6		75.6
D.S.Lucas Pump	496	Shasta River	56.1		56.1
E.J.Luken Pipe Line	58A	Spring	0.0		0.0
E.J.Luken Upper Ditch	60	Boles Creek	5.3		5.3
E.J.Luken Lower Ditch	61	Boles Creek	14.0		14.0
N.K.Magoffey Ditch	504	Return flow S.R.W.U.A.System	0.8		0.8
Joe Marion Pump	567	Well near Yreka Creek.	0.9		0.9
C.C.Marlowe Spring	545	Spring	)		
C.C.Marlowe Spring	546	Spring	) 5.1		5.1
C.C.Marlowe Spring	547	Spring	0.2		0.2
C.C.Marlowe Ditch	548	North Fork of Greenhorn Cr.	2.3		2.3
I.A.Martin Dairy Upper Ditch.	429	N.Fork Little Shasta River.	9.4		9.4
I.A.Martin Dairy Lower Ditch.	430	N.Fork Little Shasta River.	4.2		4.2
I.A.Martin Ditch	455	Cleland Spring	886.3	2.4	888.7
I.A.Martin Ditch	458	Jim Spring Cr.	38.1		38.1
I.A.Martin Ditch	459	Jim Spring Cr.	6.5		6.5
I.A.Martin Ditch	460	Tunnel Spring	21.2		21.2

TABLE 72 (cont.)

Name of Diversion Systems	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	Sub-irr	Total
I.A.Martin Ditch	461	Martin Spring Creek.			
I.A.Martin Ditch	462	Martin Spring Creek.	117.1	7.8	124.9
I.A.Martin Ditch	463	Martin Spring Creek.			
I.A.Martin Ditch	464	Bassy Spring	65.5		65.5
I.A.Martin Pipe Line	465	Bassy Spring	0.0		0.0
I.A.Martin Ditch	469	Slough			*
I.A.Martin Ditch	470	Slough			*
I.B.Mathews Company Ditch	150	Upper Elting Spring.	107.4		107.4
Barney McCoy Ditch	330	Macks Gulch.	24.9		24.9
McKee Ditch	153	Shasta River	162.7	6.8	169.5
McKee Spring Ditch	162	Spring	243.0		243.0
McKee Tunnel Spring Ditch	163	Spring	17.7		17.7
F.H.McMahon Upper Ditch	104	Shasta River	8.4	0.9	9.3
F.H.McMahon Middle Ditch	106	Shasta River	3.5		3.5
F.H.McMahon Lower Ditch	107	Shasta River	26.2		26.2
F.H.McMahon Slough Ditch	111	Slough of Shasta River.	6.9		6.9
B.Medici Pipe Line	46A	Spring	0.0		0.0
Miller and Dunlap Ditch	154	Shasta River	106.7	12.9	119.6
M.F.Mills Reese Ditch	109	Shasta River	59.5		59.5
M.F.Mills House Ditch	109	Lateral from Reese Ditch.	11.6		11.6
M.F.Mills Stewart Ditch	110	Shasta River.	92.2		92.2
M.F.Mills Beaver Dam Ditch	112	Shasta River.	13.2		13.2
M.F.Mills Spring Ditch	115	Spring	12.0		12.0

*Under I.A.Martin Ditch (Diversion 455).

TABLE 72 (cont.)

Name of Diversion Systems	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	Sub-irr	Total
M.F.Mills Ditch	145	Carrick Creek	13.0		13.0
M.F.Mills Ditch	146	Carrick Creek	20.7		20.7
M.F.Mills Ditch	147	Carrick Creek	2.0		2.0
M.F.Mills Ditch	148	Carrick Creek			*
M.F.Mills (No Ditch)		Slough of Parks Creek.		44.6	44.6
R.Mills Ditch	436	Little Shasta River.	24.0		24.0
R.Mills Ditch	437	Little Shasta River.	14.8		14.8
R.Mills Ditch	438	Little Shasta River.	2.6		2.6
R.Mills Ditch	439	Little Shasta River.	)		
R.Mills Ditch	440	Little Shasta River.	) 7.7		7.7
R.Mills Ditch	441	Little Shasta River.	)		
R.Mills Ditch	442	Little Shasta River.	1.3		1.3
R.Mills Ditch	443	Unnamed fork Little Shasta R.	4.7		4.7
C.Nelson Ditch	212	Parks Creek.	31.7		31.7
C.Nelson Ditch	213	Parks Creek	8.0		8.0
C.Nelson Ditch	215	Unnamed Fork Parks Creek.	4.8		4.8
C.Nelson Ditch	216	Unnamed Fork Parks Creek.			**
C.Nelson Ditch	219	Parks Creek.	22.0	0.1	22.1
C.Nelson Ditch	220	Parks Creek	2.9		2.9
G.V.Nelson Upper Ditch	210	Parks Creek	33.3		33.3
G.V.Nelson Lower Ditch	211	Parks Creek	5.5		5.5
G.V.Nelson Ditch	214	Unnamed fork Parks Creek.	4.0		4.0

*Under Arbaugh Ditch (Diversion 108).
**Under C.Nelson Ditch (Diversion 212).

TABLE 72 (cont.)

Name of Diversion Systems	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	Sub-irr	Total
Nevada County Bank Ditch	261	McCloud Slough	17.2		17.2
Nevada County Bank Ditch	262	McCloud Slough			
Sarah J.Nunes Ditch	542	Greenhorn Cr.	4.9		4.9
Sarah J.Nunes Ditch	543	Milk Gulch	1.1		1.1
Sarah J. Nunes Ditch	544	Milk Gulch	11.7		11.7
Old Williams Ditch	157	Shasta River	29.8		29.8
Orr Brothers Ditch	263	McCloud Slough	1.2		1.2
Orr Brothers (no ditch)		McCloud Slough		73.7	73.7
Orr Brothers Ditch	365	Willow Creek	2.1		2.1
Orr Brothers Ditch	367	Willow Creek	4.5		4.5
Orr Brothers Ditch	368	Willow Creek	9.1		9.1
Orr Brothers Ditch	369	Unnamed Fork Willow Creek.	16.2		16.2
Orr Brothers Ditch	368A	Grenada Irrig. District Upper	94.0	3.5	97.5
Orr Brothers Ditch	370	Drainage Ditch			
Orr Brothers Ditch	371	Willow Creek	156.4		156.4
Orr Brothers Ditch	372	Grenada Irrig. District Lower	103.2		103.2
Orr Brothers Ditch	373	Drainage Ditch			
Orr Brothers (no ditch)		Willow Creek		246.1	246.1
A.S.Orr Ditch	342	Willow Creek	129.4	1.0	130.4
A.S.Orr Ditch	344	Willow Creek	13.8		13.8
A.S.Orr Ditch	345	Willow Creek	6.0		6.0
A.S.Orr Ditch	346	Willow Creek	1.2	6.4	7.6
A.S.Orr Ditch	359	Orr Slough	170.7		170.7

TABLE 72 (cont.)

Name of Diversion Systems	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	Sub-irr	Total
A.S.Orr Ditch	360	Orr Spring	21.5		21.5
A.S.Orr Pump	360A	Orr Spring	78.0		78.0
A.S.Orr and W.D.Duke Ditch	343	Willow Creek	148.9	111.5	260.4
A.S.Orr and W.D.Duke Ditch	347	Willow Creek	25.3		25.3
C.S.Orr Upper Ditch	397	Branch of Guys Gulch.	63.3		63.3
C.S.Orr Lower Ditch	398	Guys Gulch.	20.4		20.4
C.S.Orr East Ditch	399	Cram Gulch	54.4		54.4
C.S.Orr House Ditch	400	Cram Gulch	9.1		9.1
G.C.Orr Ditch	354	Orr Slough	107.9		107.9
G.C.Orr Ditch	355	Orr Slough	127.3		127.3
G.C.Orr Ditch	356	Orr Slough	60.0	4.7	64.7
G.C.Orr Ditch	357	Orr Slough	9.1		9.1
G.C.Orr Ditch	358	Orr Slough	3.8		3.8
C.Payot Ditch	305	Oregon Slough	19.8		19.8
C.Payot (no ditch)		Oregon Slough		8.1	8.1
J.F.Perry Ditch	389	Guys Gulch	0.2		0.2
J.F.Perry Ditch	390	Guys Gulch	1.1		1.1
J.F.Perry Ditch	392	Guys Gulch	1.3		1.3
J.F.Perry Ditch	393	Guys Gulch	1.2		1.2
J.T. & M.W.Perry Upper Ditch	572	Yreka Creek	42.0		42.0
J.T. & M.W. Perry Middle Ditch	582	Yreka Creek	9.6	1.8	11.4

TABLE 72 (cont.)

Name of Diversion Systems	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	Sub-irr	Total
J.T. & M.W.Perry Lower Ditch.	583	Yreka Creek	25.0		25.0
Prather and Tamisier Ditch	482	Little Shasta River.	381.8		381.8
R.E. and R.H.Pruett Upper Ditch.	512	Walters Gulch	39.9		39.9
R.E. and R.H.Pruett Middle Ditch.	513	Walters Gulch	9.5		9.5
R.E. and R.H.Pruett Lower Ditch.	514	Walters Gulch	13.7		13.7
R.H.Pruett Ditch	515	Pruett Gulch	8.7		8.7
Geo. Raymond Ditch	564	Yreka Creek	)		
Geo. Raymond Pump	566	Well near Yreka Creek.	) 15.6		15.6
Benjamin Ritter Mine Ditch	606	Shasta River.	0.0		0.0
Joe Rogers Pump	568	Well near Yreka Creek.	3.1		3.1
Rose Brothers Ditch	538	Bob Rice Ravine.	1.7		1.7
Rose Brothers Ditch	539	Greenhorn Cr.	1.7		1.7
Jose Rose Ditch	537	Greenhorn Cr.	9.3	0.9	10.2
M.F.Rose Ditch	540	Greenhorn Cr.	13.0		13.0
M.F.Rose Ditch	541	Tanner Gulch	1.2		1.2
M.F.Rose Ditch	549	Greenhorn Cr.	36.2		36.2
M.F.Rose Ditch	553	Unnamed fork Greenhorn Cr.	0.8		0.8
M.F.Rose Ditch	554	Unnamed fork Greenhorn Cr.	0.3		0.3
M.F.Rose Ditch	555	Unnamed fork Greenhorn Cr.	0.6		0.6
M.F.Rose Domestic Pipe Line	556	Unnamed fork Greenhorn Cr.	0.2		0.2
M.F.Rose Ditch	557	Unnamed fork Greenhorn Cr.			*
A.E.Rowe Upper Ditch	113	Shasta River.	281.2	5.7	286.9
A.E.Rowe Lower Ditch	114	Shasta River	88.9		88.9

*Under M.F.Rose Ditch(Diversion 549).

TABLE 72 (cont.)

Name of Diversion Systems	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	Sub-irr	Total
L.Scalise Ditch	62	Boles Creek	0.4		0.4
Chas. Schock Upper Ditch	409	Schulmeyer Gulch.	10.7		10.7
Chas. Schock Lower Ditch	410	Schulmeyer Gulch.	6.6		6.6
Wm. Schock Ditch	411	Schulmeyer Gulch.	4.0		4.0
Wm. Schock Ditch	531	Yreka Creek	12.6		12.6
John Sequeria Ditch	506	Return flow S.R.W.U.A.System	2.3		2.3
Shasta River Water Users Association Pump	419	Shasta River.	3336.5	64.2	3400.7
Shastina Domestic Pipe Line	48	Sullivan Spring	0.0		0.0
Shastina Domestic Pump	50	Spring at Shastina.	0.0		0.0
Manuel Shelly Pump	509	Shasta River.	73.7		73.7
M.A.Silva Upper Ditch	236	Parks Creek	8.1		8.1
M.A.Silva Middle Ditch	237	Parks Creek	119.2		119.2
M.A.Silva Lower Ditch	238	Parks Creek	2.2		2.2
M.S.Simas Upper Ditch	532	Greenhorn Cr.	0.0		0.0
M.S.Simas Lower Ditch	534	Greenhorn Cr.	0.0		0.0
M.S.Simas Ditch	533	Unnamed Gulch	0.0		0.0
M.S.Simas Ditch	535	Stewart Ravine	0.0		0.0
M.S.Simas Domestic Pipe Line.	536	Spring	0.0		0.0
Geo. Simmons Upper Ditch	594	Yreka Creek	8.9		8.9
Geo. Simmons Lower Ditch	601	Yreka Creek			**
Siskiyou County Hospital Pump.	565	Well near Yreka Creek.	8.1		8.1
J.A.Sissel Ditch	281	Willow Creek	6.6		6.6

**Under Alves and Simmons Ditch and Drain (Diversions 584 and 585).

TABLE 72 (cont.)

Name of Diversion Systems	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	Sub-irr	Total
J.A.Sissel Ditch	282	Birch Creek	0.7		0.7
J.A.Sissel Ditch	283	Birch Creek	0.9		0.9
J.A.Sissel Ditch	284	Birch Creek	2.1		2.1
J.A.Sissel Ditch	285	Birch Creek	2.1		2.1
J.A.Sissel Ditch	286	Birch Creek	4.4		4.4
J.A.Sissel Ditch	287	Birch Creek	0.3		0.3
J.A.Sissel Ditch	288	Birch Creek	1.6		1.6
J.A.Sissel Ditch	289	Willow Creek	10.5		10.5
J.A.Sissel Ditch	290	Unnamed Fork Willow Creek.	4.1		4.1
J.A.Sissel Ditch	291	Willow Creek.	12.3		12.3
Cordia V.Smith Estate Ditch.	432	Unnamed Fork Little Shasta R.	9.2		9.2
Cordia V.Smith Estate Ditch.	433	Unnamed Fork Little Shasta R.	16.4		16.4
Cordia V.Smith Estate Ditch.	434	Unnamed Fork Little Shasta R.	4.7		4.7
Cordia V.Smith Estate Ditch.	435	S.Fork Little Shasta River.	8.2		8.2
C.V.Smith Ditch	475	Little Shasta River.	82.0		82.0
C.V.Smith Ditch	477	Little Shasta River.	14.6		14.6
C.V.Smith Ditch	477A	Little Shasta River.	8.6		8.6
C.V.Smith (no ditch)		Little Shasta River.	6.7		6.7
John Solus Ditch	600	Yreka Creek.	9.7		9.7
John Solus Ditch	602	Yreka Creek	31.2		31.2
John Solus Ditch	603	Yreka Creek	8.4		8.4
John Solus Ditch	604	Yreka Creek	18.0		18.0

TABLE 72 (cont.)

Name of Diversion Systems	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	Sub-irr	Total
Soule and Terwilliger Ditch	457	Little Shasta River.	620.0		620.0
John Soule Ditch	156	Shasta River	134.3	2.6	136.9
John Soule Slough Ditch	159	Unnamed Slough Shasta River.	6.3		6.3
Geo. Souza Buried Rock Drain.	569	Souza Pasture	3.4	7.1	10.5
E.Stallcup and Sons Pump	239	Big Spring	336.6		336.6
E.Stallcup (no ditch)		Big Spring		29.3	29.3
E.Stallcup (no ditch)		Little Spring		83.7	83.7
E.Stallcup (no ditch)		Hole-in-the-Ground Creek.		83.7	83.7
Alden Steele Ditch	562	Yreka Creek.	13.1		13.1
Alden Steele Pump	563	Well near Yreka Creek.	0.1		0.1
Stone Brothers West Ditch	129	Spring	74.3		74.3
Stone Brothers East Ditch	129A	Spring	45.2		45.2
F.E.Stone Upper Ditch	119	Carrick Creek	36.4		36.4
F.E.Stone Lower Ditch	121	Carrick Creek	5.7		5.7
F.E.Stone Ditch	123	Spring	7.5		7.5
F.E.Stone House Spring	125	Spring	0.0		0.0
F.E.Stone (no ditch)		Stone Creek		8.8	8.8*
F.F.Stone and A.B.Hoy Ditch	124	Stone Creek	72.1		72.1
W.O.Stone Ditch	118	Carrick Creek	18.6		18.6
W.O.Stone Domestic Pipe Line.	130	Spring	0.0		0.0
G.A.Sullivan Ditch	47	Boles Creek	12.5		12.5

*Also receives sub-irrigation from F.E.Stone Ditch and W.O.Stone Ditch (Diversions 119 and 118, respectively).

TABLE 72 (cont.)

Name of Diversion Systems	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	Sub-irr	Total
G.A.Sullivan Ditch	49	Sullivan Spring	1.6		1.6
G.A.Sullivan Ditch	51	North Fork of Boles Creek.	5.5		5.5
G.A.Sullivan Ditch	52	North Fork of Boles Creek.	11.4		11.4
G.A.Sullivan Ditch	53	North Fork of Boles Creek.	13.4		13.4
G.A.Sullivan Ranch Spring	54	Spring		5.2	5.2
M.A.Tamisier Ditch	483	Little Shasta River.	357.1		357.1
Geo. Tebbe Drain	578	Humbug Gulch	0.6		0.6
E.D.Terwilliger Upper Ditch.	165	Shasta River	24.8		24.8
E.D.Terwilliger Lower Ditch.	166	Shasta River	124.3		124.3
E.D.Terwilliger Ditch	235	Parks Creek	23.4		23.4
E.D.Terwilliger (no ditch)		Parks Creek		31.4	31.4
E.D.Terwilliger (no ditch)		Hole-in-the-Ground Creek.		128.4	128.4
S.F.Terwilliger Ditch	448	Little Shasta River.	1.8		1.8
S.F.Terwilliger Ditch	449	Little Shasta River.	105.1		105.1
S.F.Terwilliger Ditch	450	Little Shasta River.	2.1		2.1
S.F.Terwilliger Ditch	451	Little Shasta River.	29.9		29.9
S.F.Terwilliger Ditch	452	Cleland Spring	32.0		32.0
S.F.Terwilliger Ditch	453	Cleland Spring	13.5		13.5
S.F.Terwilliger Ditch	454	Cleland Spring	6.4		6.4
Upper Greenhorn Ditch	550	Greenhorn Cr.	213.2	9.1	222.3
U.S.Forest Service Ditch	431	Unnamed Fork Little Shasta R.	8.3		8.3
Antone Valin Ditch	574	North Fork of Humbug Gulch.	10.3		10.3

TABLE 72 (cont.)

Name of Diversion Systems	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	Sub-irr	Total
Antone Valin Ditch	575	North Fork of Humbug Gulch	31.4		31.4
Antone Valin Ditch	576	South Fork of Humbug Gulch.	5.8		5.8
Antone Valin Domestic Pipe Line.	577	Valin Spring.	0.1		0.1
Geo. Walter Upper Ditch	510	Walters Gulch	26.6		26.6
Geo. Walter Lower Ditch	511	Walters Gulch	24.2		24.2
Webb Brothers Ditch	391	Guys Gulch	2.1		2.1
Webb Brothers Ditch	413	Schulmeyer Gulch.	69.2		69.2
Webb Brothers Pump	497	Shasta River.	371.4		371.4
Weed Estate North Ditch	39	Black Butte Spring.	1.6		1.6
Weed Estate South Ditch	40	Black Butte Spring.	2.4		2.4
Weed Estate Ditch	41	Black Butte Spring Creek.	3.7		3.7
Weed Lumber Company Igerna Pipe Line.	36	South Fork of Boles Creek.	0.0		0.0
Weed Lumber Company Ditch	46	Boles Creek	40.7	7.5	48.2
Weed Domestic Pipe Line	70	Beaughan Sp.	0.0		0.0
Weed Lumber Company Mill Ditch.	71	Beaughan Cr.	107.7		107.7
Weed Lumber Company Ditch	72	Springs	*	4.9	4.9
Weed Lumber Company Italian Town Domestic Pipe Line	72A	Little Beaughan Spring.	0.0		0.0
Weed Lumber Company Ditch	73	Little Beaughan Spring.			*
Weed Lumber Company Ditch	74	Beaughan Cr.			*
Weed Lumber Company Ditch	75	Beaughan Cr.	15.6		15.6
Weed Lumber Company Mill Pipe Line.	78	Beaughan Cr.	0.0		0.0

*Under Weed Lumber Company Mill Ditch (Diversion 71).

TABLE 72 (cont.)

Name of Diversion Systems	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	Sub-irr	Total
Weed Lumber Company (No Ditch)		Beaughan Cr.		1.1	1.1
Western Group Securities Company Ditch	248	Shasta River	63.6	9.9	73.5
M.A.Wholey Ditch	92	Beaughan Cr.	26.1	1.0	27.1
M.A.Wholey Ditch	100	Jackson Creek	6.7		6.7
M.A.Wholey Drain Ditch	102	Swamp		6.8	6.8
M.A.Wholey Ditch	193	Unnamed Fork Spring Creek.			*
M.A.Wholey Ditch	194	Unnamed Fork Parks Creek.	1.7		1.7
M.A.Wholey Ditch	195	Spring Creek.	17.8		17.8
M.A.Wholey Ditch	196	Spring Creek	8.5		8.5
M.A.Wholey Ditch	197	Unnamed Fork Spring Creek.	7.4		7.4
M.A.Wholey Ditch	198	Unnamed Fork Parks Creek.	2.3		2.3
M.A.Wholey Ditch	201	Spring Creek.	10.2		10.2
M.A.Wholey Ditch	202	Spring Creek	)		
M.A.Wholey Ditch	203	Spring Creek	) 7.2		7.2
M.A.Wholey Ditch	204	Spring Creek	85.9	3.5	89.4
M.A.Wholey Ditch	205	Unnamed Fork Parks Creek.			**
Arthur P.Williams Ditch	266	Willow Creek.	1.4		1.4
Arthur P.Williams Ditch	267	Willow Creek	0.9		0.9
Arthur P.Williams Ditch	268	Willow Creek	2.2		2.2
Arthur P.Williams Ditch	269	Hulett Gulch	2.6		2.6
Arthur P.Williams Ditch	270	Hulett Gulch	1.3		1.3
Arthur P.Williams Ditch	271	Timber Gulch	0.6		0.6

*Under Wholey Ditch (Diversion 196).
**Under Wholey Ditches (Diversions 202 and 203).

TABLE 72 (cont.)

Name of Diversion Systems	Diversion Number	Stream Diverted From	Acreage Irrigated Irr	Sub-irr	Total
Arthur P.Williams Ditch	272	Willow Creek	2.2		2.2
Arthur P.Williams Ditch	273	Willow Creek	14.0		14.0
Arthur P.Williams Domestic Pipe Line.	274	Willow Creek	0.0		0.0
Arthur P.Williams Ditch	275	Willow Creek	1.3		1.3
Arthur P.Williams Ditch	276	Willow Creek	2.2		2.2
Arthur P.Williams Ditch	277	Willow Creek	1.6		1.6
Arthur P.Williams Ditch	278	Unnamed Fork Willow Creek.	9.8		9.8
Arthur P.Williams Ditch	279	Unnamed Fork Willow Creek.	0.1		0.1
Arthur P.Williams Ditch	280	Willow Creek.	3.3		3.3
J.D.Williams Upper Ditch	485	Davis Gulch	)		
J.D.Williams Middle Ditch	486	Davis Gulch	) 88.7		88.7
J.D.Williams Lower Ditch	488	Davis Gulch	114.4		114.4
J.D.Williams Benson Spring Ditch.	490	Benson Spring	67.4		67.4
L.Workman Upper Ditch	306	Willow Creek	86.9		86.9
L.Workman Middle Ditch	307	Willow Creek	1.4		1.4
L.Workman Lower Ditch	308	Willow Creek	9.7		9.7
L.Workman Ditch	331	Macks Gulch			*
Yreka City Pipe Line	551	Greenhorn Cr.	0.0		0.0
Yreka City Pump	572A	Well near Yreka Creek.	0.0		0.0
GRAND TOTAL			36531.5	3005.0	39536.5

*Under Edson-Foulke Yreka Ditch (Diversion 18).

TABLE 73

ANNUAL KILOWATT HOUR OUTPUT

of the

CALIFORNIA OREGON POWER COMPANY's
SHASTA RIVER PLANT

for the

Years 1912 to 1923, inclusive.

Year	Total Kilowatt Hours
1912	726,520
1913	576,425
1914	944,270
1915	1,568,800
1916	1,976,470
1917	1,084,050
1918	379,100
1919	321,000
1920	565,200
1921	591,600
1922	236,035
1923	278,321

Data obtained from California Oregon Power Company.

TABLE 74

MONTHLY KILOWATT HOUR OUTPUT

of the

CALIFORNIA OREGON POWER COMPANY'S
SHASTA RIVER PLANT

for the

Years 1922 and 1923.

Month	1922	1923
January	1,150	61,321
February	18,900	55,200
March	37,885	51,500
April	36,600	10,200
May	20,800	*
June	4,300	*
July	*	*
August	*	*
September	*	1,700
October	26,800	25,200
November	33,100	38,000
December	56,500	35,200
TOTALS	236,035	278,321

*Closed down due to lack of water.

Data obtained from California Oregon Power Company.

PLATES

PLATE I

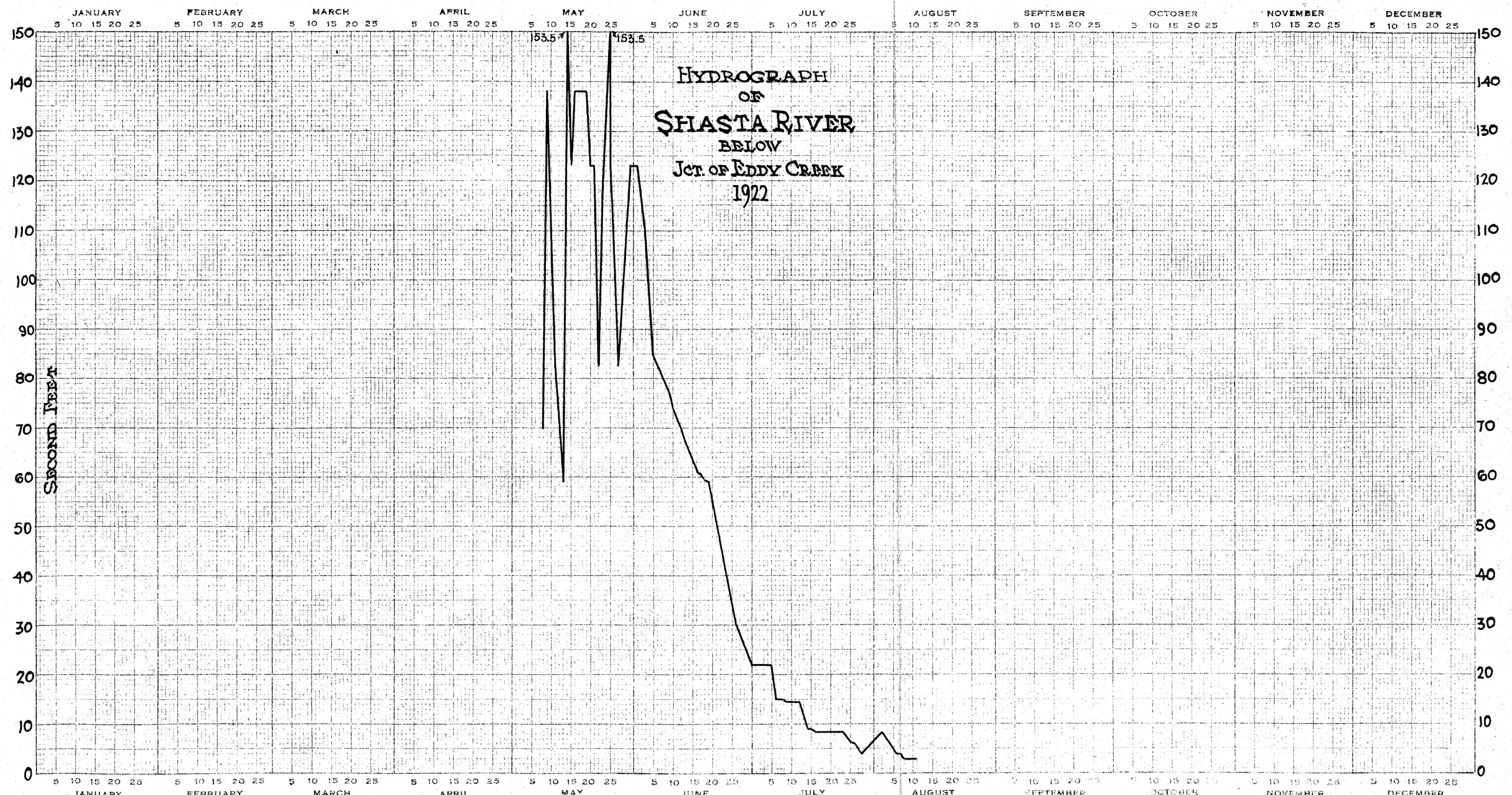
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PLATE II

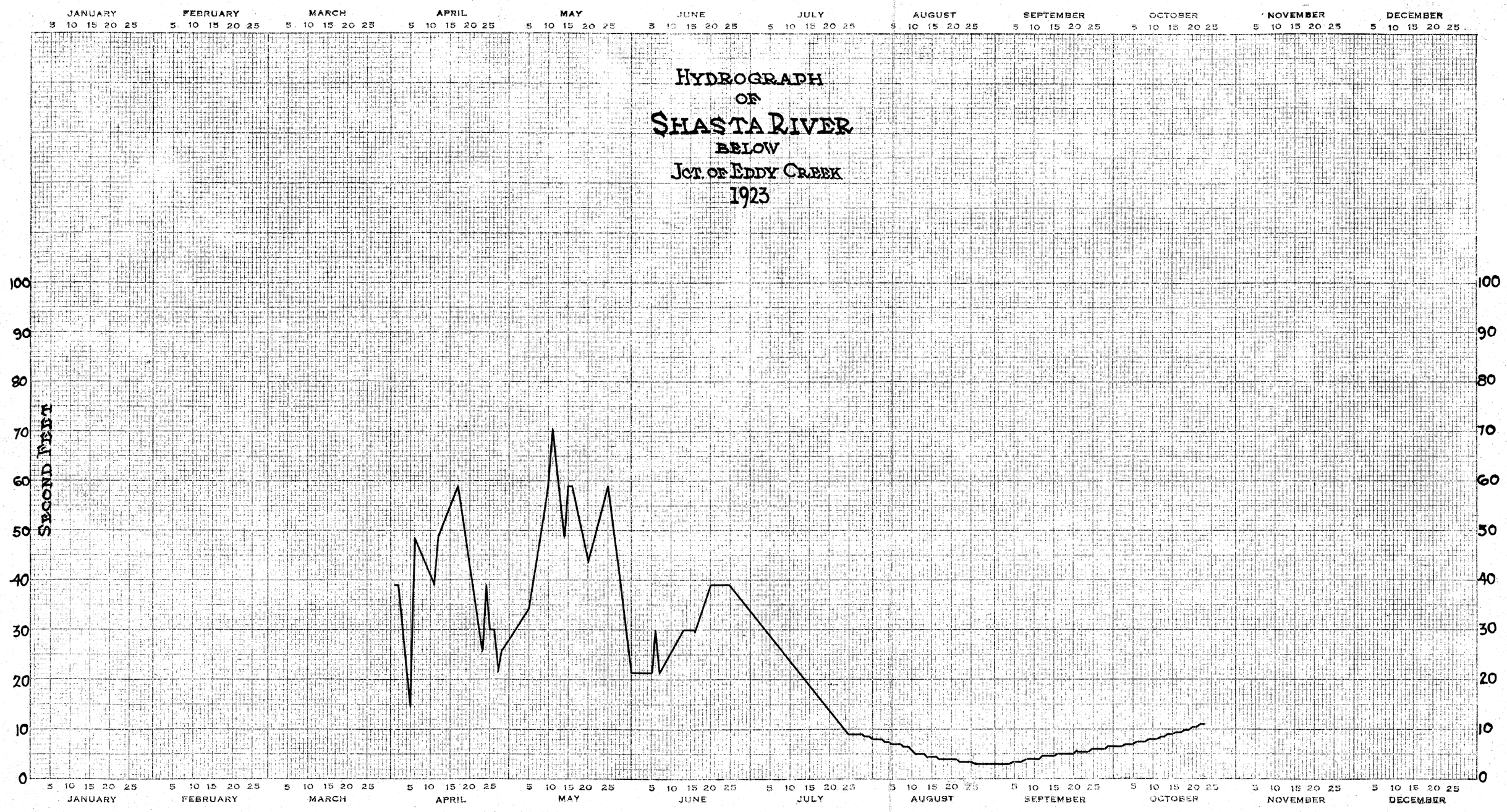
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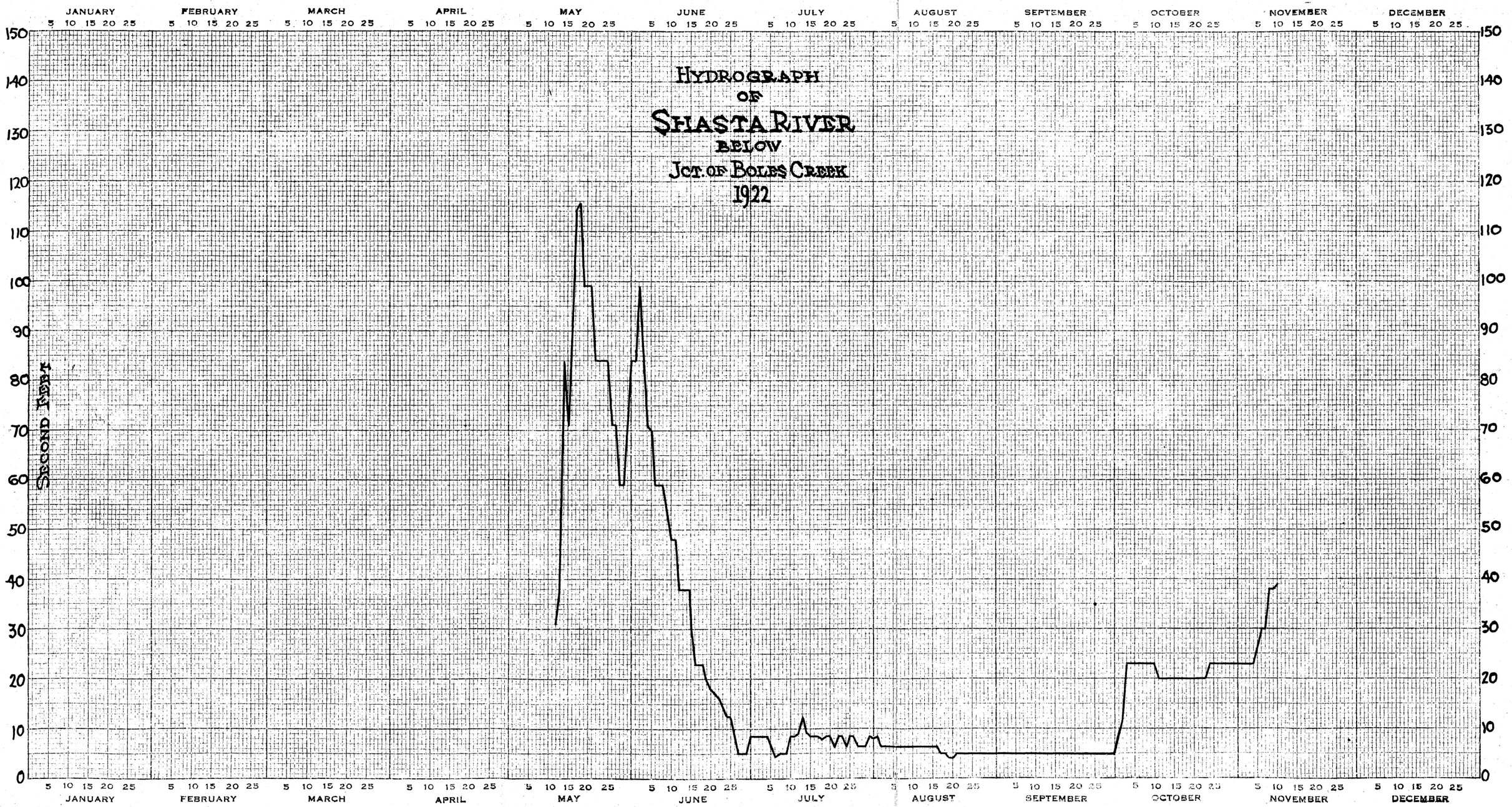
PLATE III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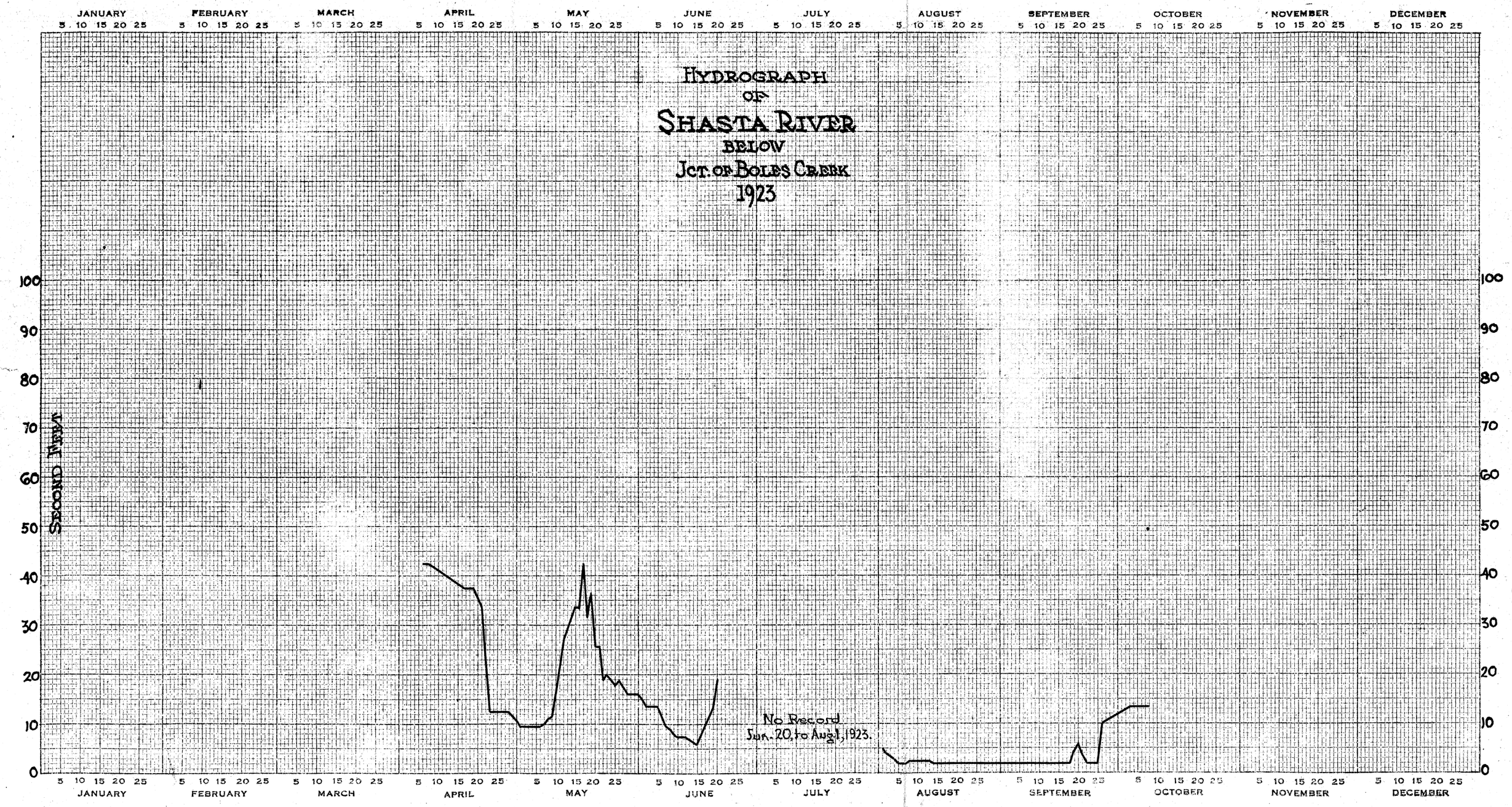
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SECOND FEET
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PLATE V

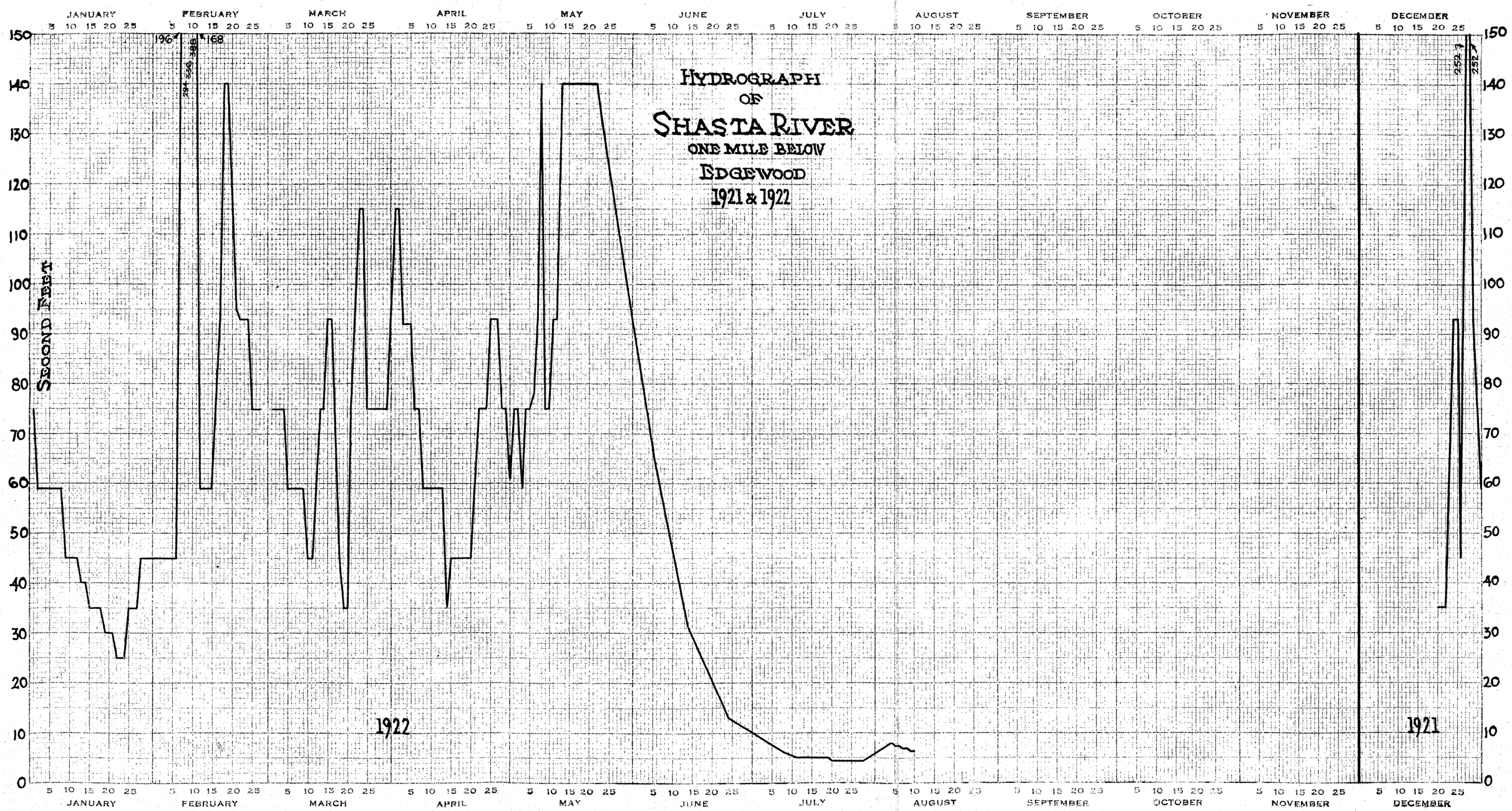
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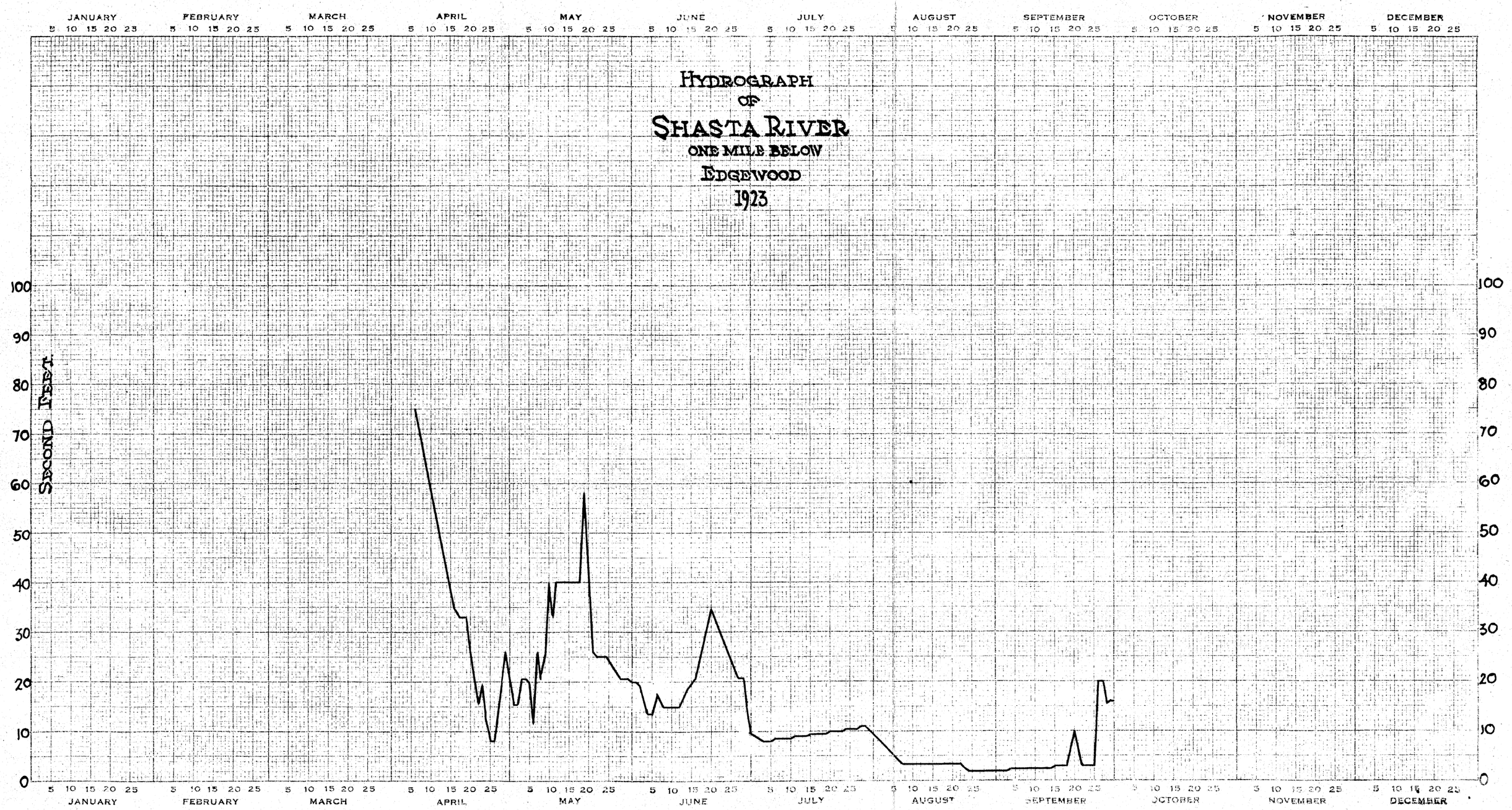
PLATE VI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JULY
AUGUST
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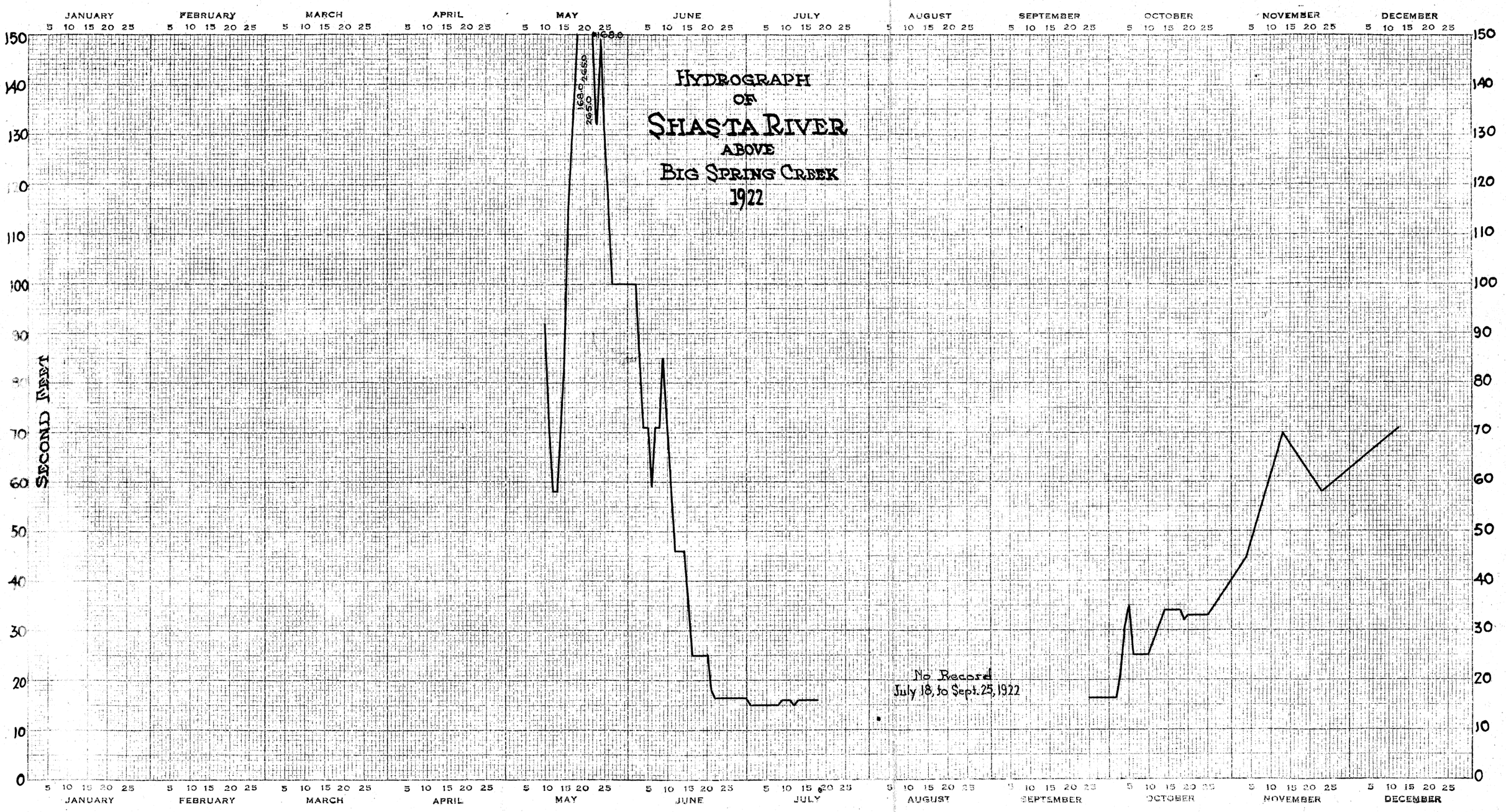
PLATE VII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AUGUST
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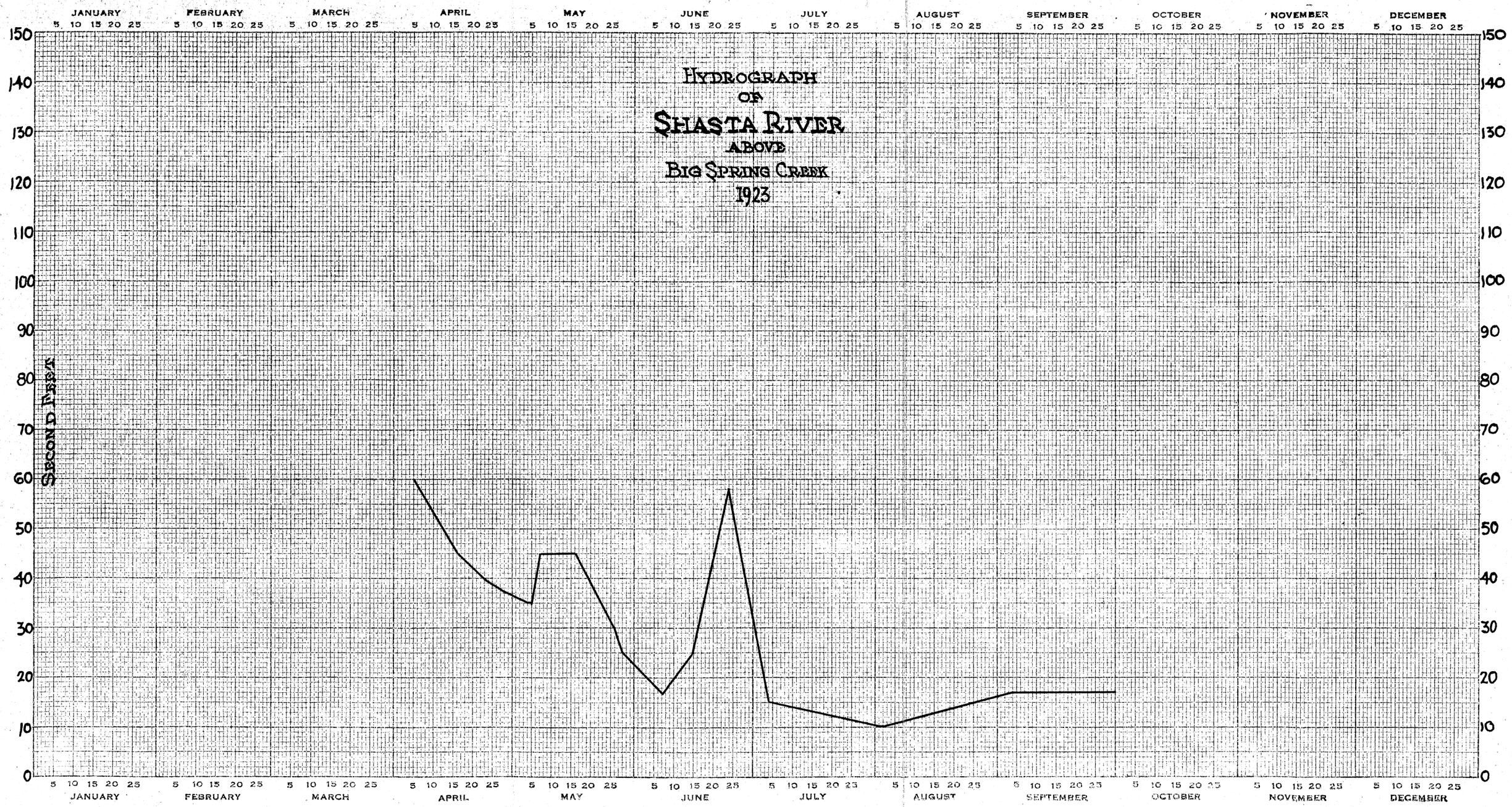
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MARCH
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MAY
JUNE
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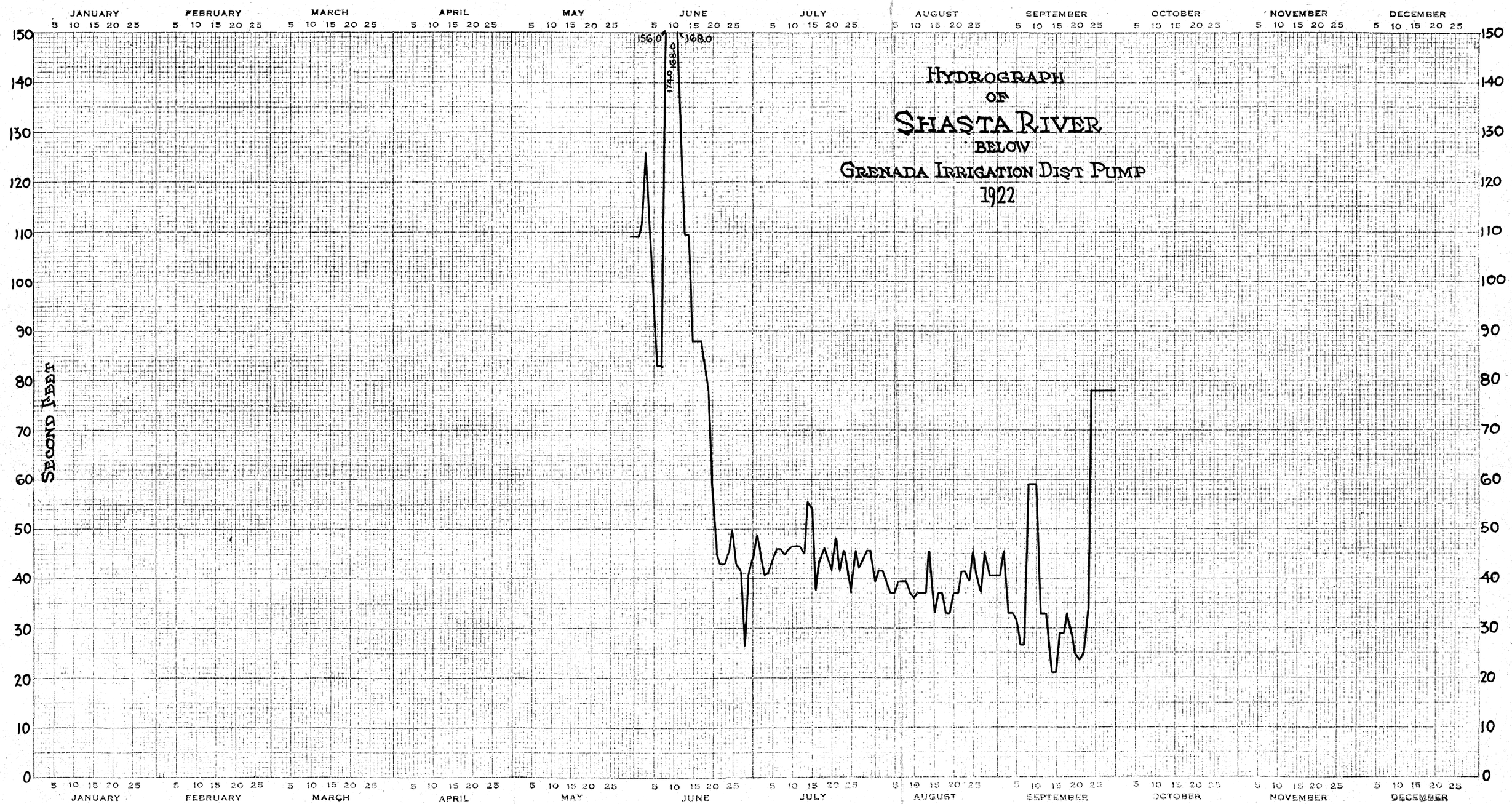
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APRIL
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JUNE
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OCTOBER
NOVEMBER
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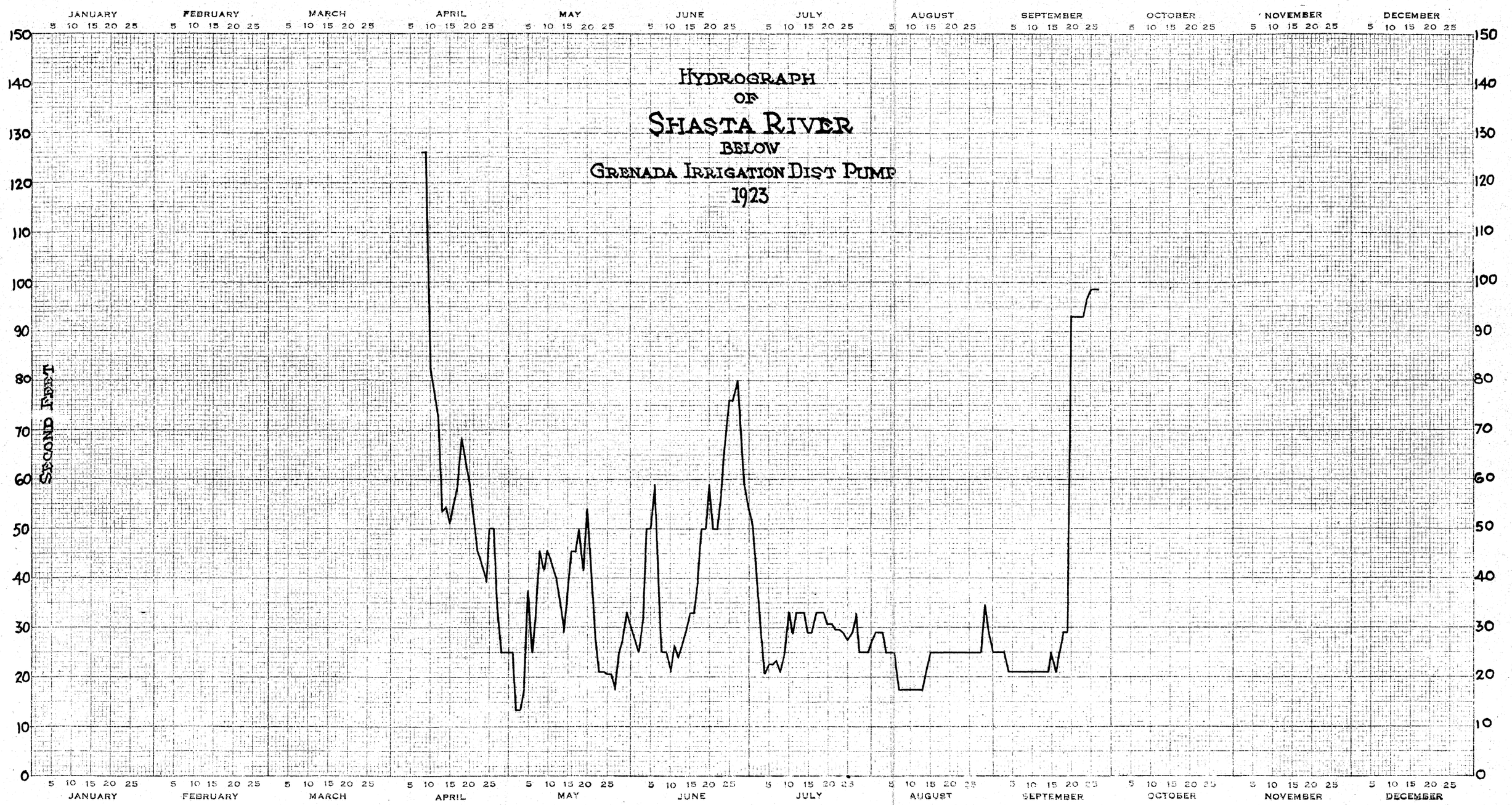
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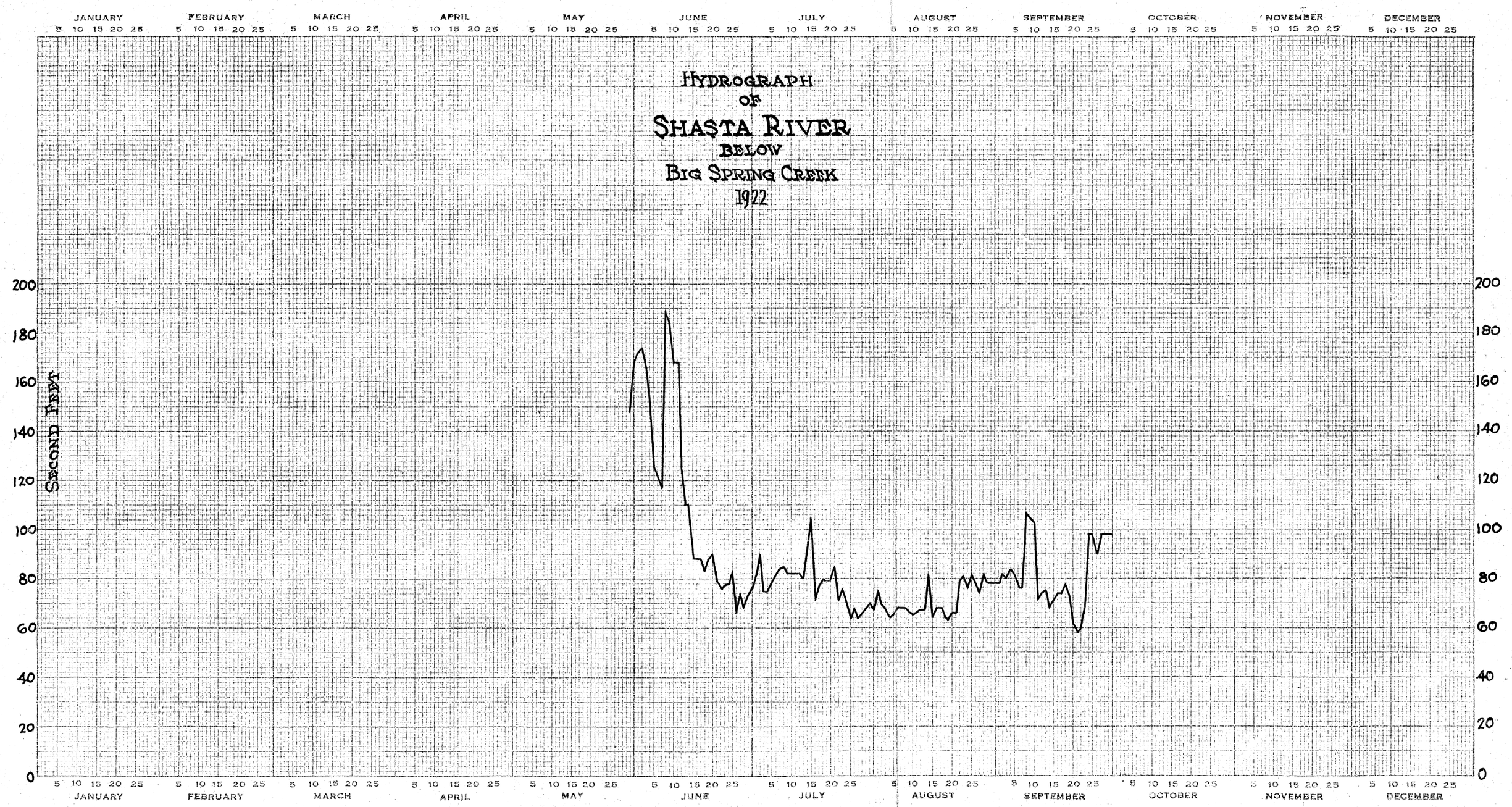
PLATE XI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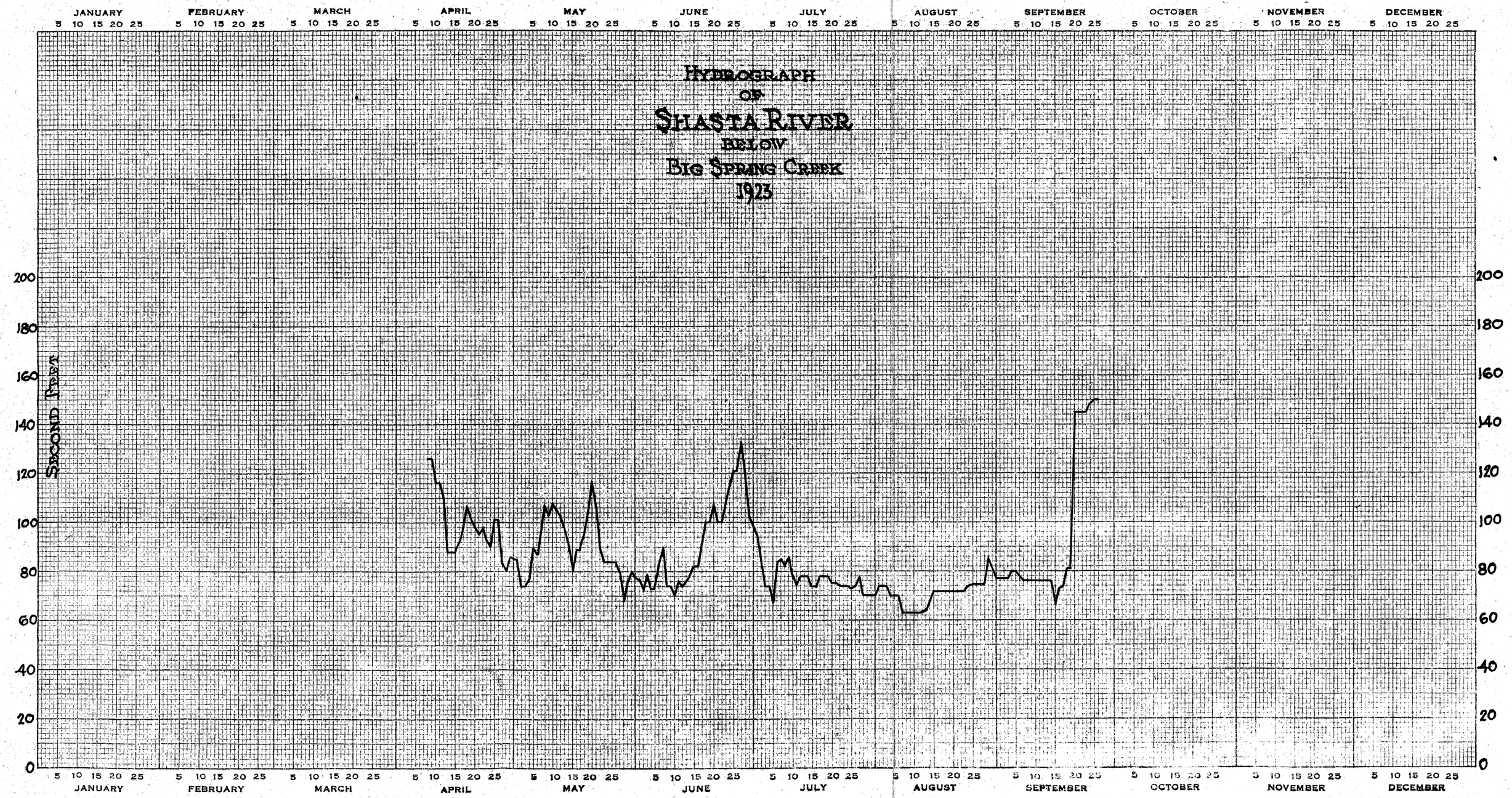
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BIG SPRING CREEK
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JANUARY
FEBRUARY
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AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
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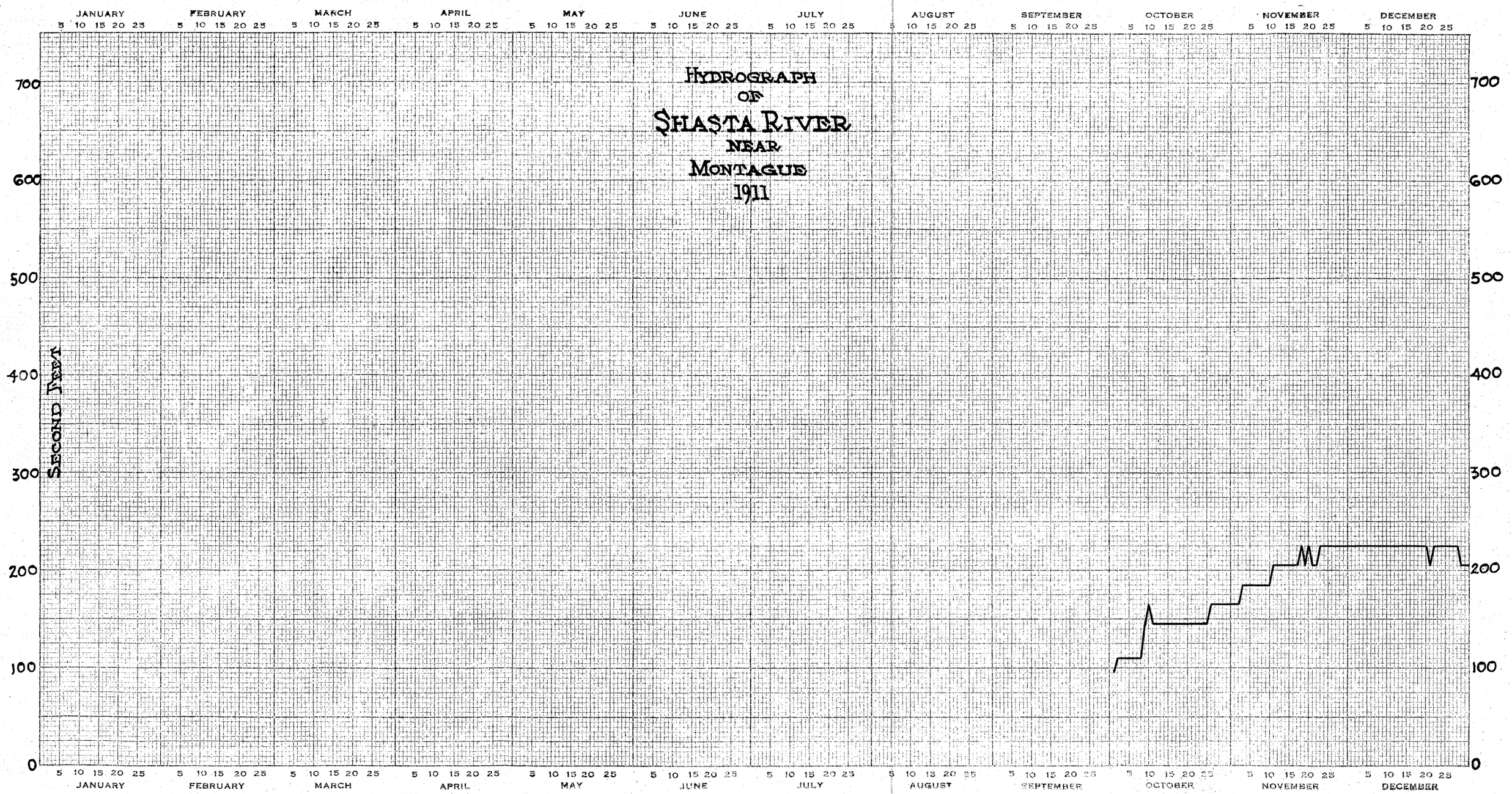
PLATE XIII



Plotted from U.S.G.S. Water Supply Paper 361.

PLATE XIV

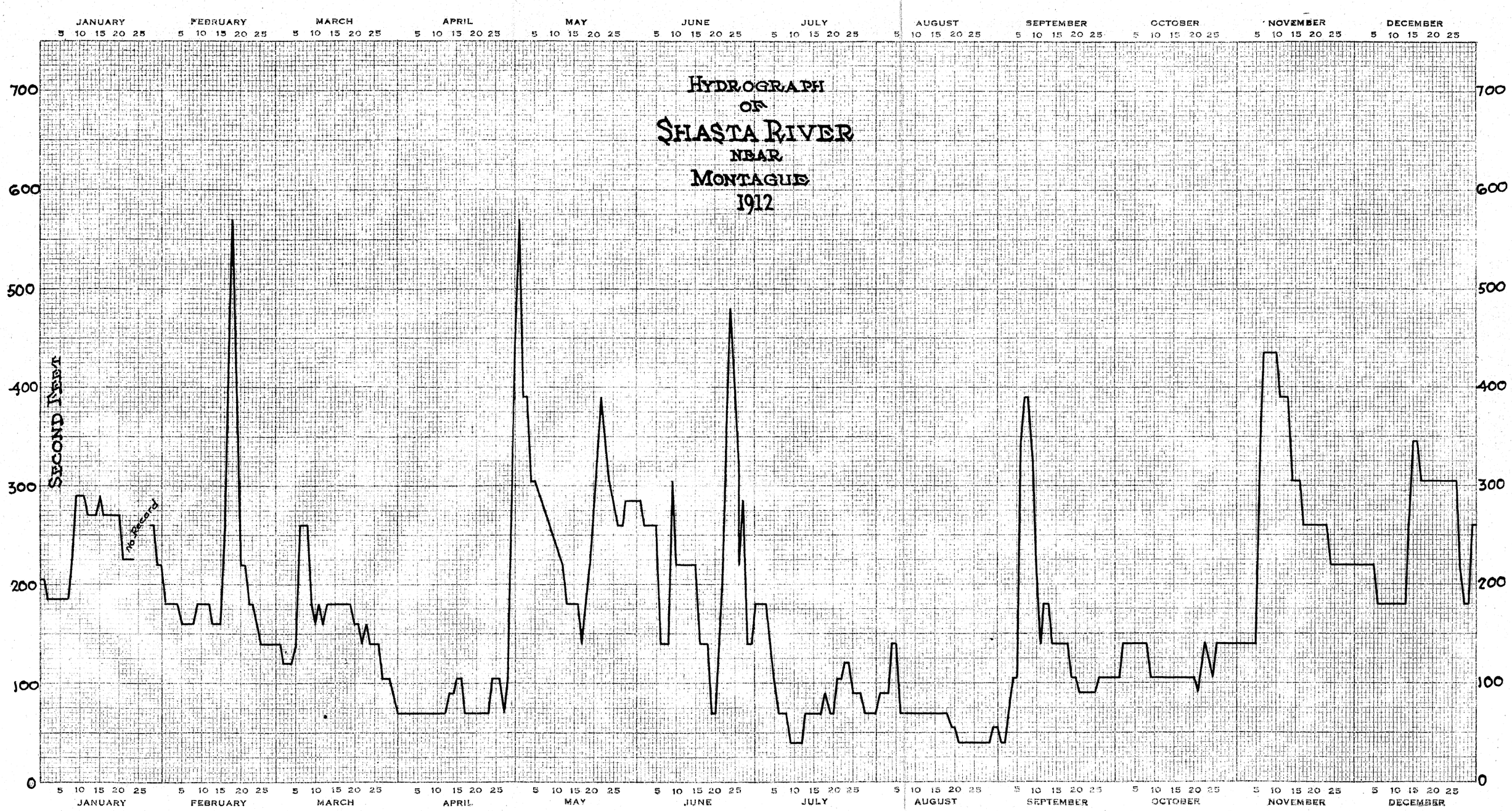


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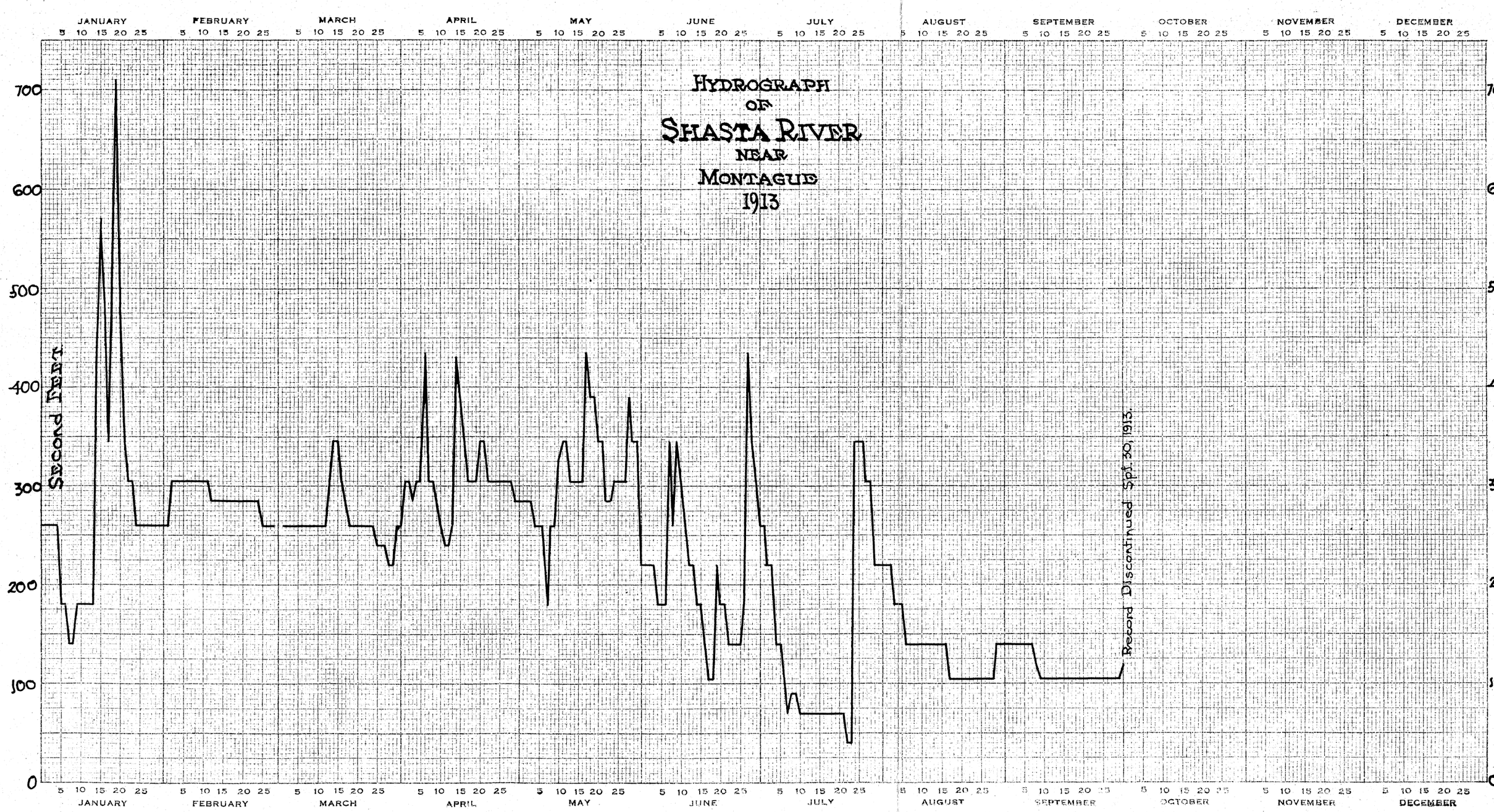
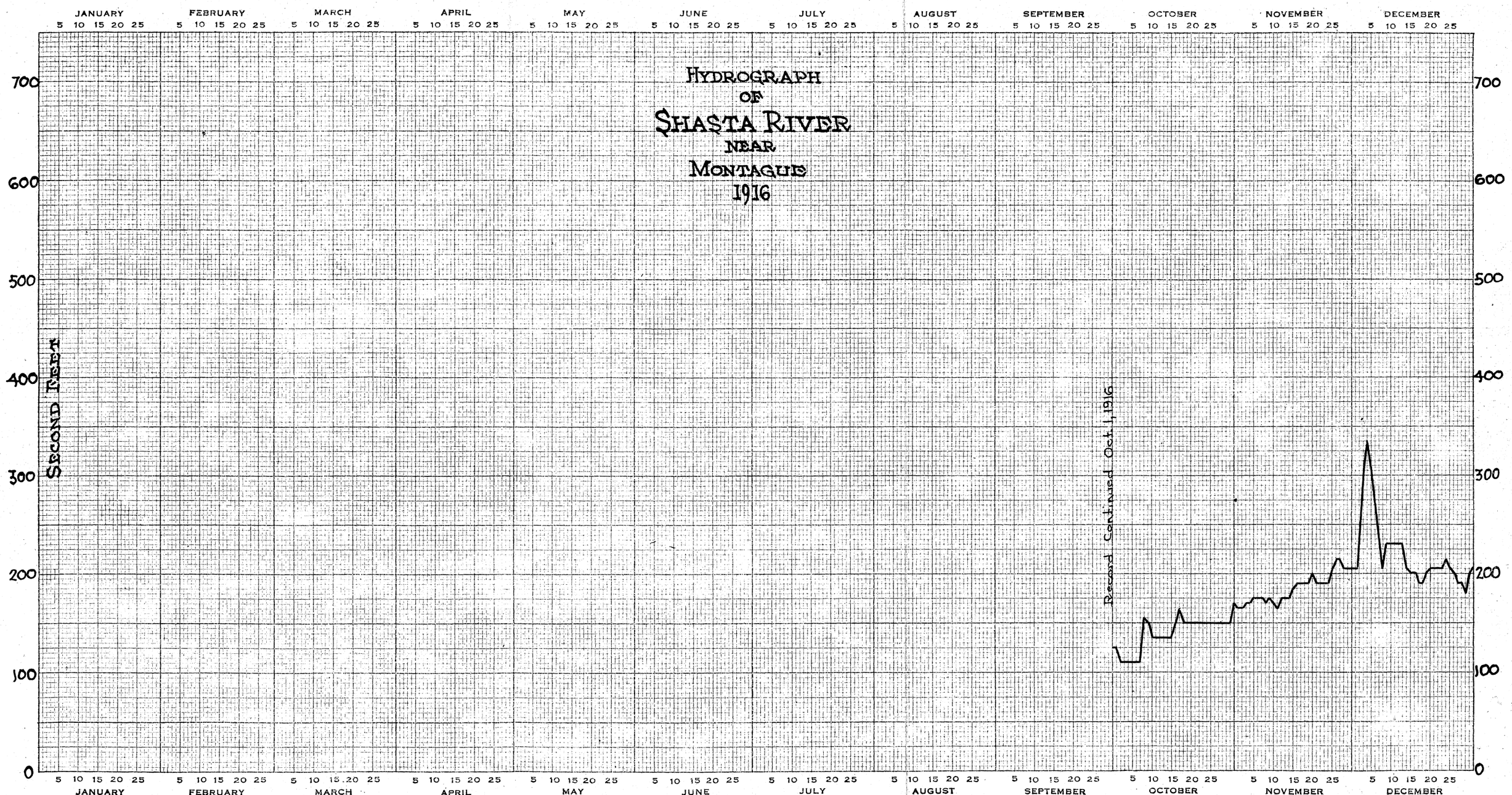
PLATE XV



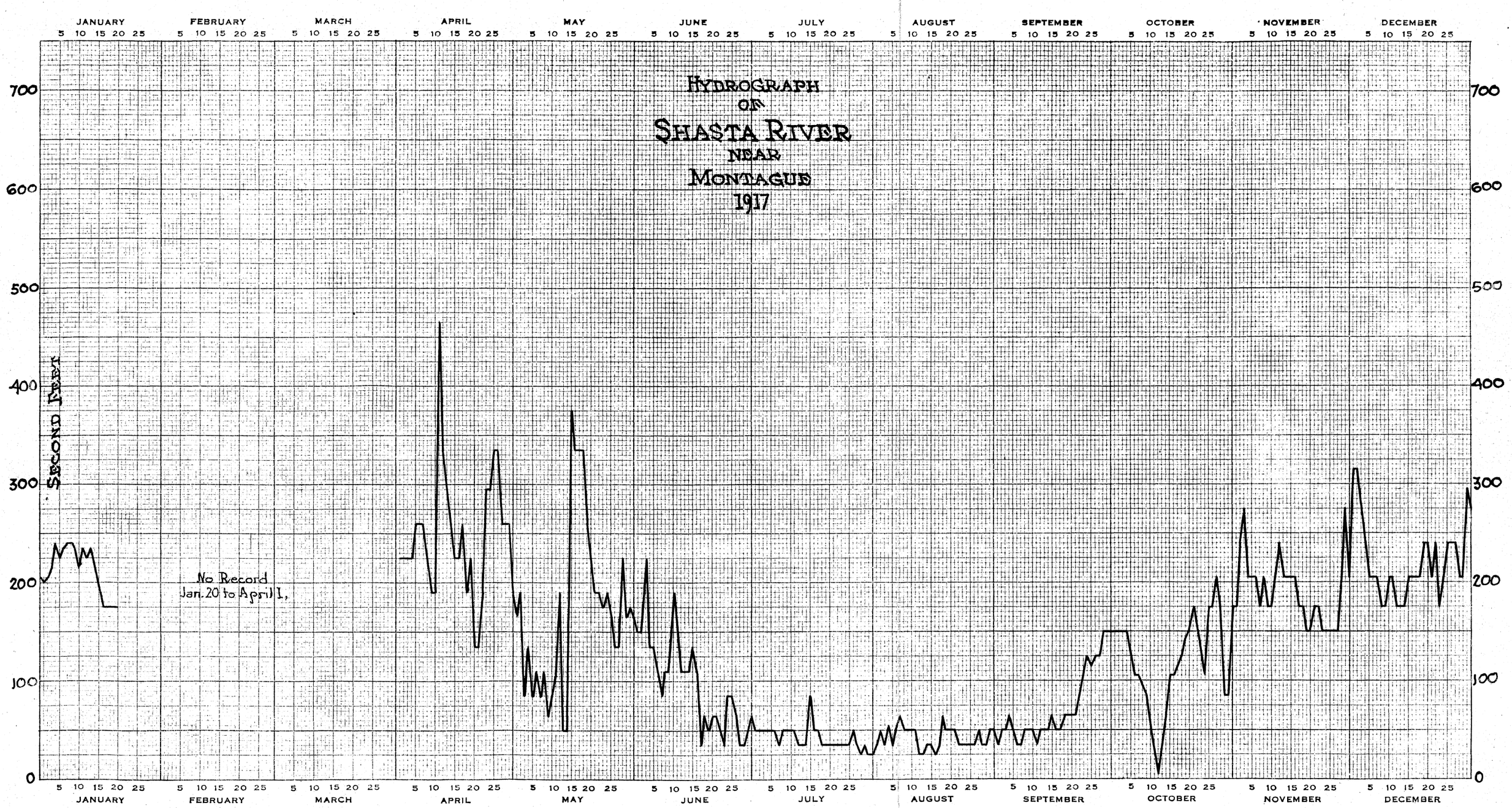
Plotted from U.S.G.S. Water Supply Paper 361.

PLATE XVI



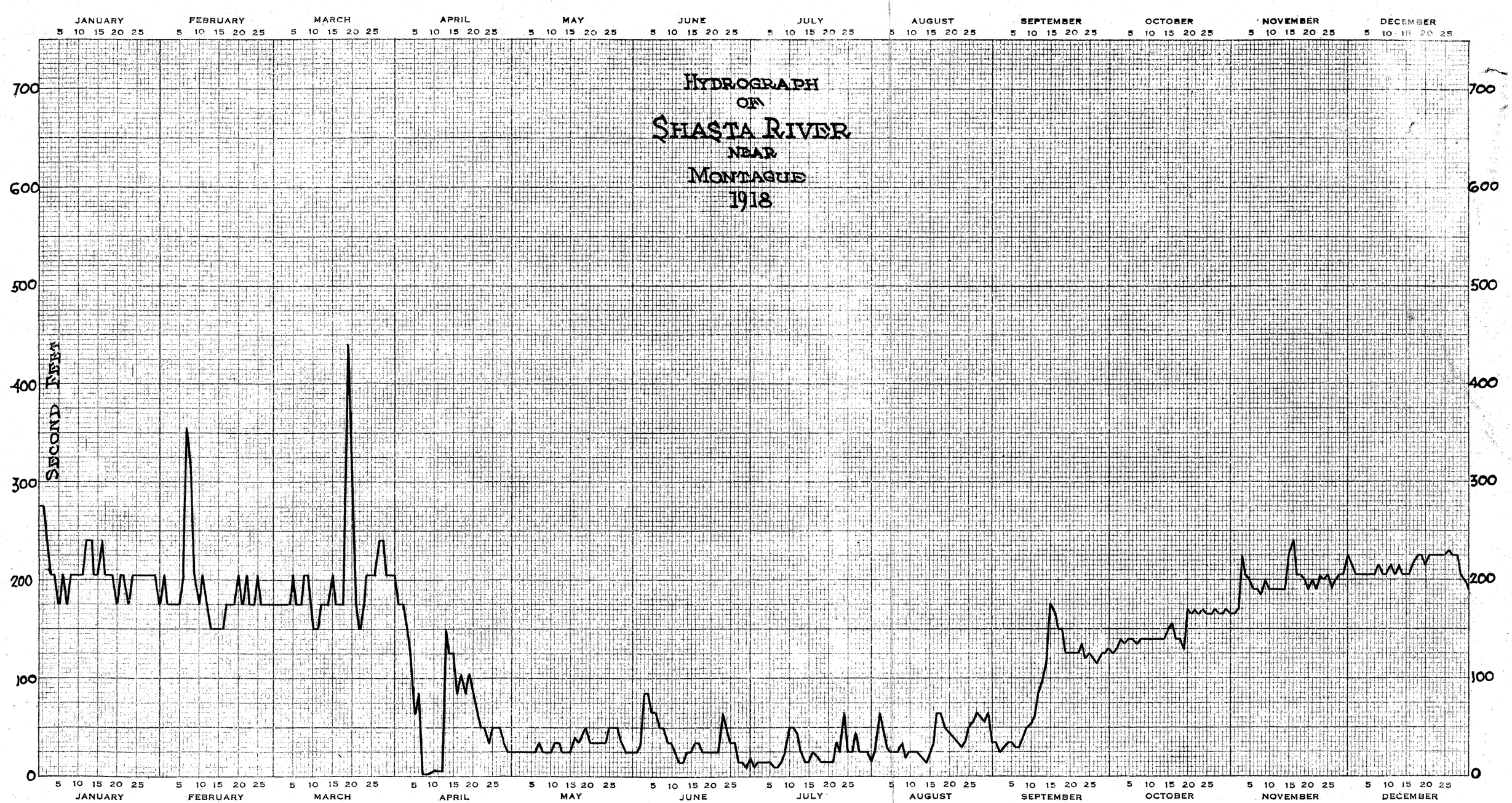
Plotted from U.S.G.S. Water Supply Paper 461.

PLATE XVII



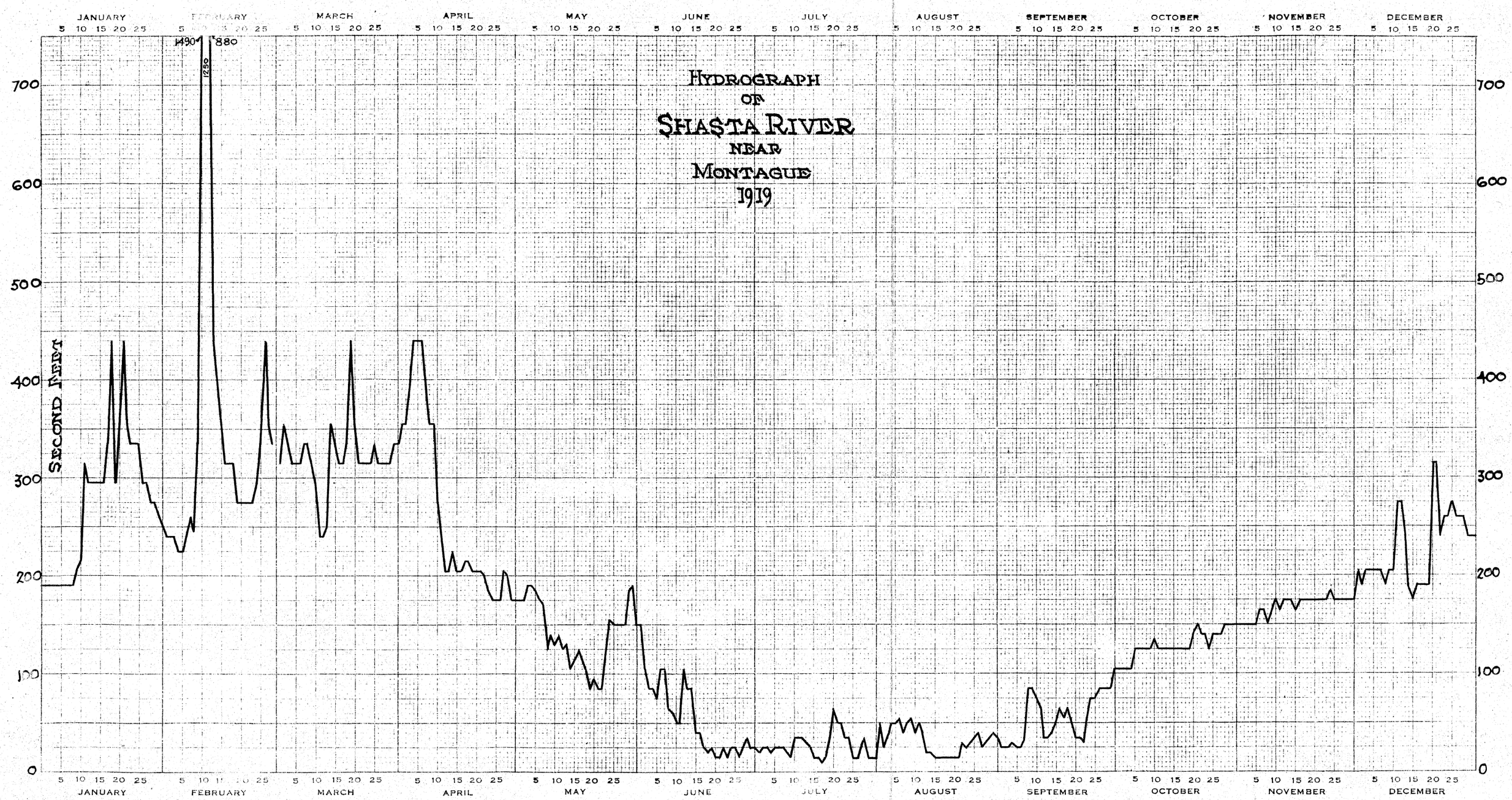
Plotted from U.S.G.S. Water Supply Paper 461 & 481

PLATE XVIII



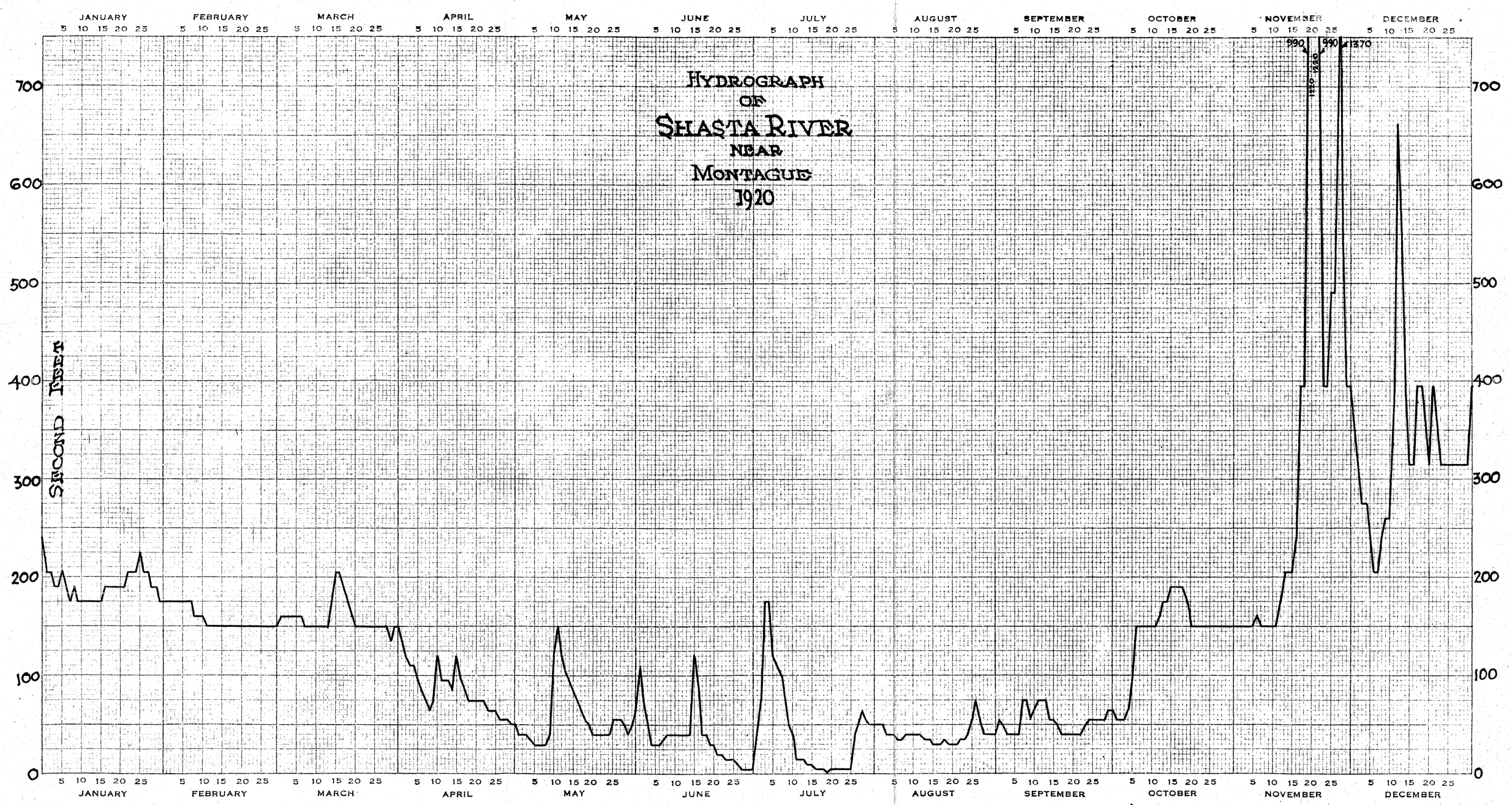
Plotted from U.S.G.S. Water Supply Paper 481 & 511.

PLATE XIX



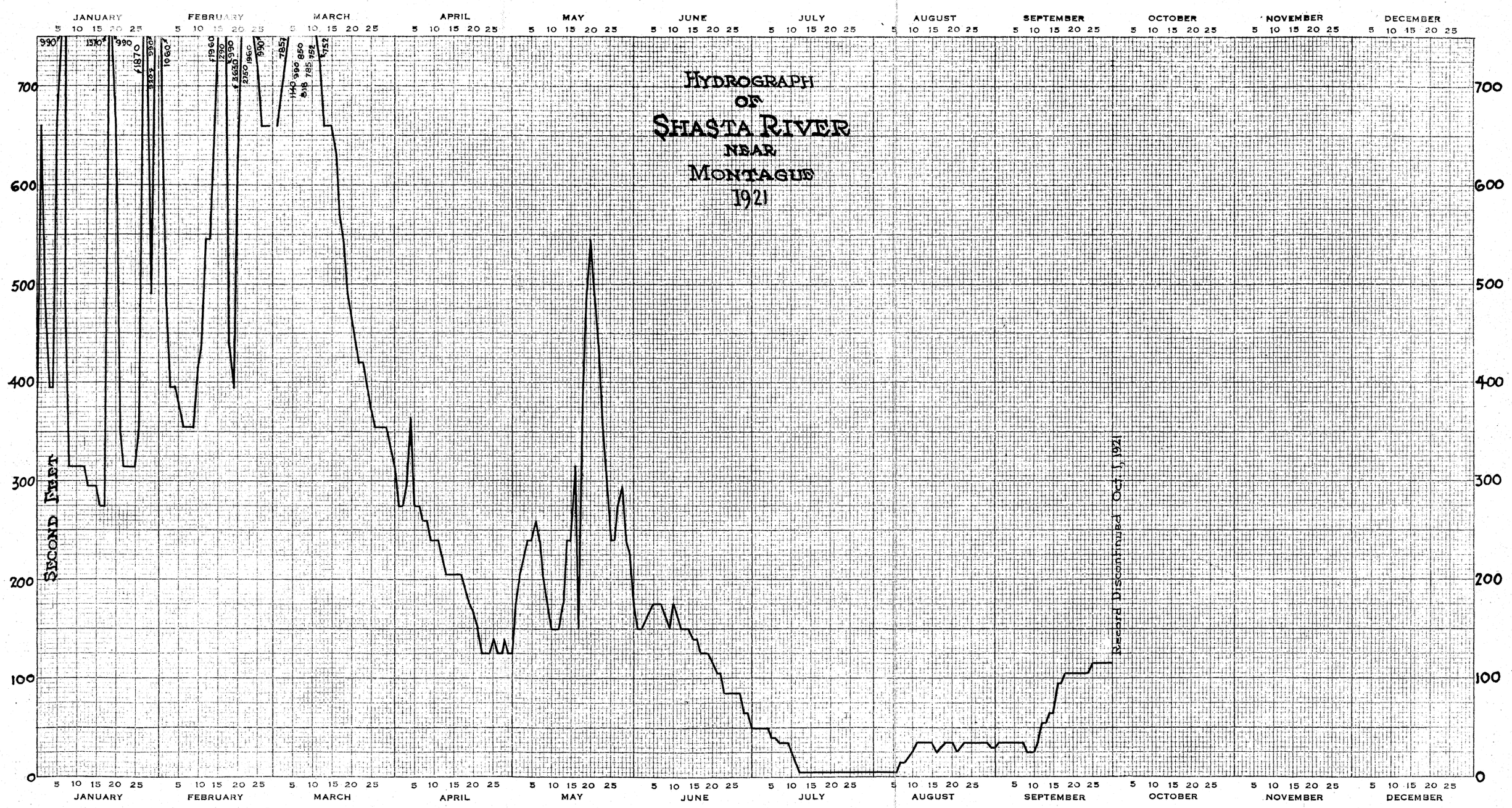
Plotted from U.S.G.S. Water Supply Paper 511.

PLATE XX



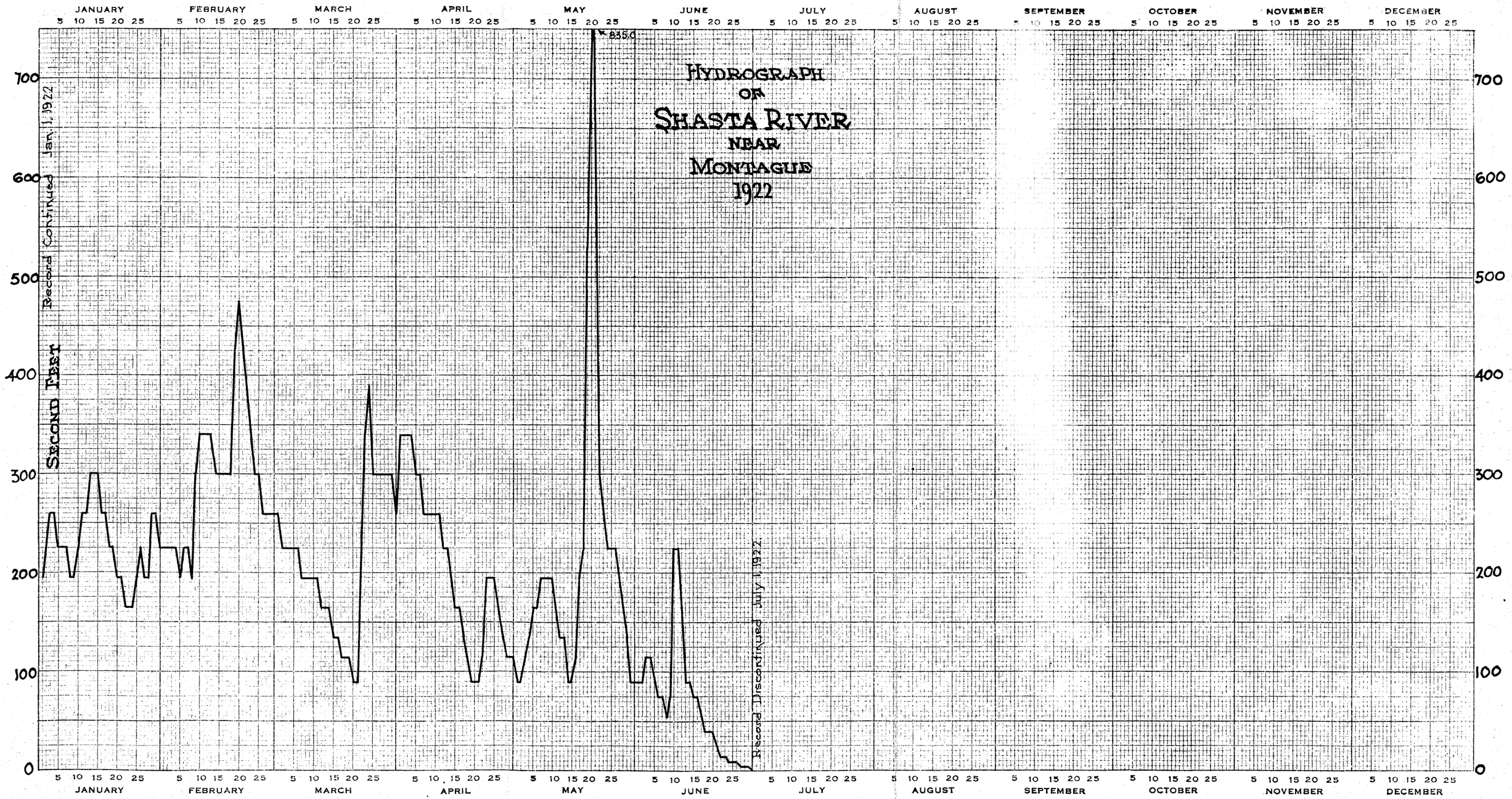
Plotted from U.S.G.S. Water Supply Paper 511
and from unpublished records of U.S.G.S.

PLATE XXI



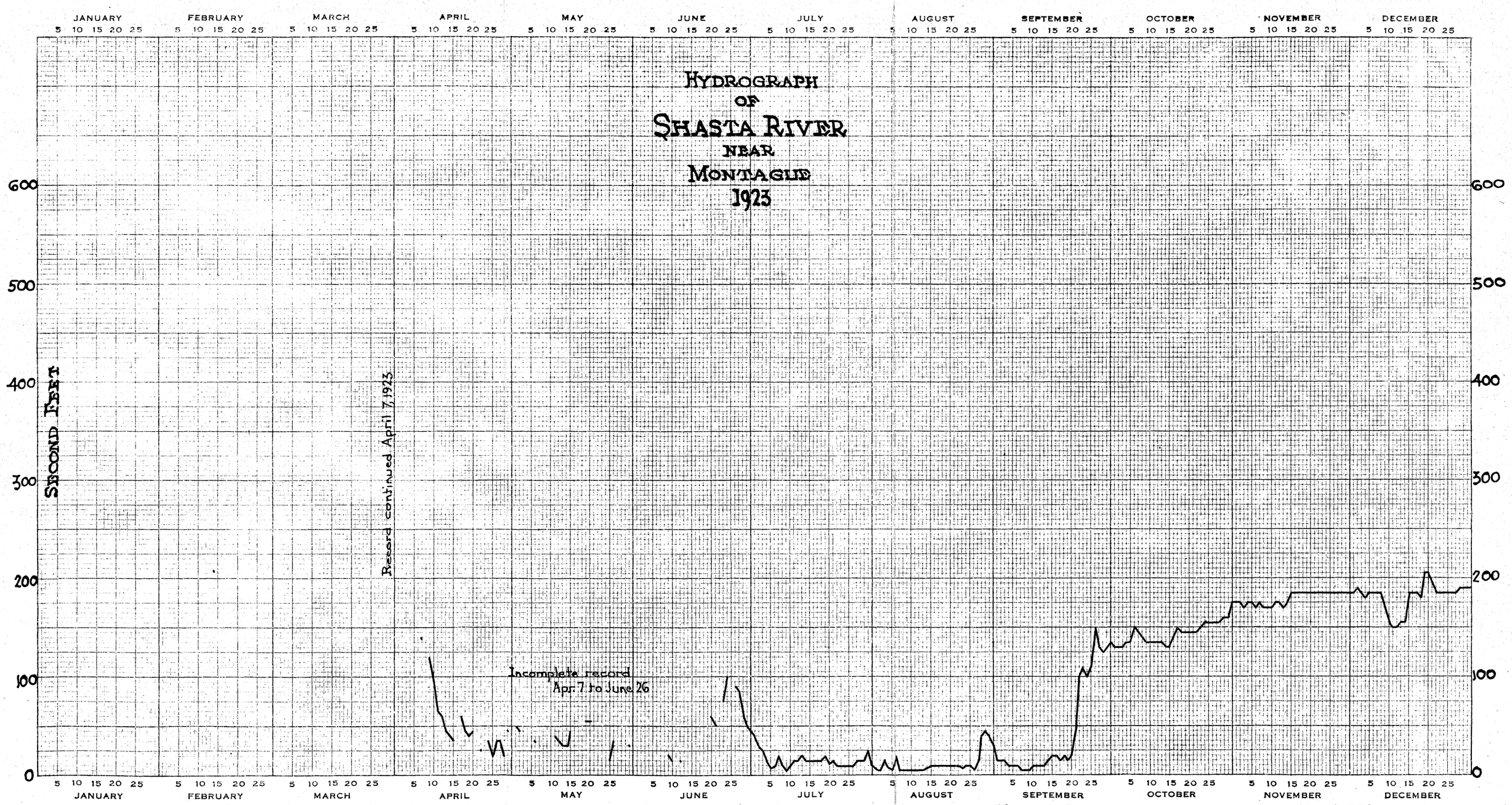
Plotted from unpublished records of U.S.G.S.

PLATE XXII



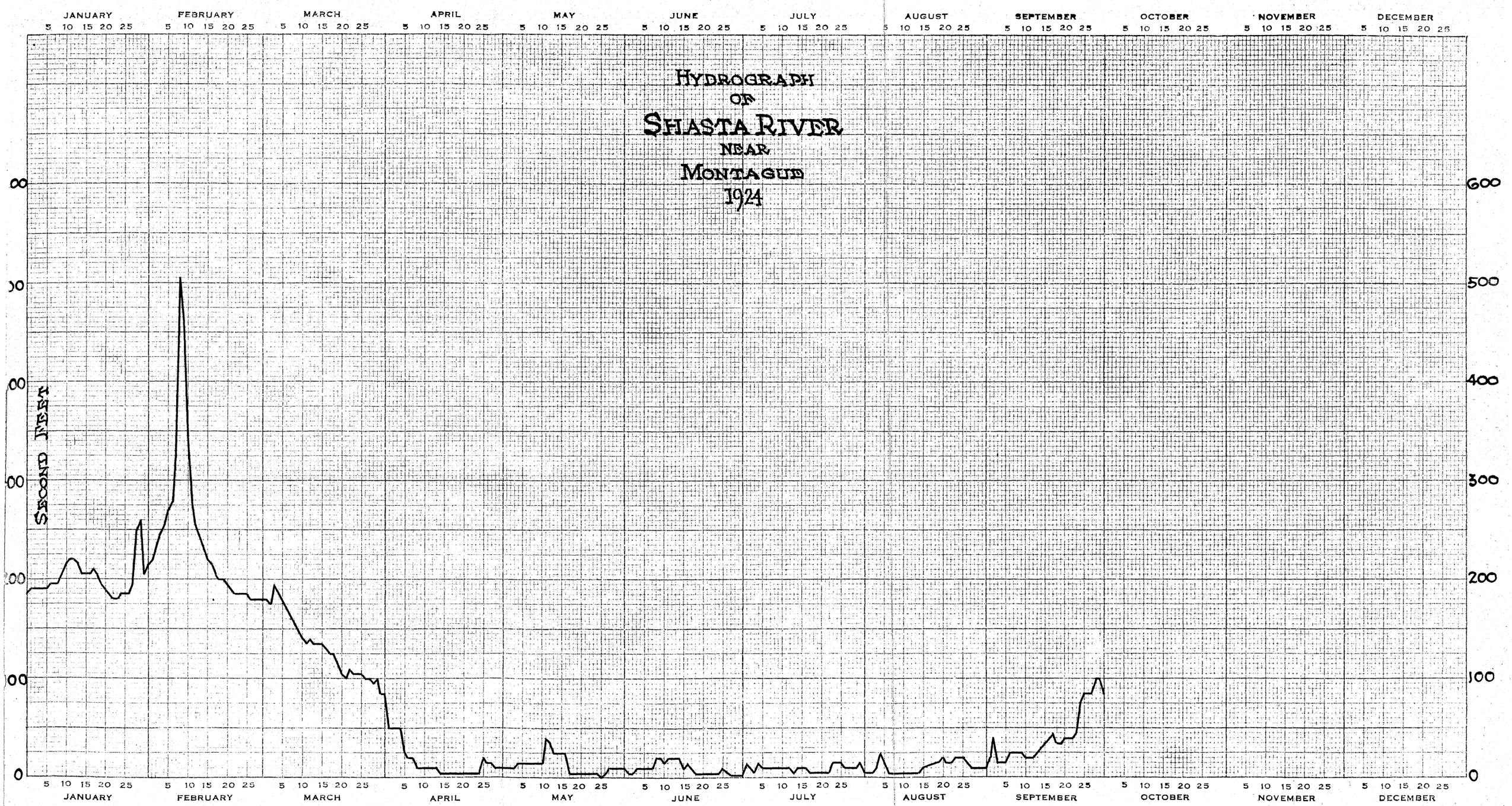
Plotted from unpublished records of U.S.G.S.

PLATE XXIII



Plotted from unpublished records of U.S.G.S.

PLATE XXIV



Plotted from unpublished records of U.S.G.S.

PLATE XXV

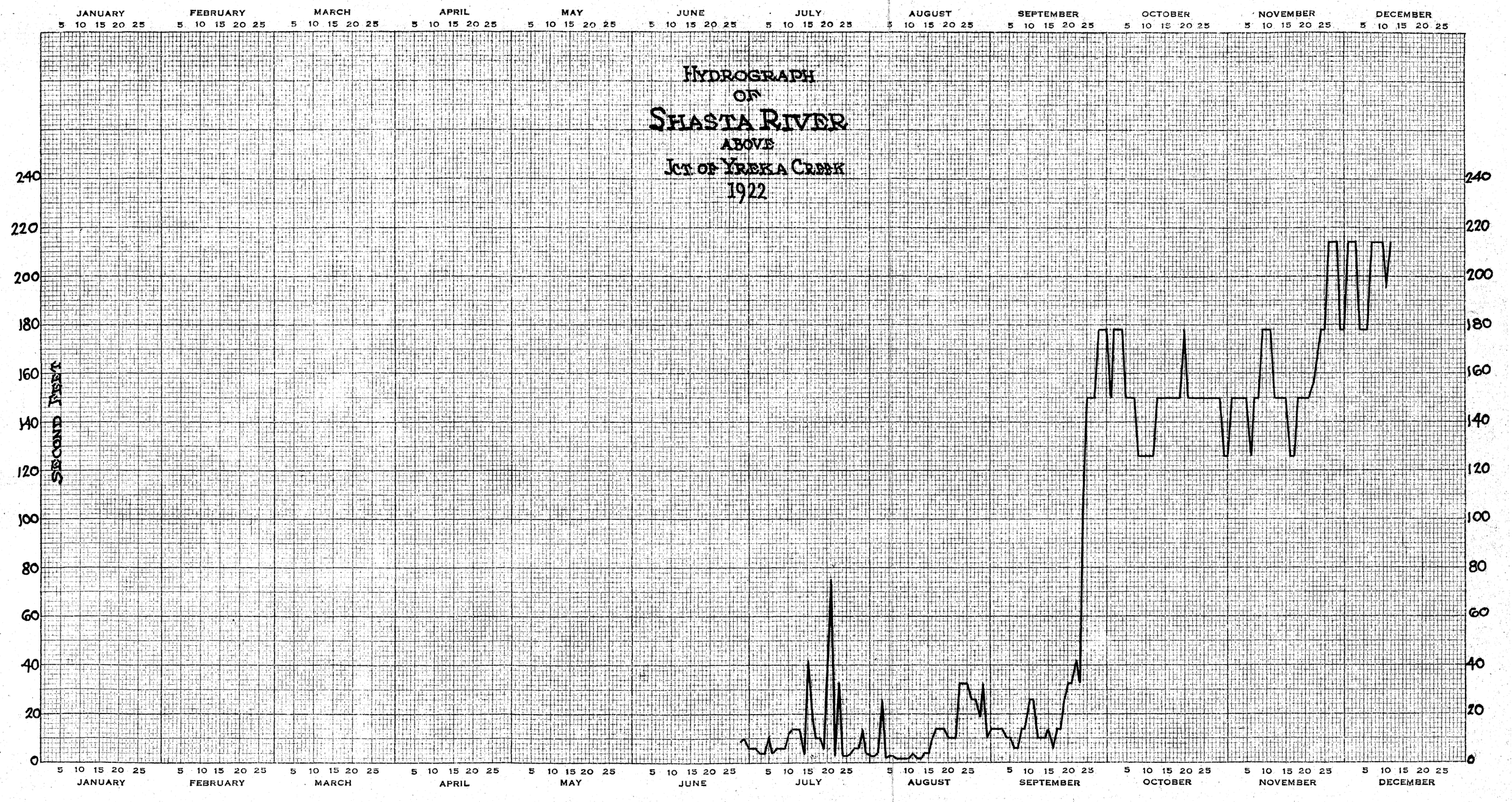

HYDROGRAPH
OF
SHASTA RIVER
ABOVE
JCT OF YREKA CREEK
1922
SECOND FEET
0
20
40
60
80
100
120
140
160
180
200
220
240
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25

PLATE XXVI

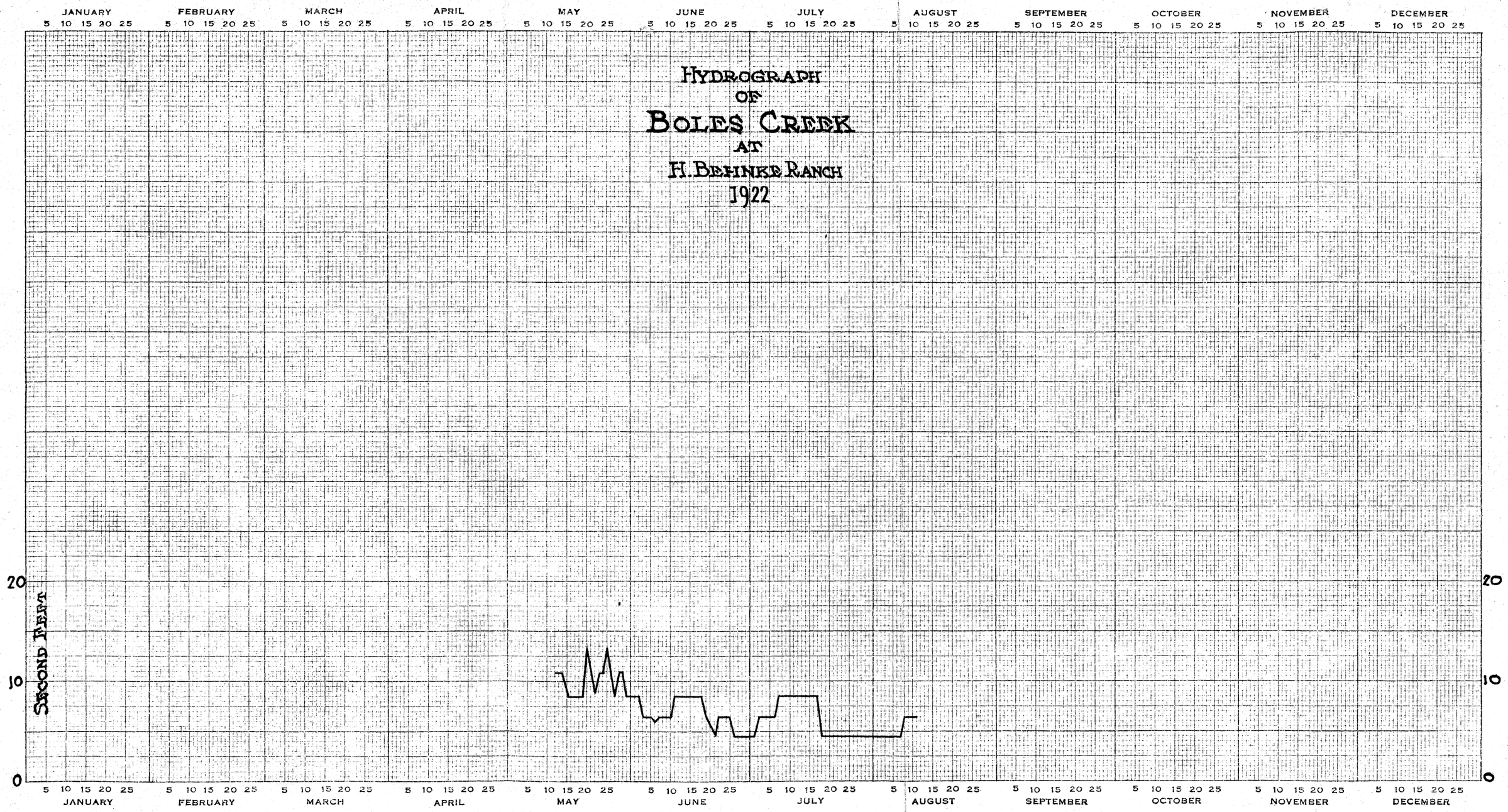

HYDROGRAPH
OF
BOLES CREEK
AT
H. BEHNKE RANCH
1922
SECOND FEET
0
10
20
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25

PLATE XXVII

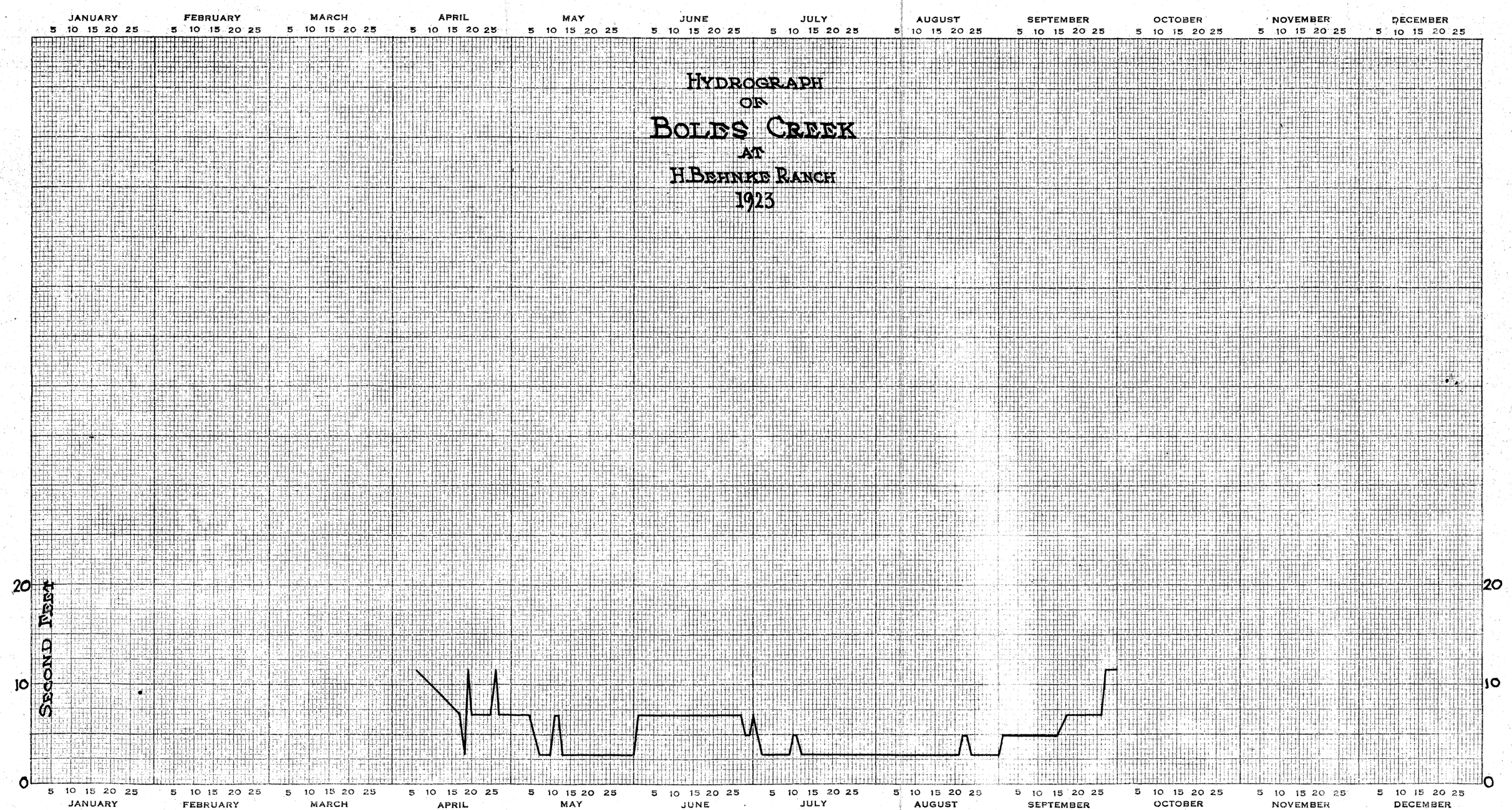

HYDROGRAPH
OF
BOLES CREEK
AT
H. BEHNKE RANCH
1923
SECOND FEET
0
10
20
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25

PLATE XXVIII

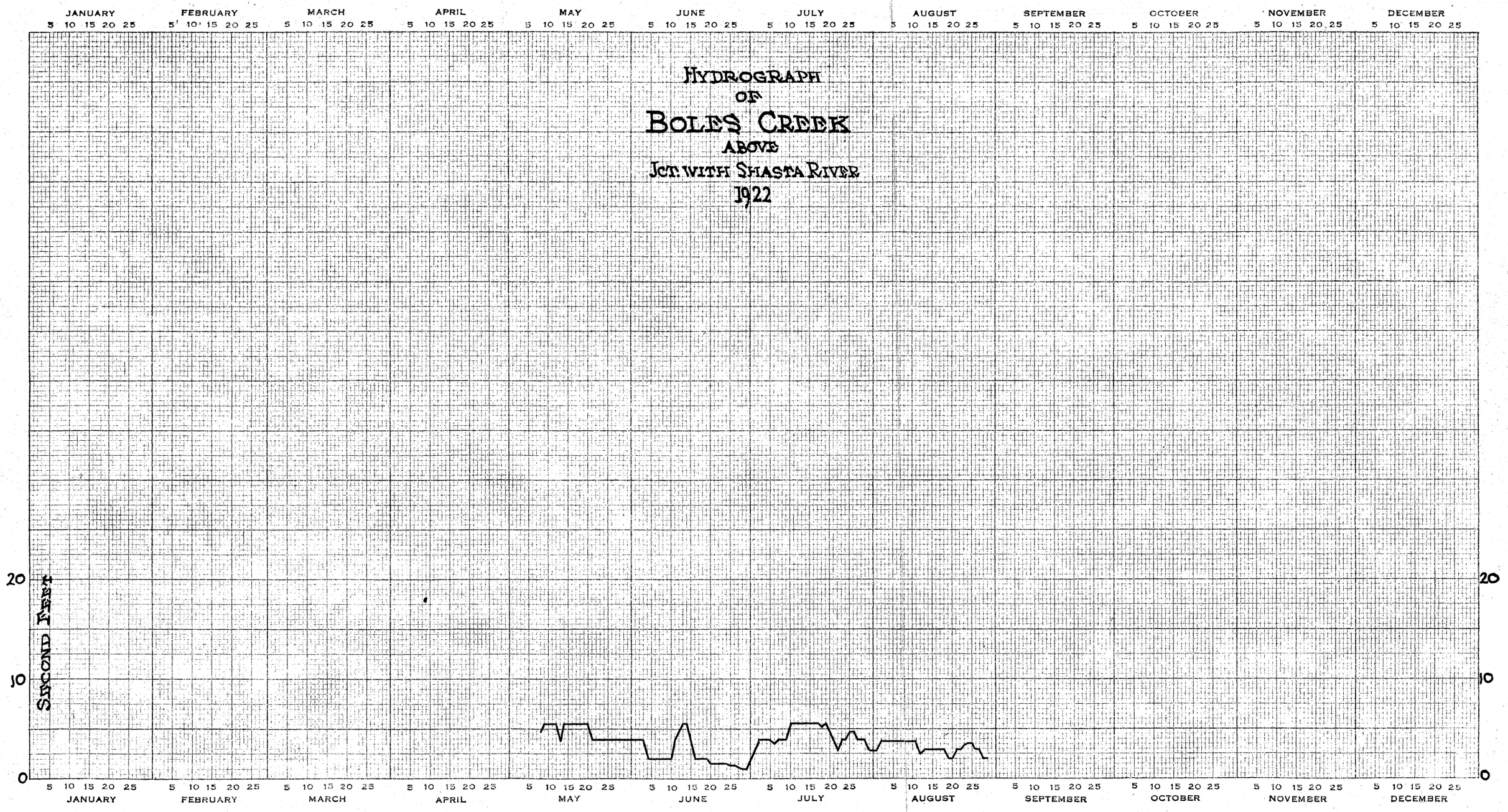


PLATE XXIX

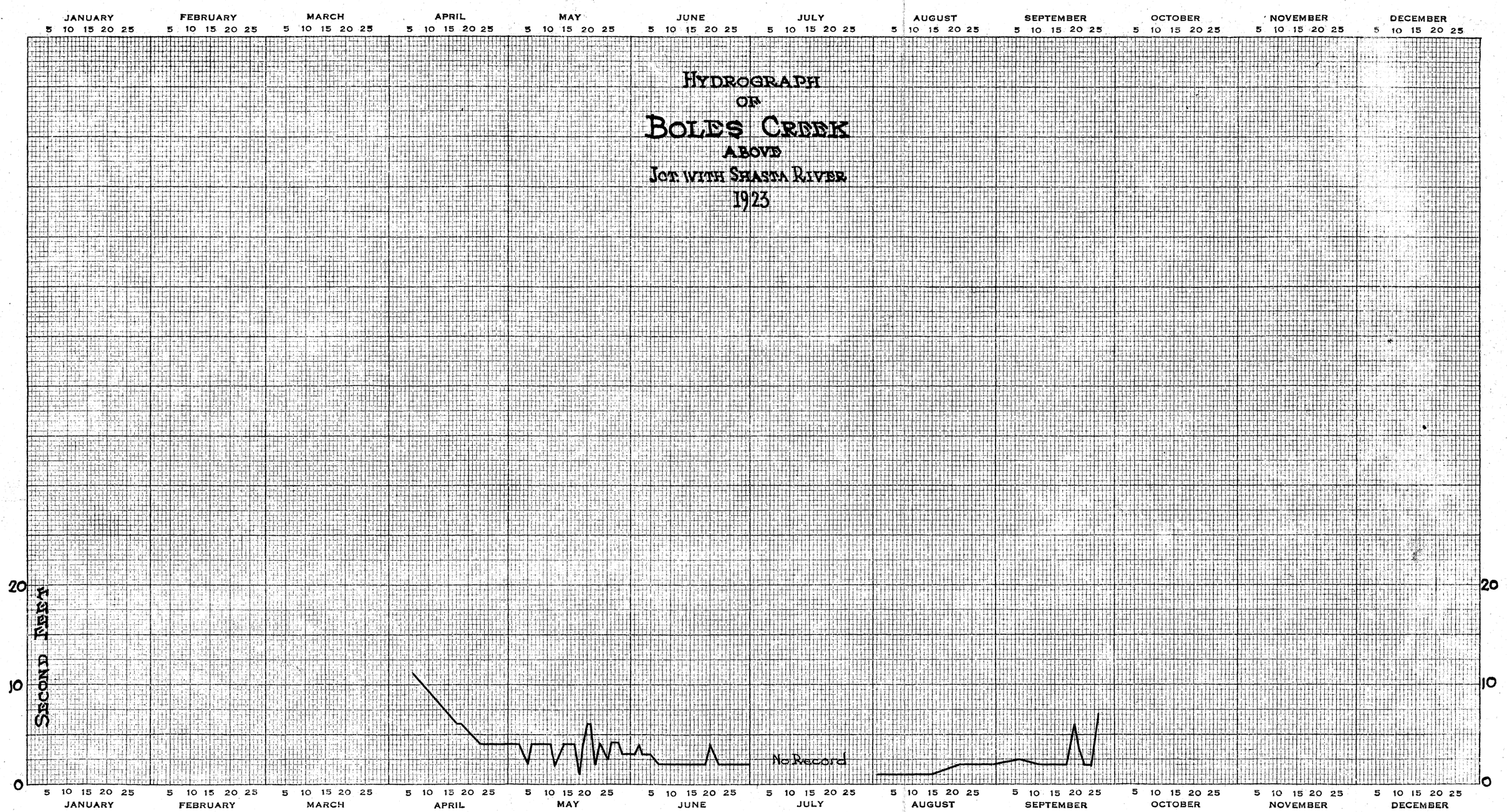

HYDROGRAPH
OF
BOLES CREEK
ABOVE
JCT. WITH SHASTA RIVER
1923
SECOND FEET
20
10
0
No Record
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25

PLATE XXX

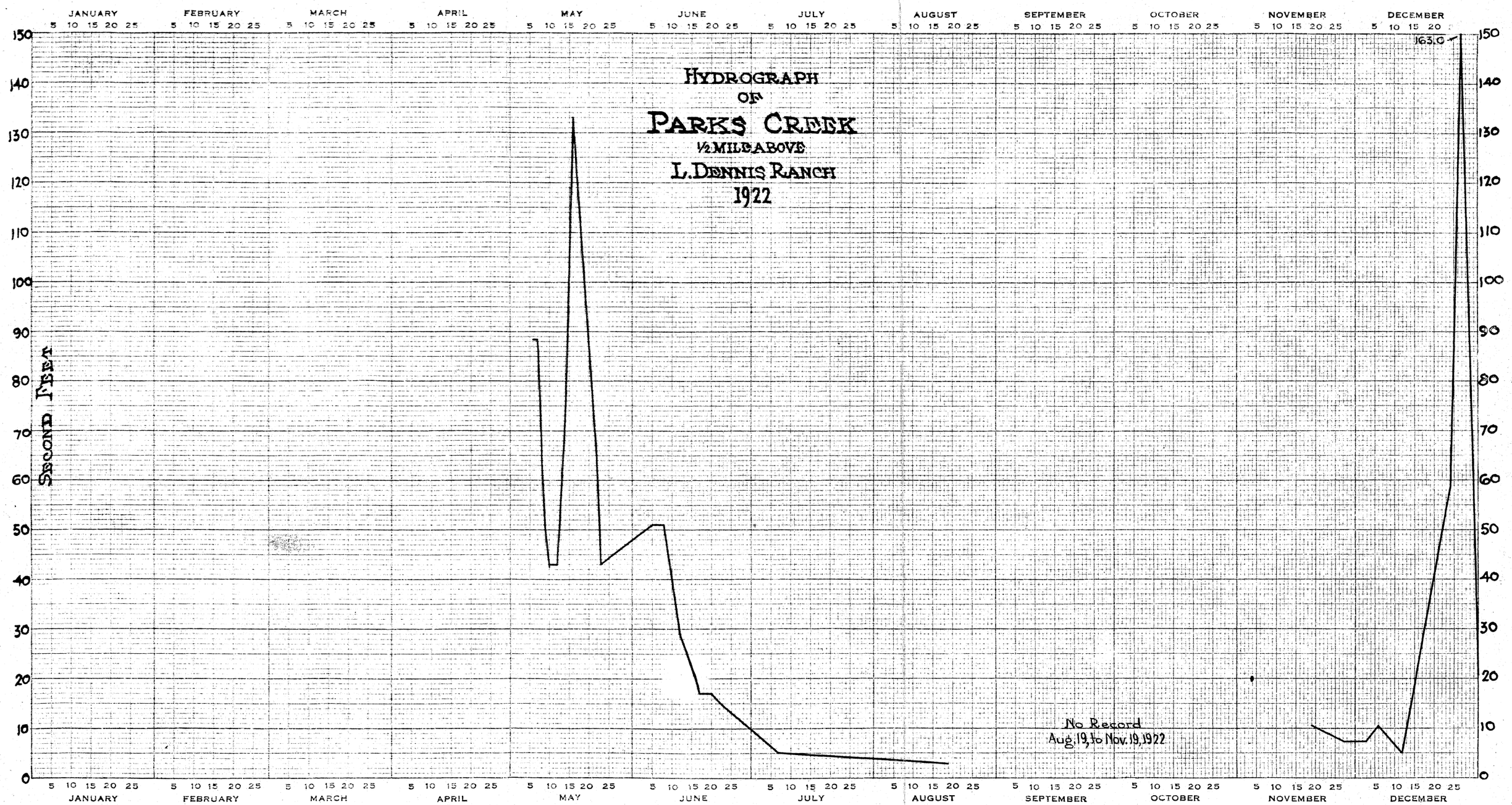

HYDROGRAPH
OF
PARKS CREEK
½ MILE ABOVE
L. DENNIS RANCH
1922
SECOND FEET
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
163.0
No Record
Aug. 19, to Nov. 19, 1922

PLATE XXXI

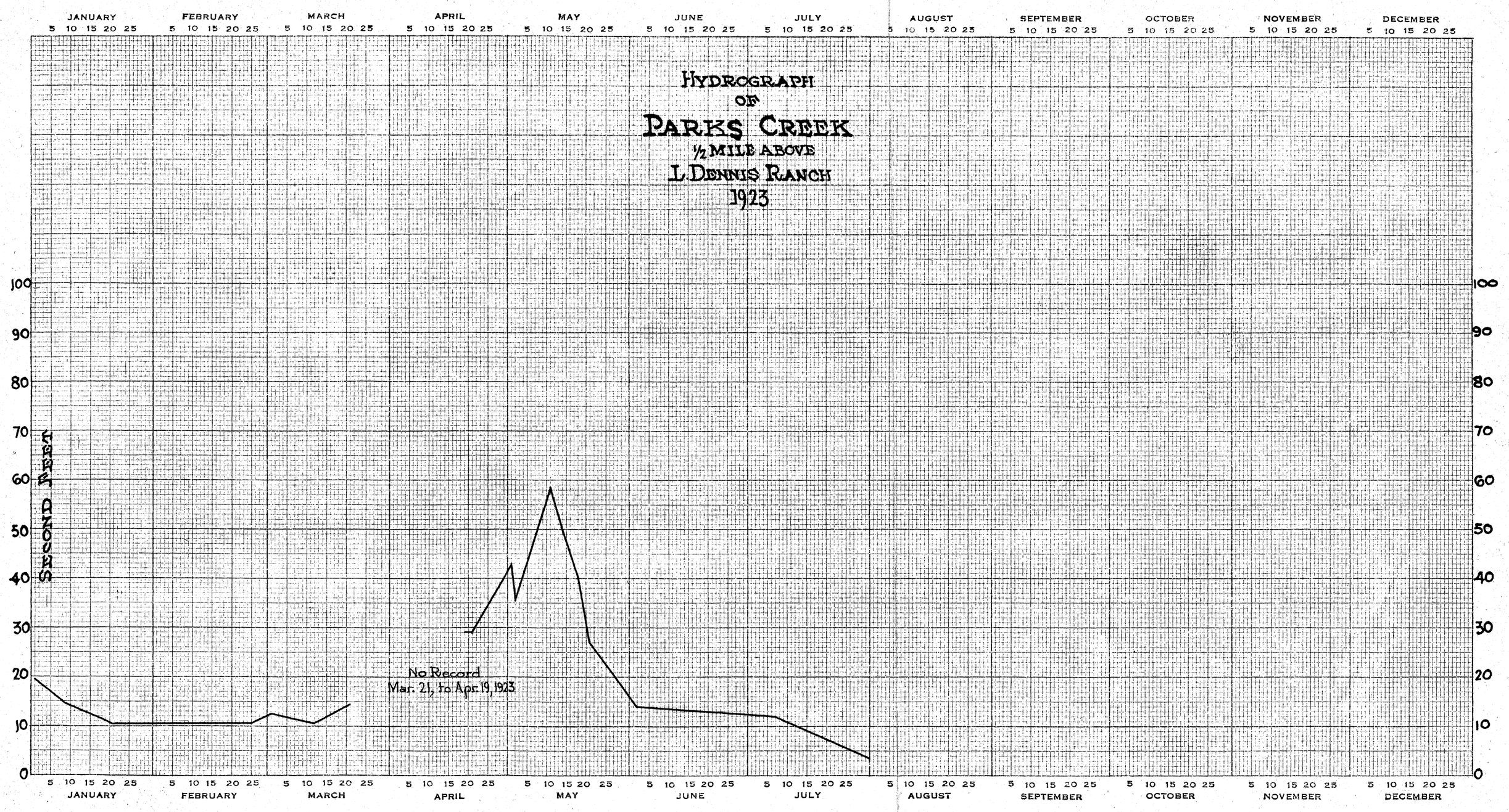

HYDROGRAPH
OF
PARKS CREEK
½ MILE ABOVE
L. DENNIS RANCH
1923
SECOND FEET
No Record
Mar. 21, to Apr. 19, 1923
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25
0
10
20
30
40
50
60
70
80
90
100

PLATE XXXII

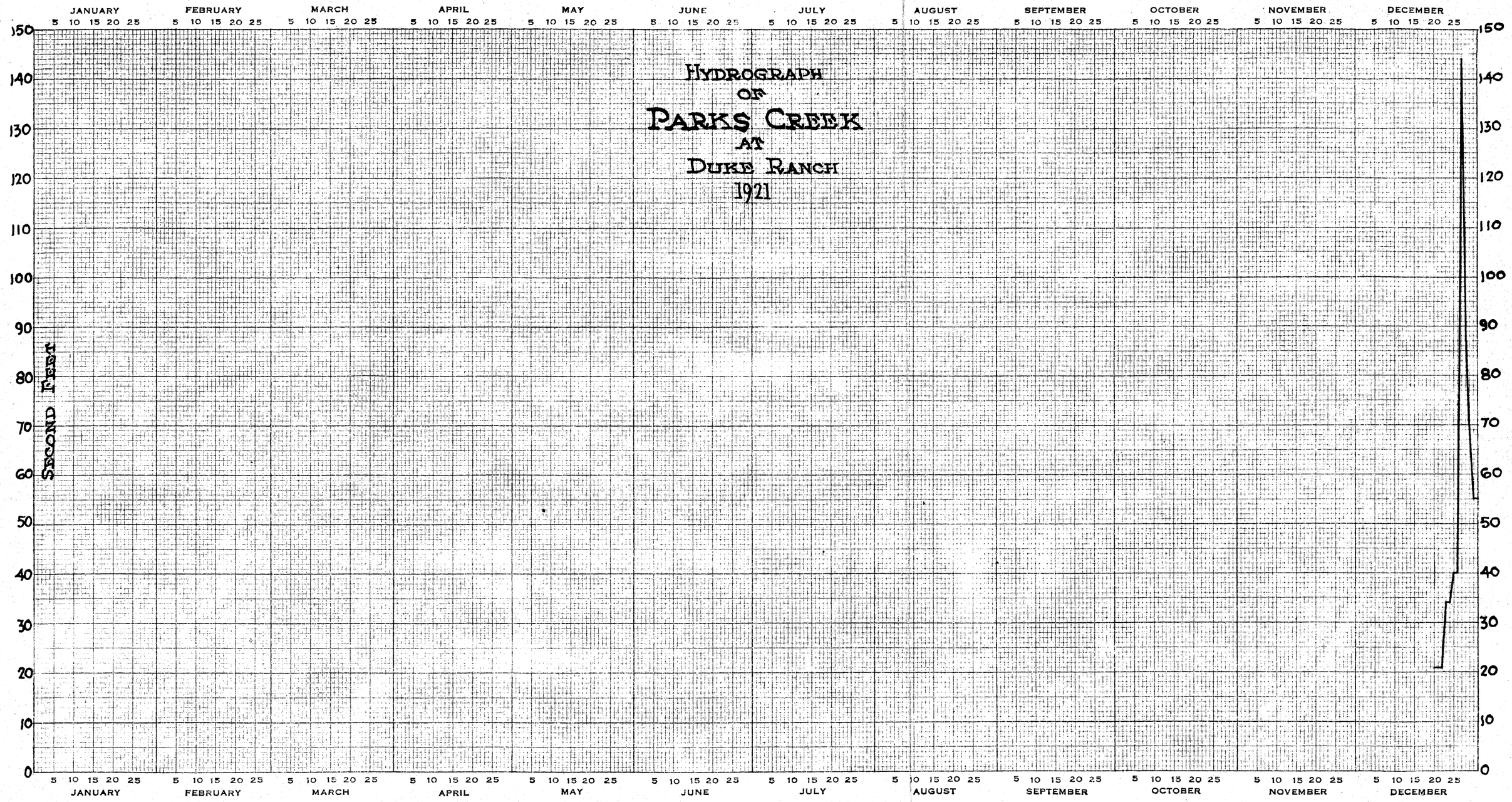

HYDROGRAPH
OF
PARKS CREEK
AT
DUKE RANCH
1921
CUBIC FEET PER SECOND
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

PLATE XXXIII

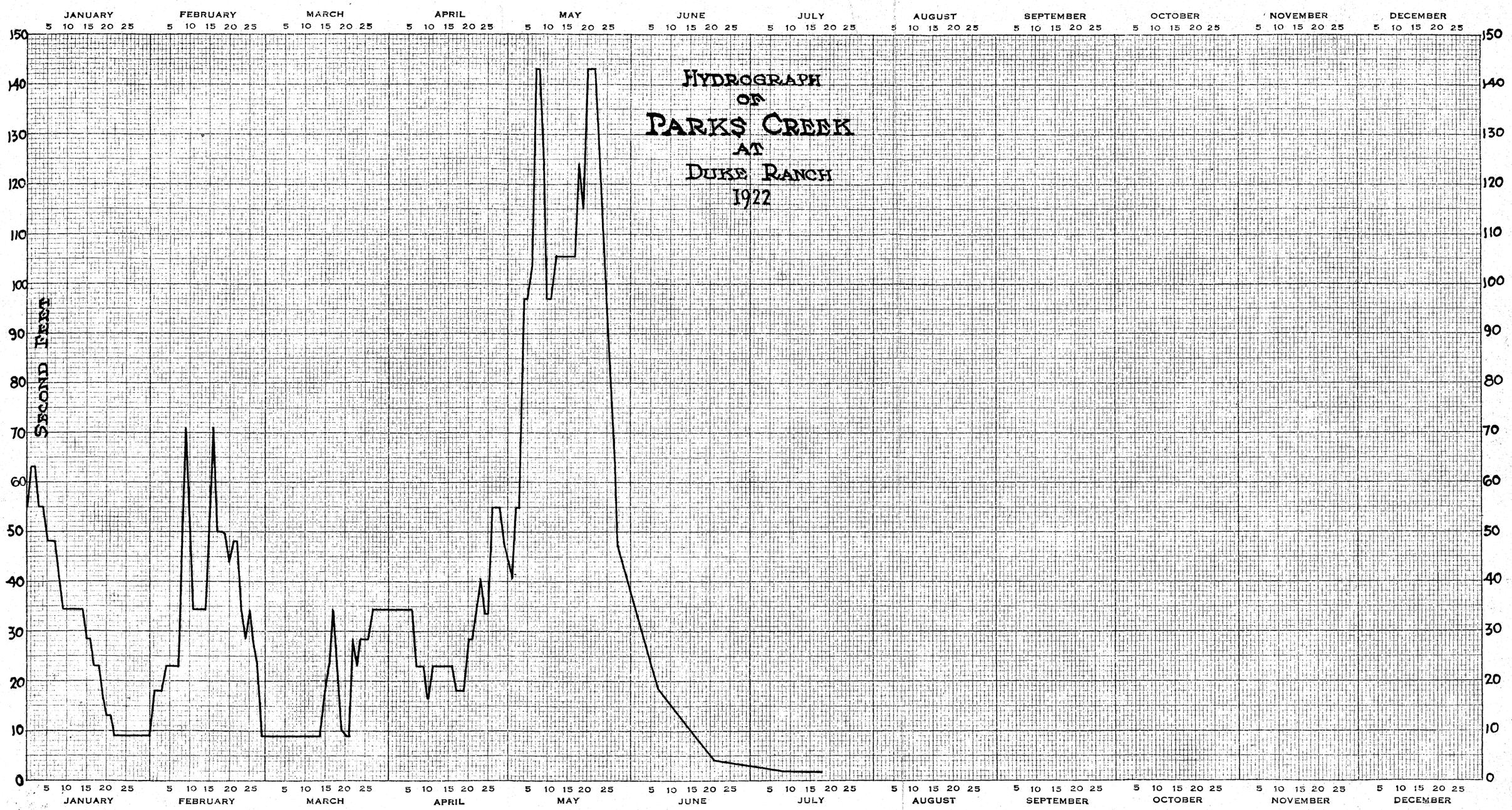


PLATE XXXIV

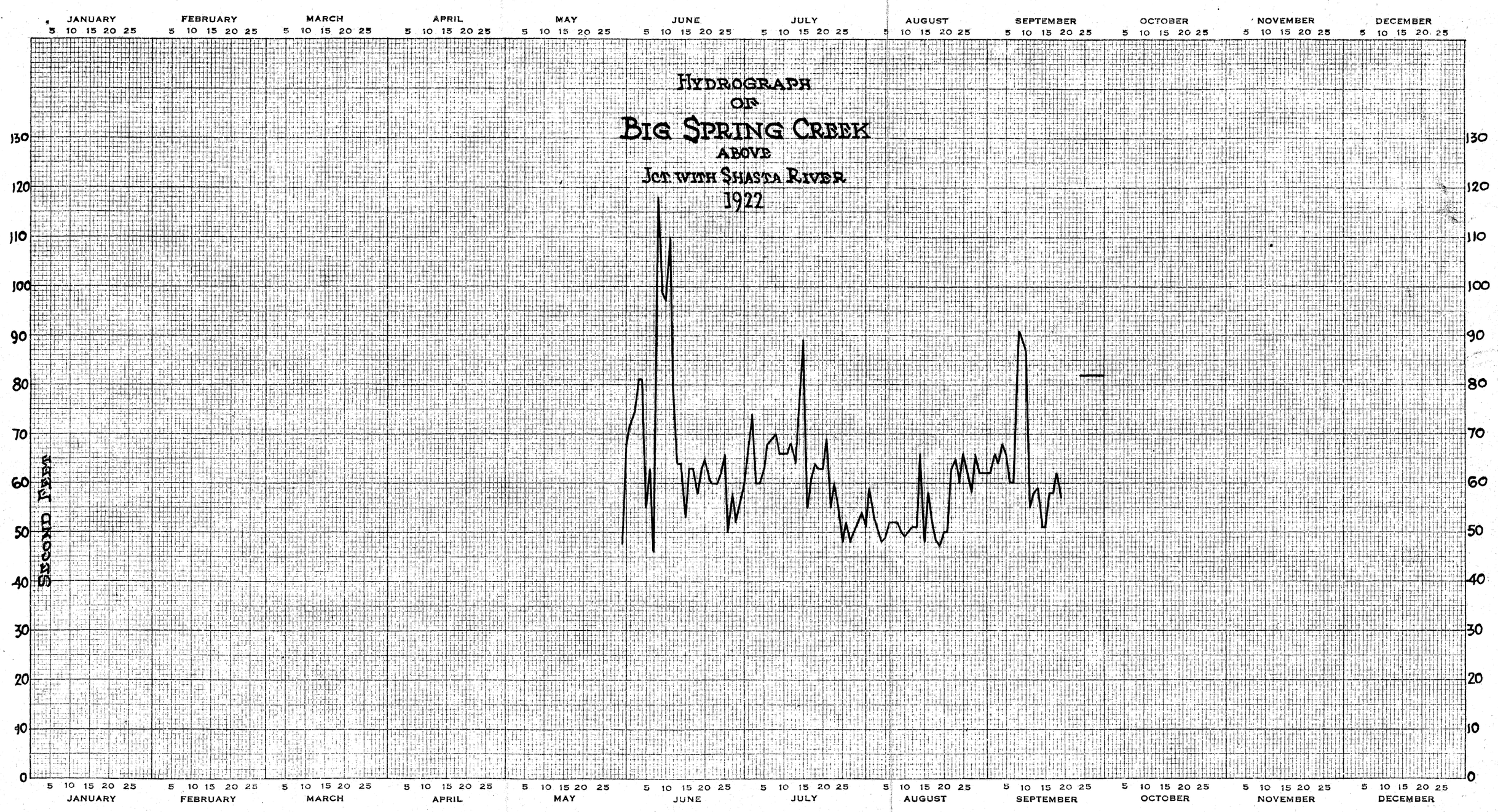

HYDROGRAPH
OF
BIG SPRING CREEK
ABOVE
JCT. WITH SHASTA RIVER
1922
CUBIC FEET PER SECOND
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25
0
10
20
30
40
50
60
70
80
90
100
110
120
130

PLATE XXXV

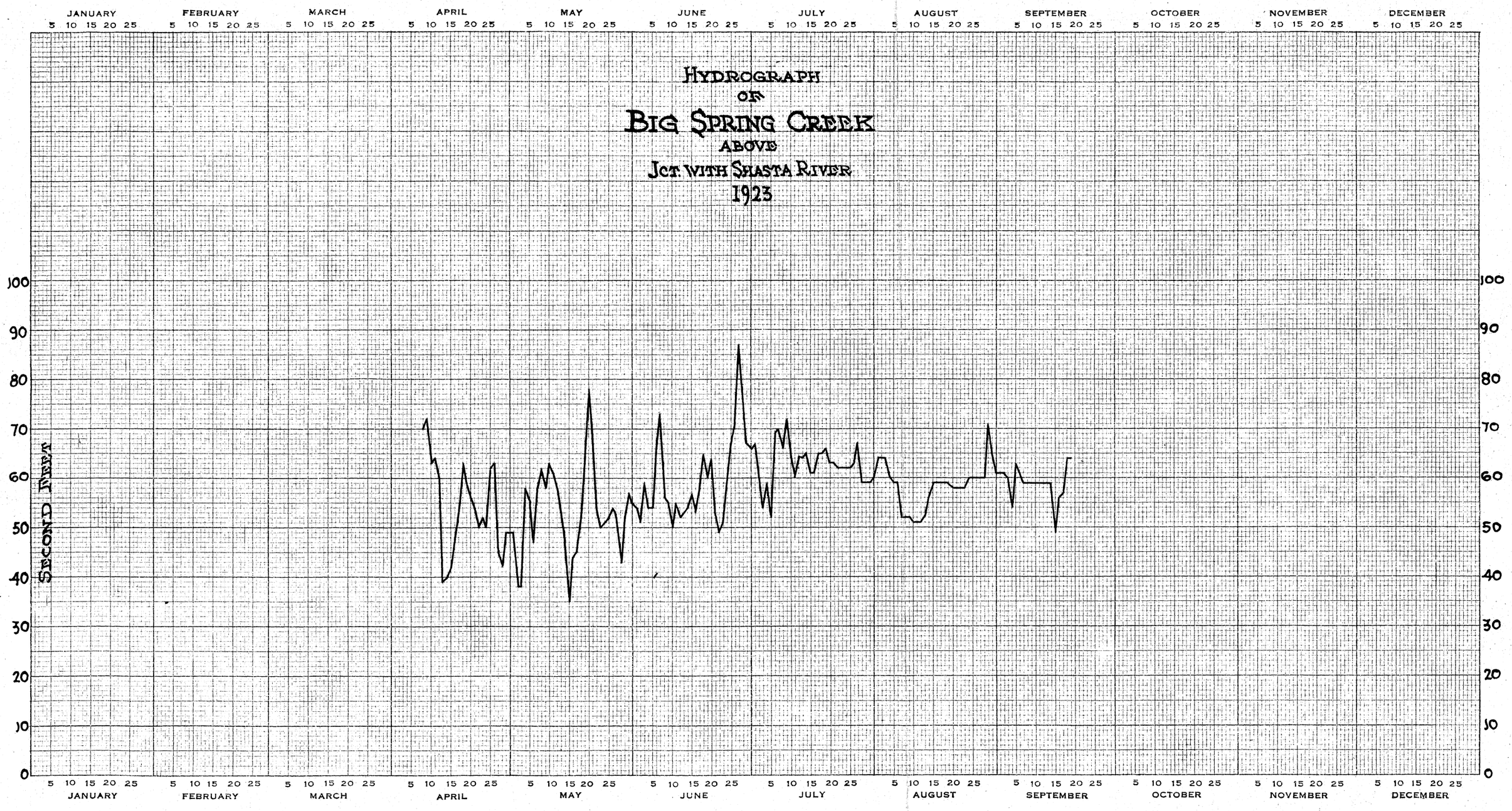
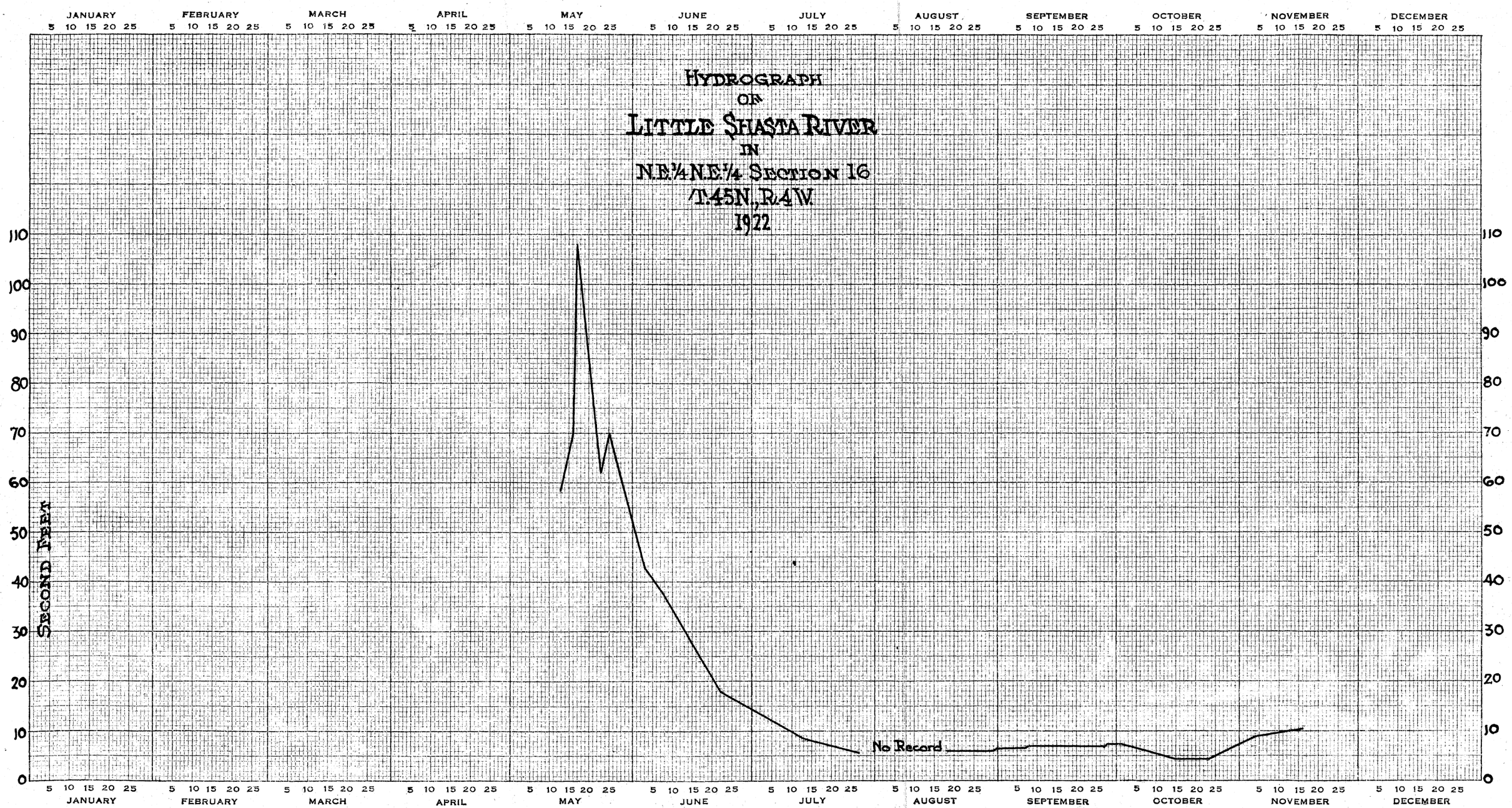

HYDROGRAPH
OF
BIG SPRING CREEK
ABOVE
JCT. WITH SHASTA RIVER
1923
SECOND FEET
0
10
20
30
40
50
60
70
80
90
100
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25

PLATE XXXVI


HYDROGRAPH
OF
LITTLE SHASTA RIVER
IN
N.E.¼N.E.¼ SECTION 16
T.45N., R.4W.
1922
SECOND FEET
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
No Record
0
10
20
30
40
50
60
70
80
90
100
110

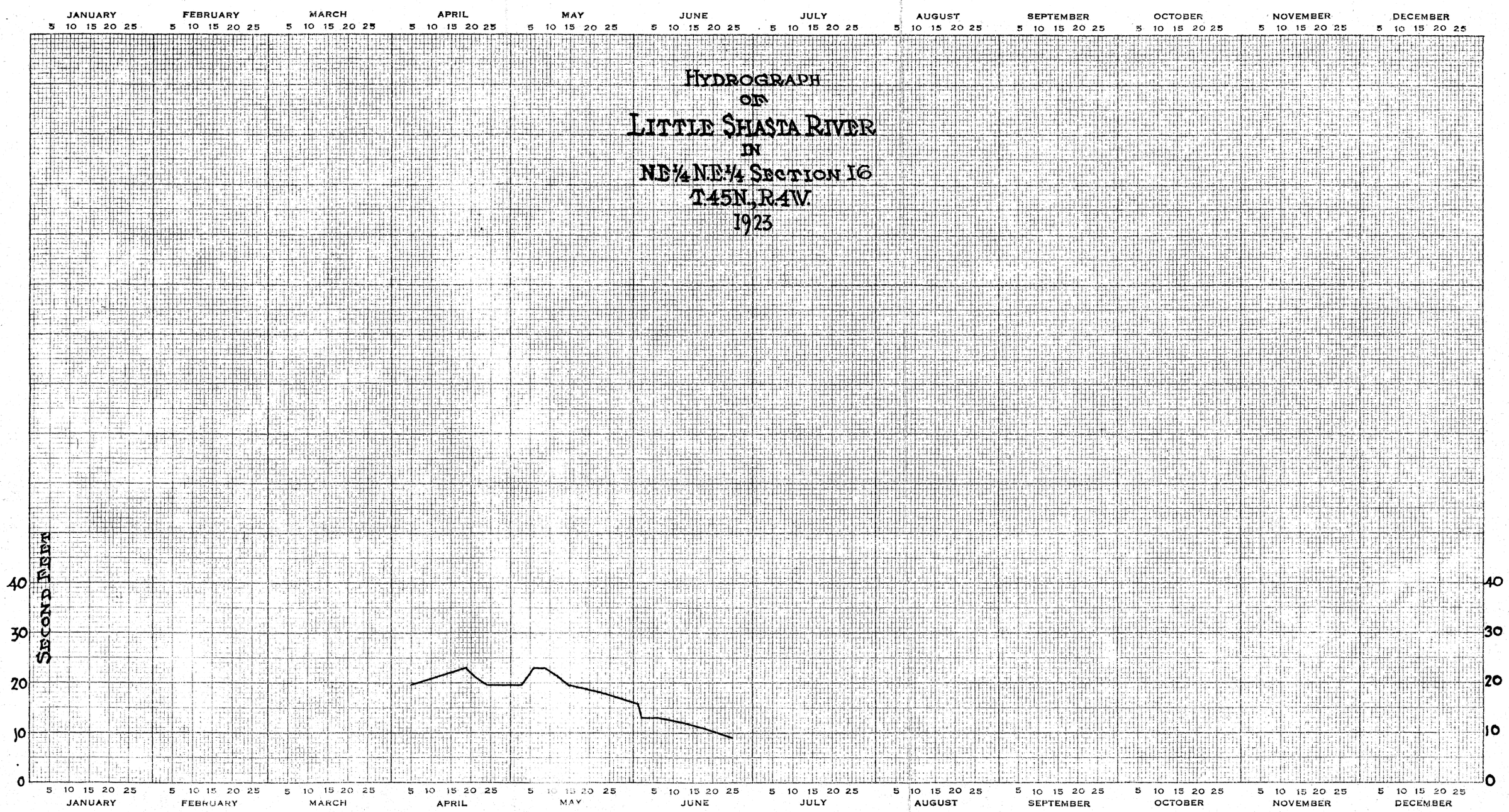

HYDROGRAPH
OF
LITTLE SHASTA RIVER
IN
NE¼NE¼ SECTION 16
T.45N., R.4W.
1923
SECOND FEET
40
30
20
10
0
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25

PLATE XXXVIII

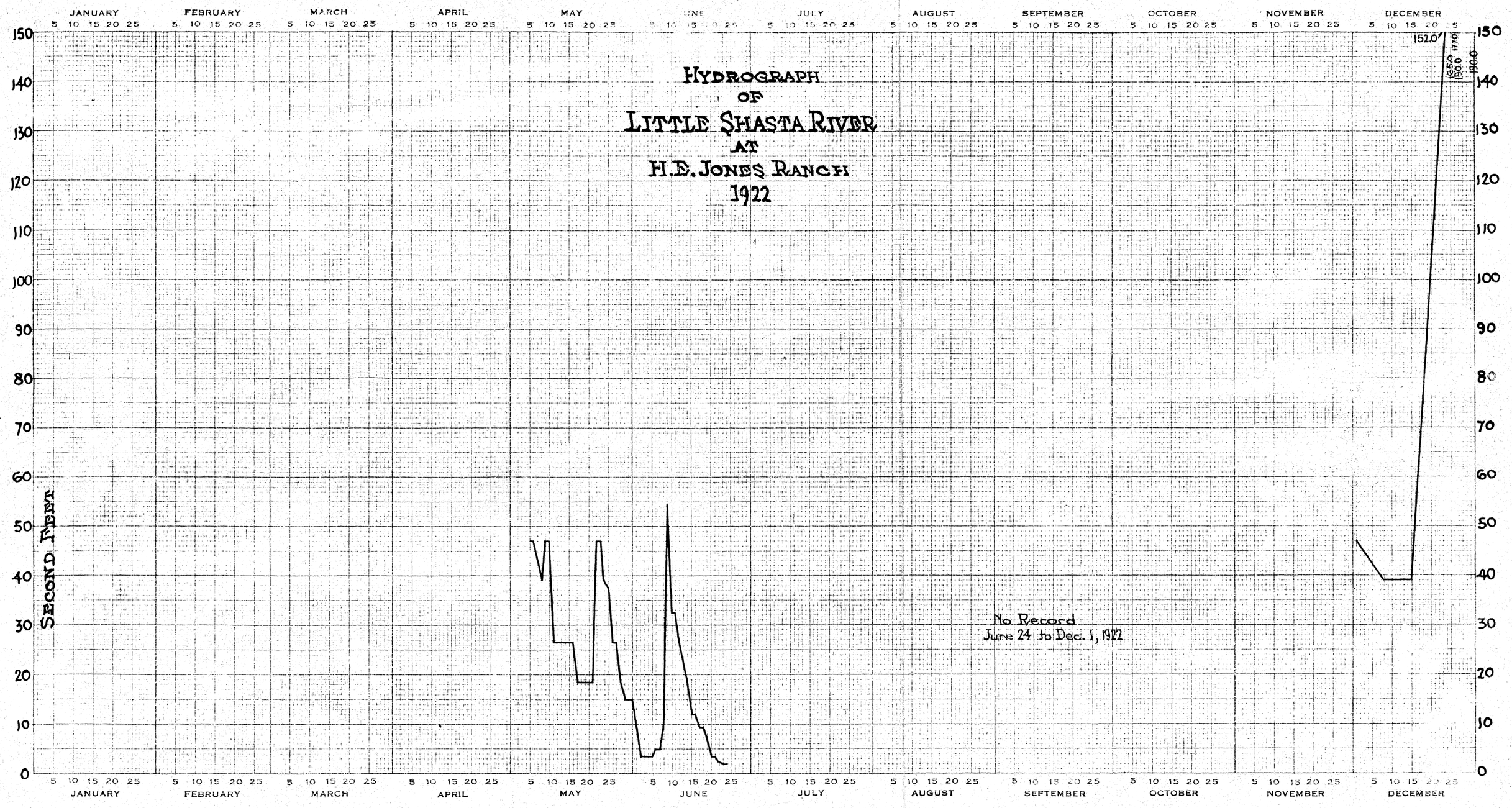


PLATE XXXIX

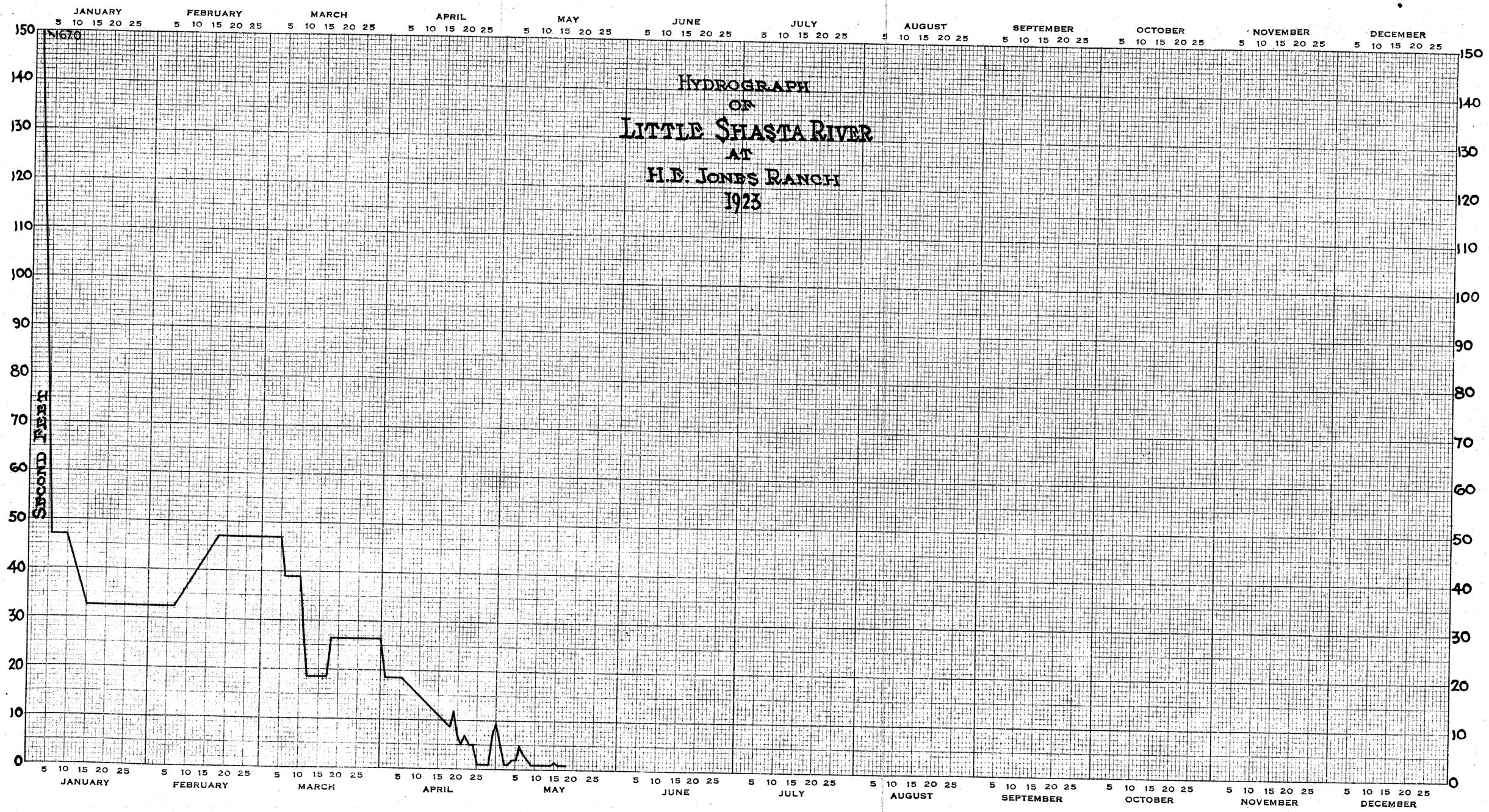

HYDROGRAPH
OF
LITTLE SHASTA RIVER
AT
H.E. JONES RANCH
1923
SECOND FEET
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0

PLATE XL

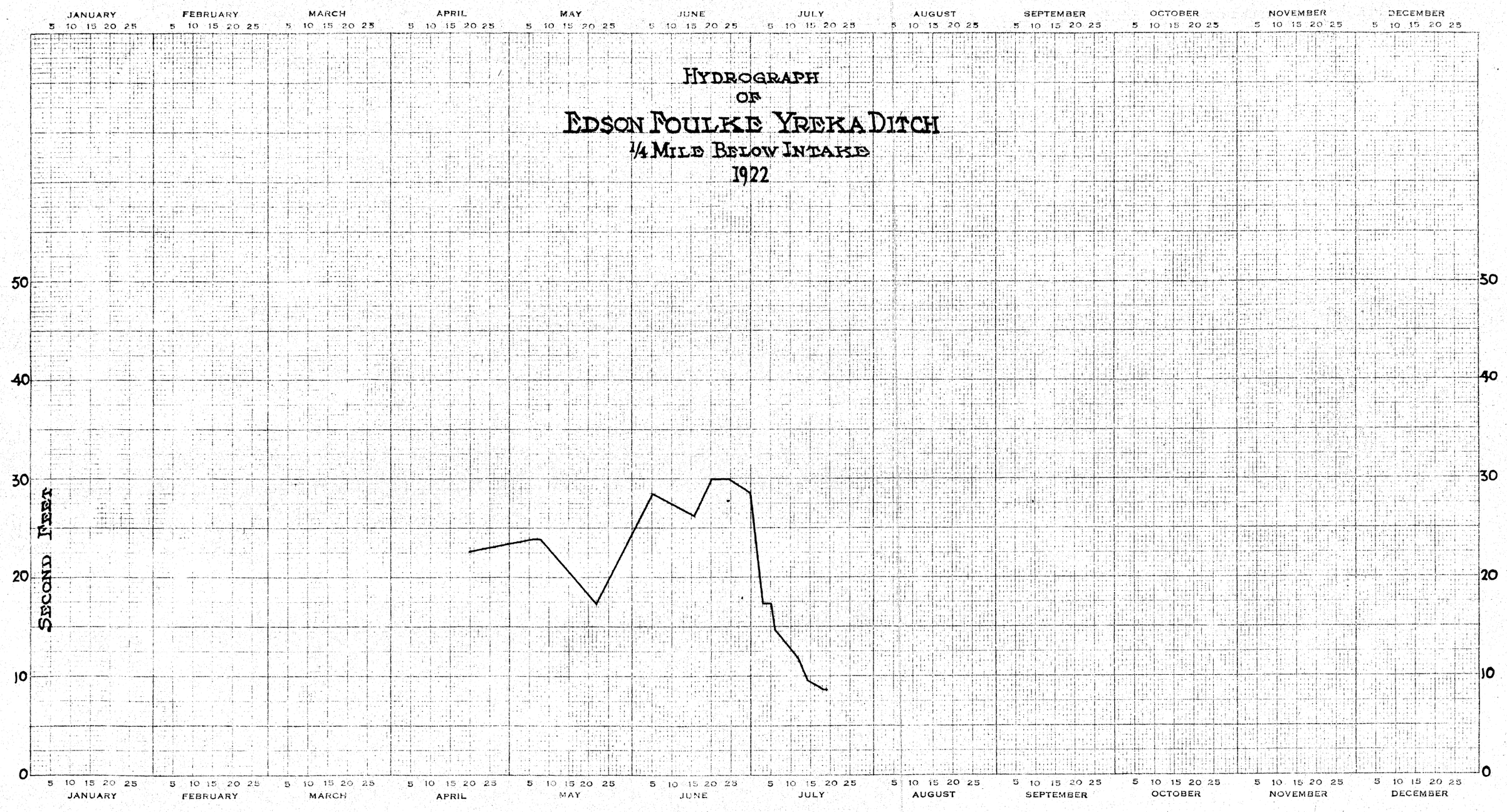

HYDROGRAPH
OF
EDSON FOULKE YREKA DITCH
1/4 MILE BELOW INTAKE
1922
SECOND FEET
0
10
20
30
40
50
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25

PLATE XLI

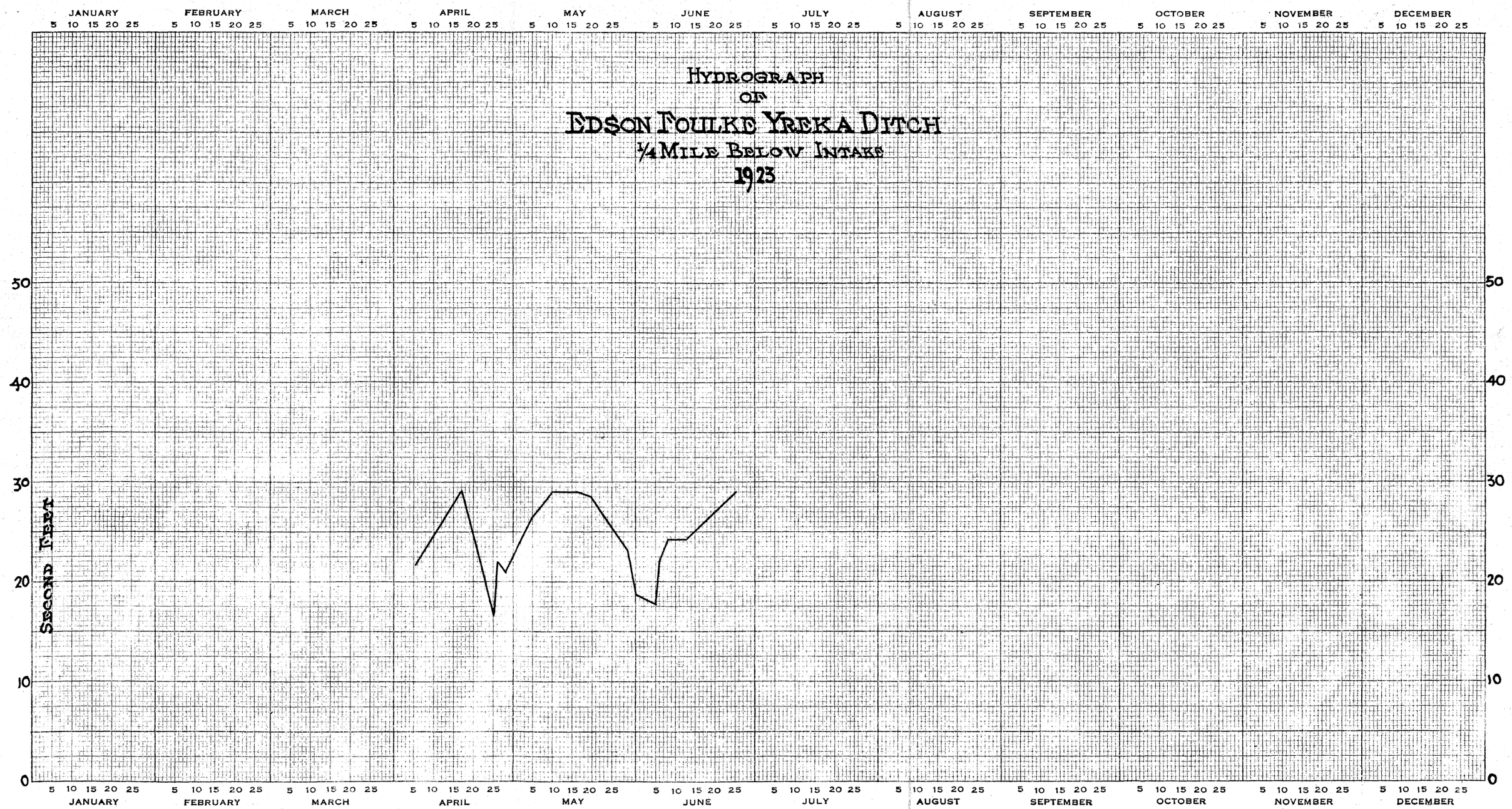
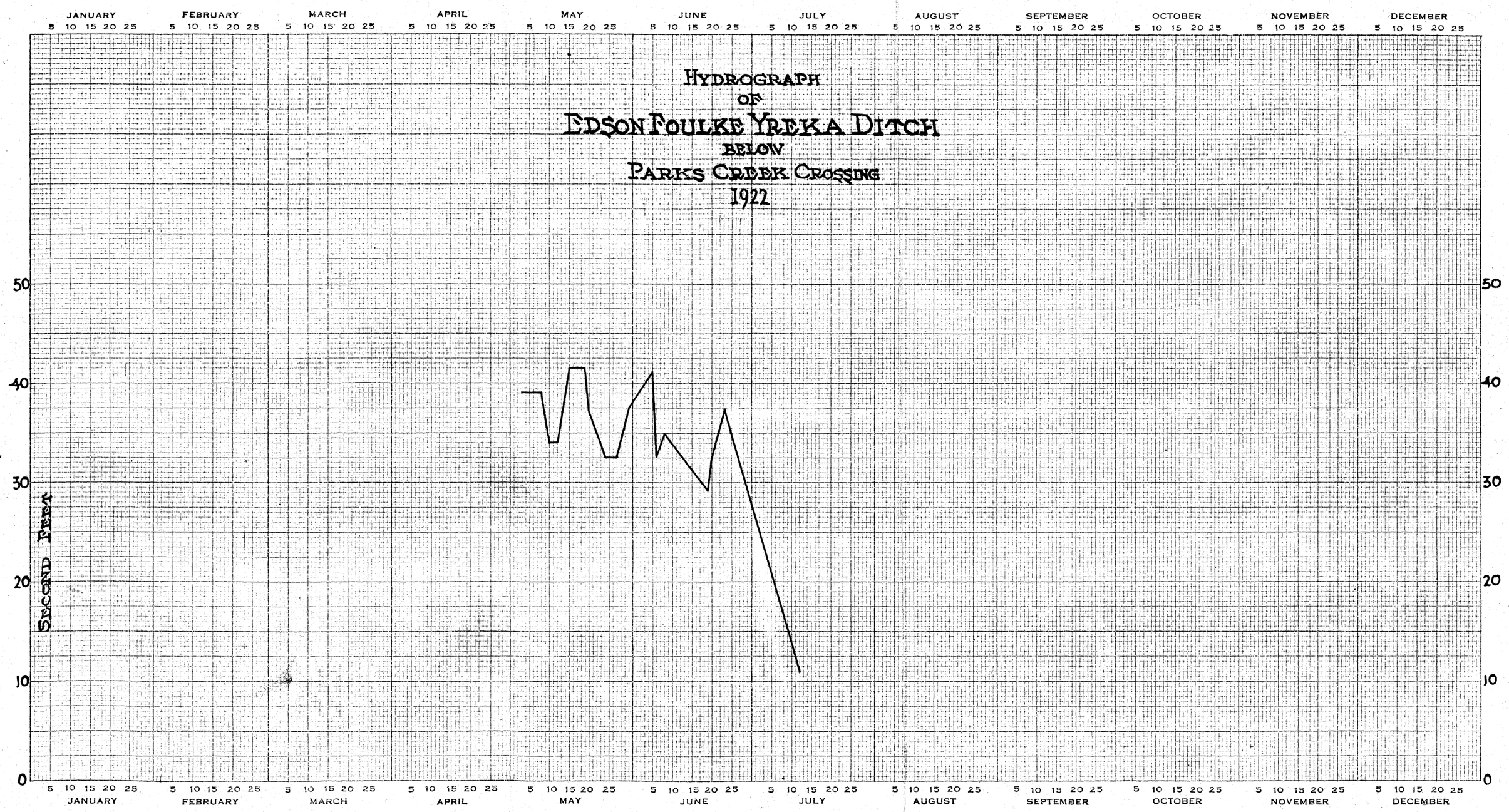

HYDROGRAPH
OF
EDSON FOULKE YREKA DITCH
¼ MILE BELOW INTAKE
1923
SECOND FEET
0
10
20
30
40
50
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25

PLATE XLII


HYDROGRAPH
OF
EDSON FOULKE YREKA DITCH
BELOW
PARKS CREEK CROSSING
1922
SECOND FEET
0
10
20
30
40
50
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25

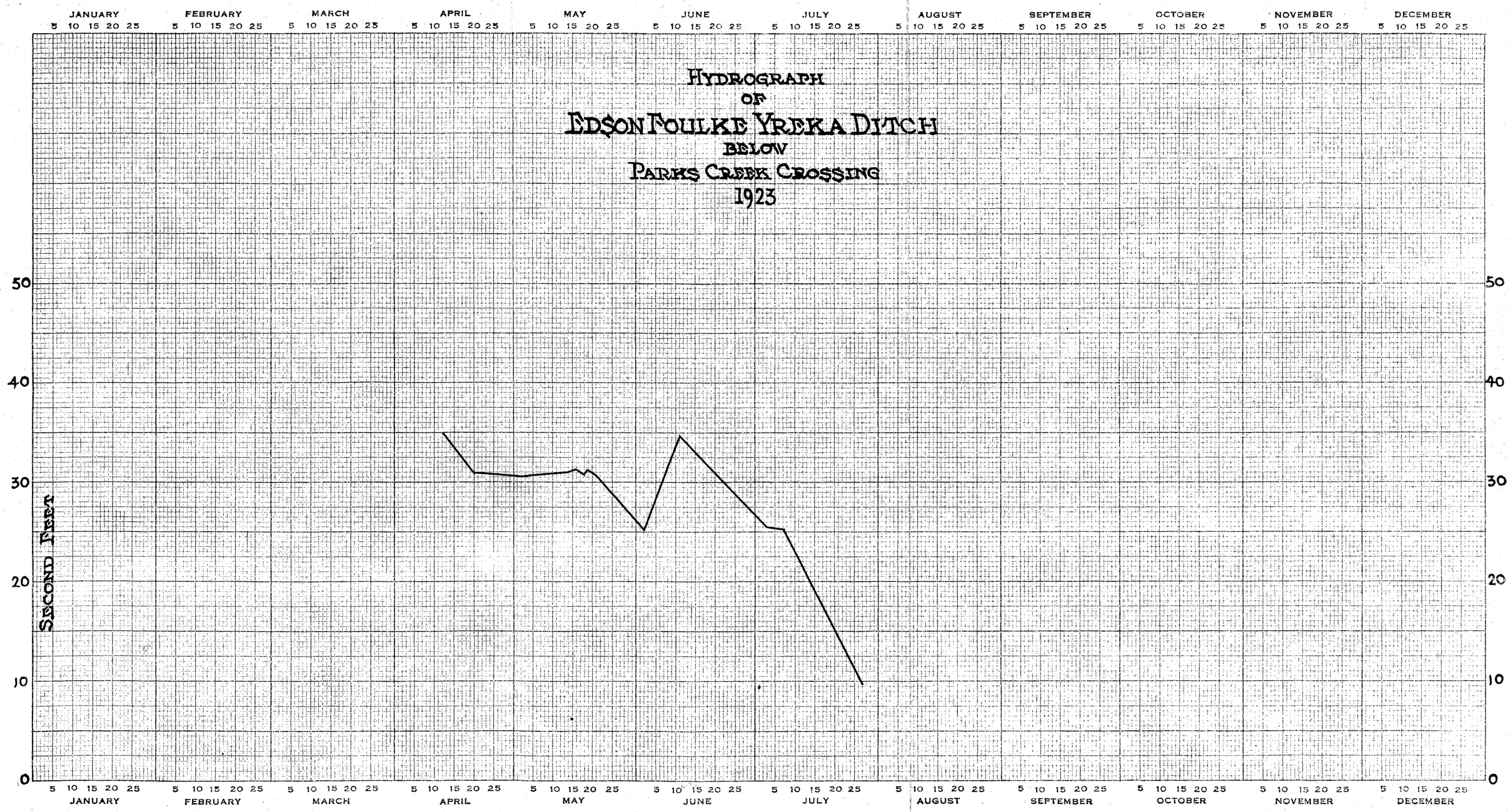

HYDROGRAPH
OF
EDSON FOULKE YREKA DITCH
BELOW
PARKS CREEK CROSSING
1923
SECOND FEET
0
10
20
30
40
50
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25

PLATE XLIV

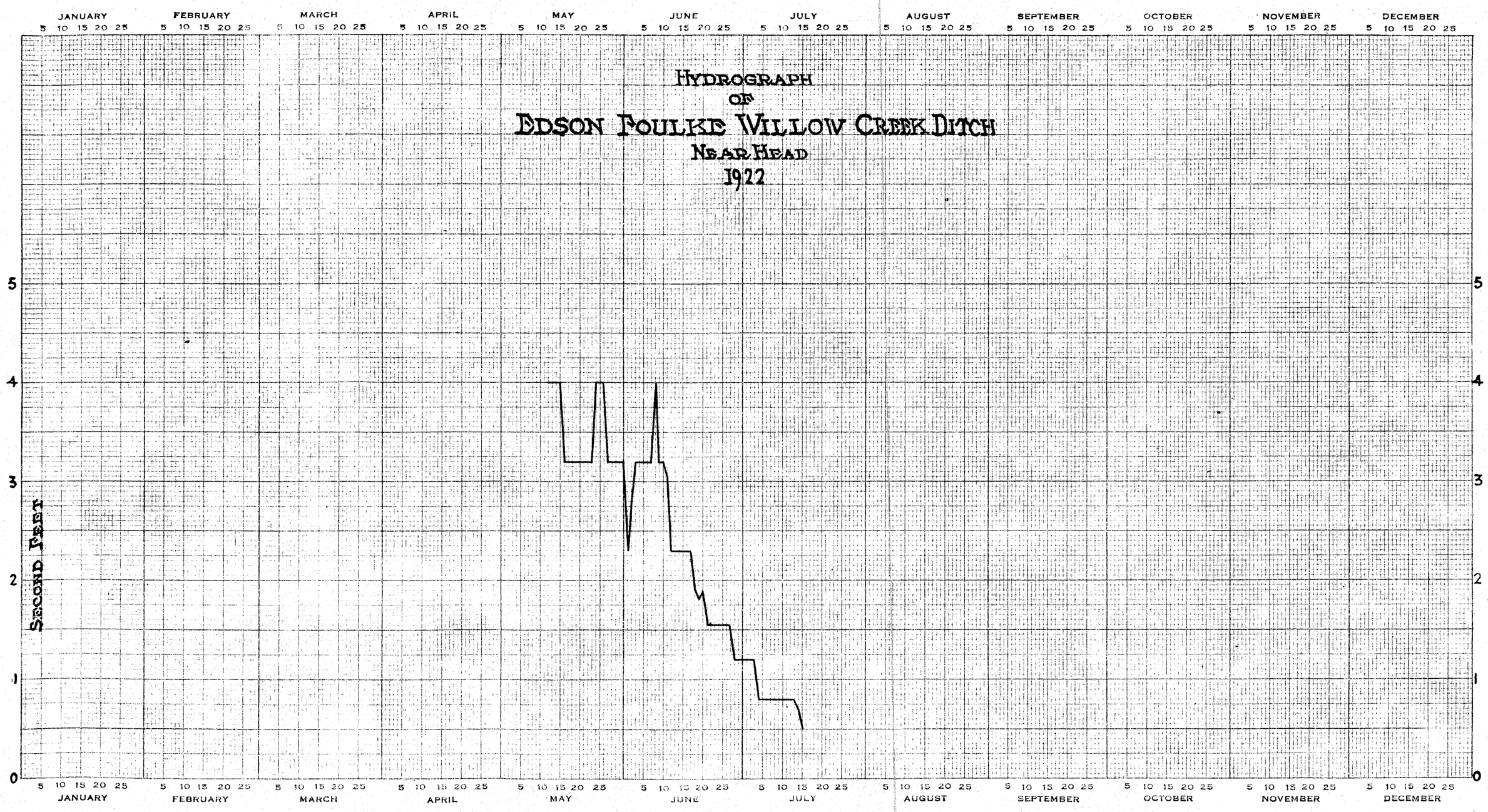
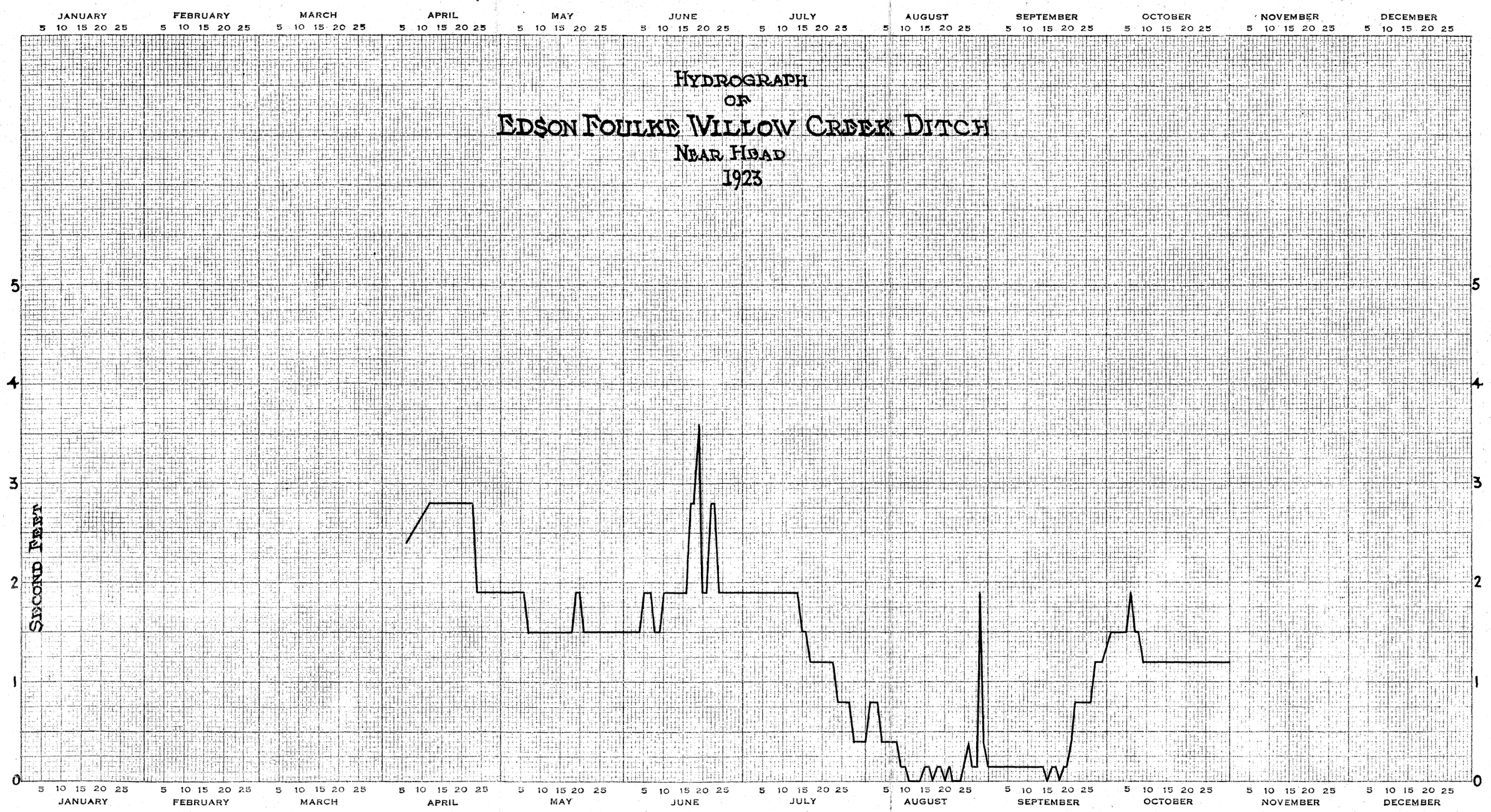
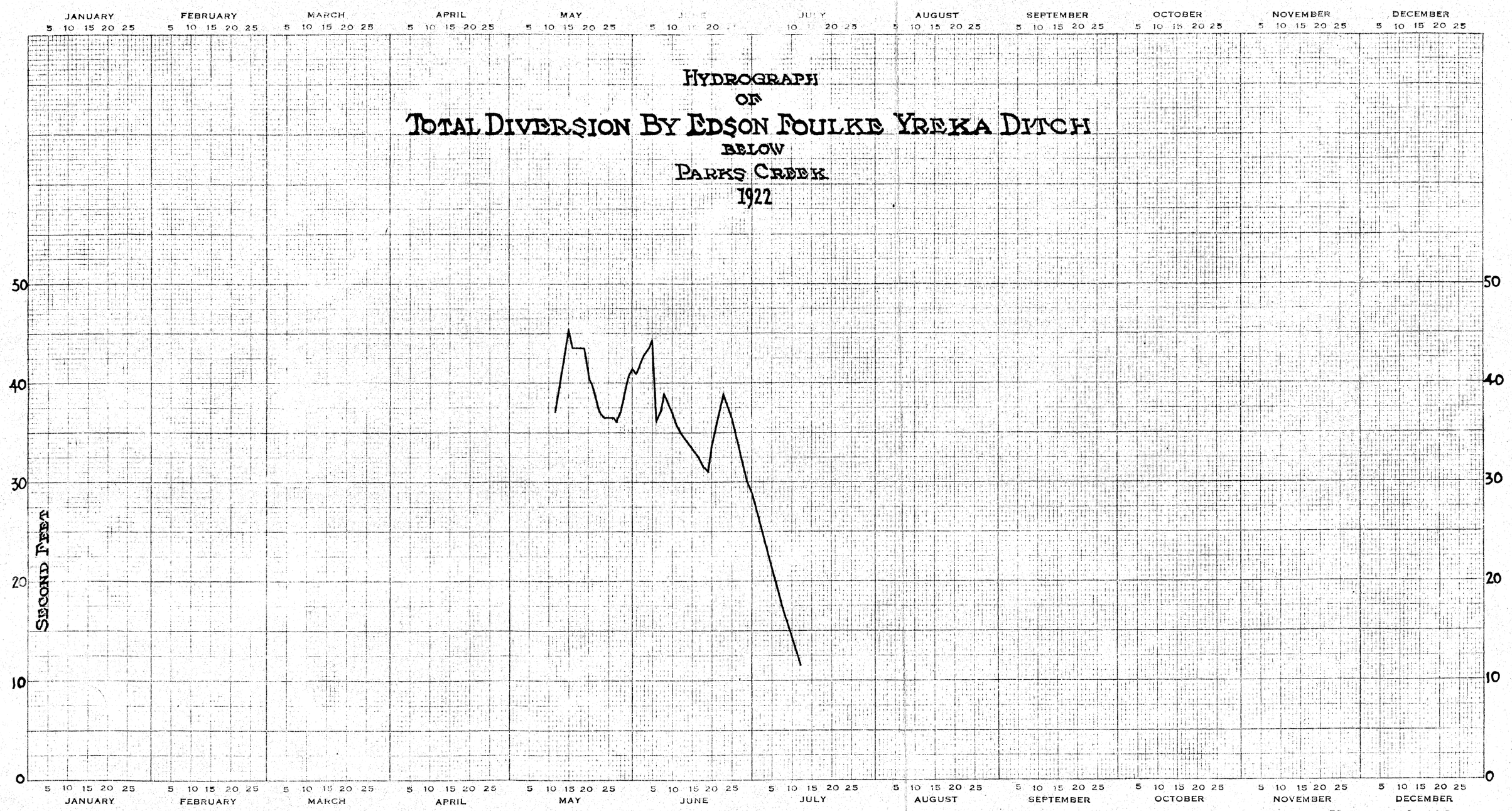
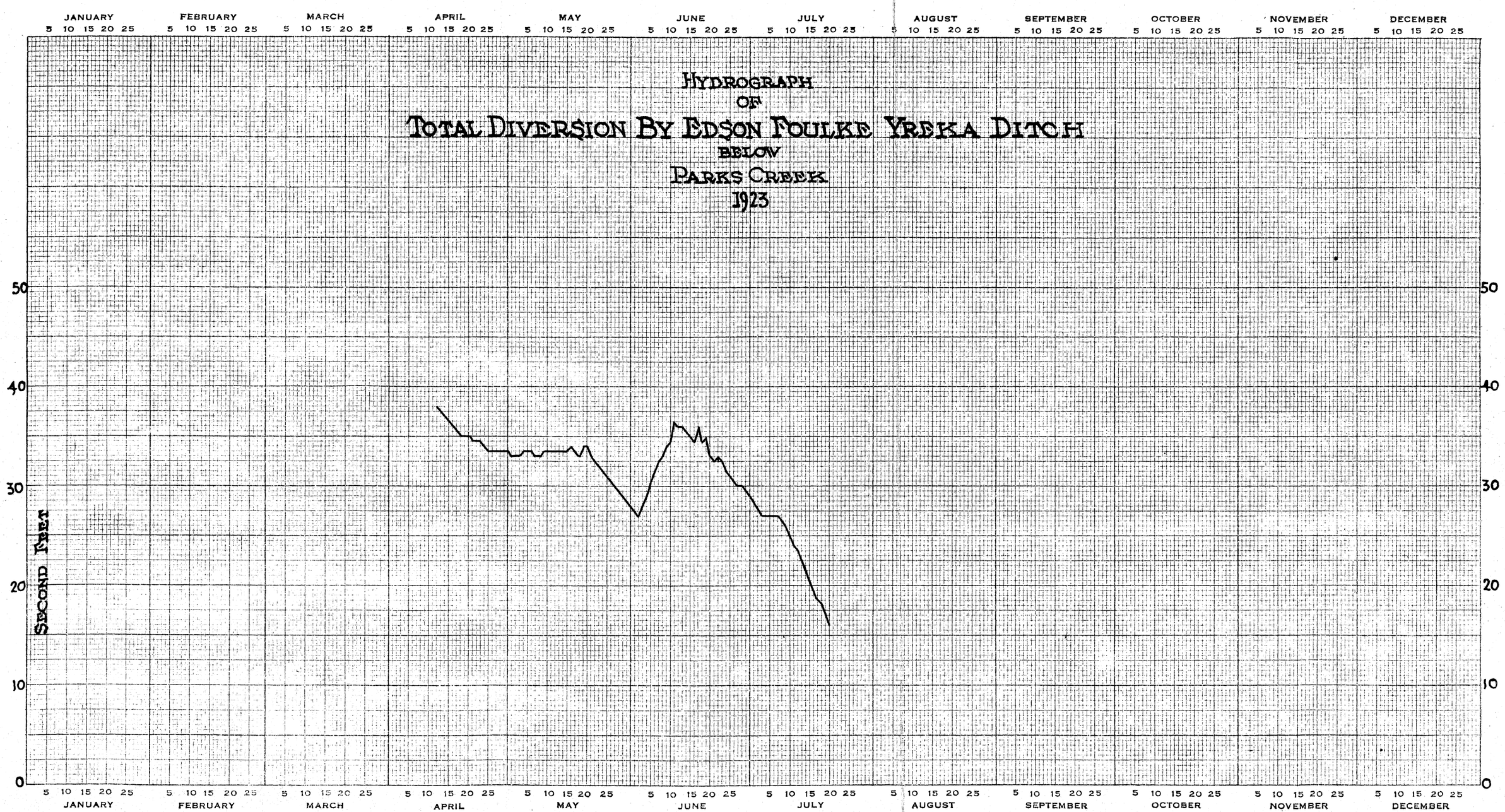

HYDROGRAPH
OF
EDSON POULKE WILLOW CREEK DITCH
NEAR HEAD
1922
SECOND FEET
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25
0
1
2
3
4
5

PLATE XLV


HYDROGRAPH
OF
EDSON FOULKE WILLOW CREEK DITCH
NEAR HEAD
1923
SECOND FEET
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25
0
1
2
3
4
5



NOTE:- Summation of the flows shown on Plates XLII & XLIV



NOTE:- Summation of the flows shown on Plates XLIII & XLV

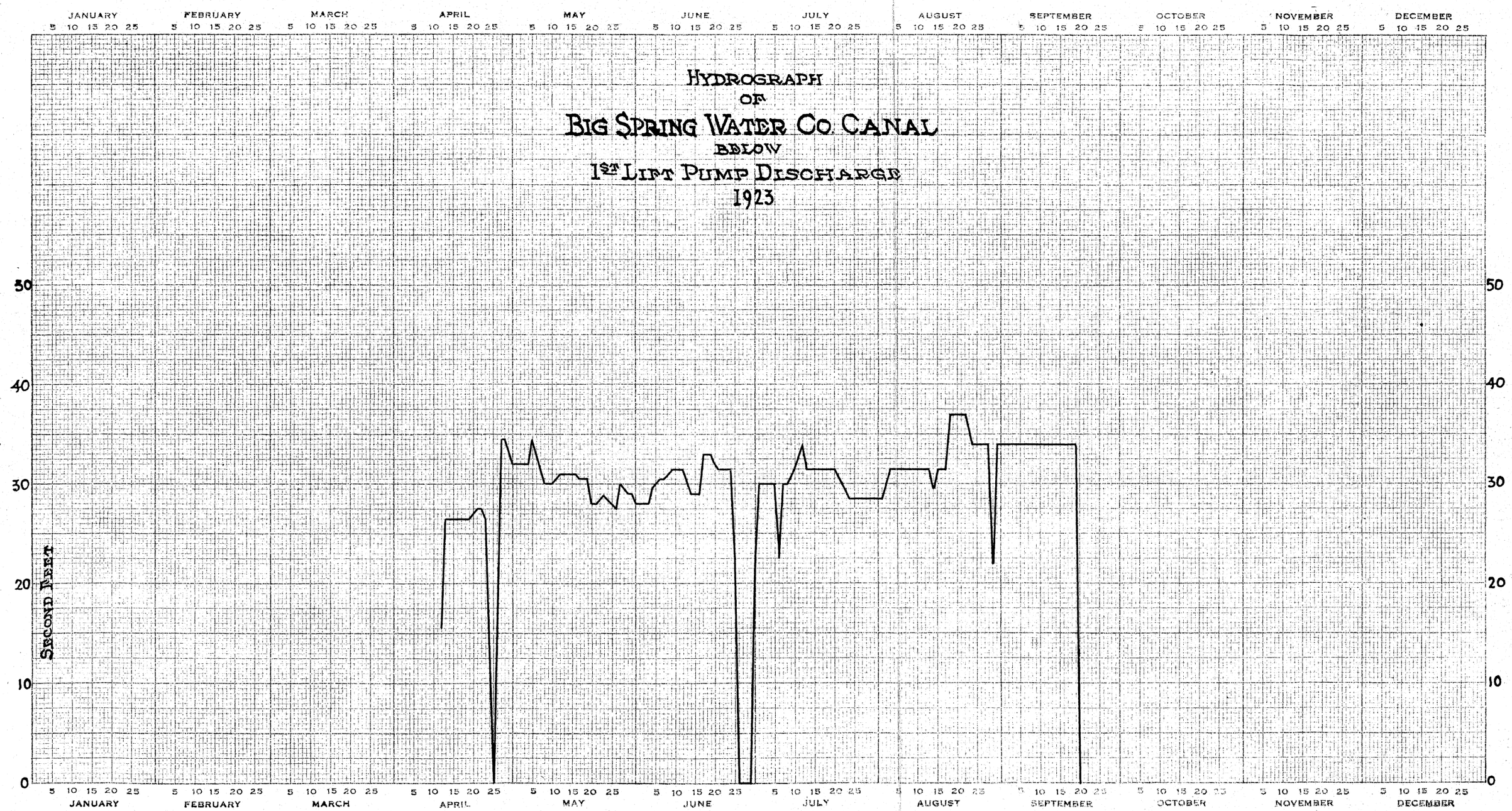

HYDROGRAPH
OF
BIG SPRING WATER CO. CANAL
BELOW
1ST LIFT PUMP DISCHARGE
1923
SECOND FEET
0
10
20
30
40
50
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25

PLATE XLIX

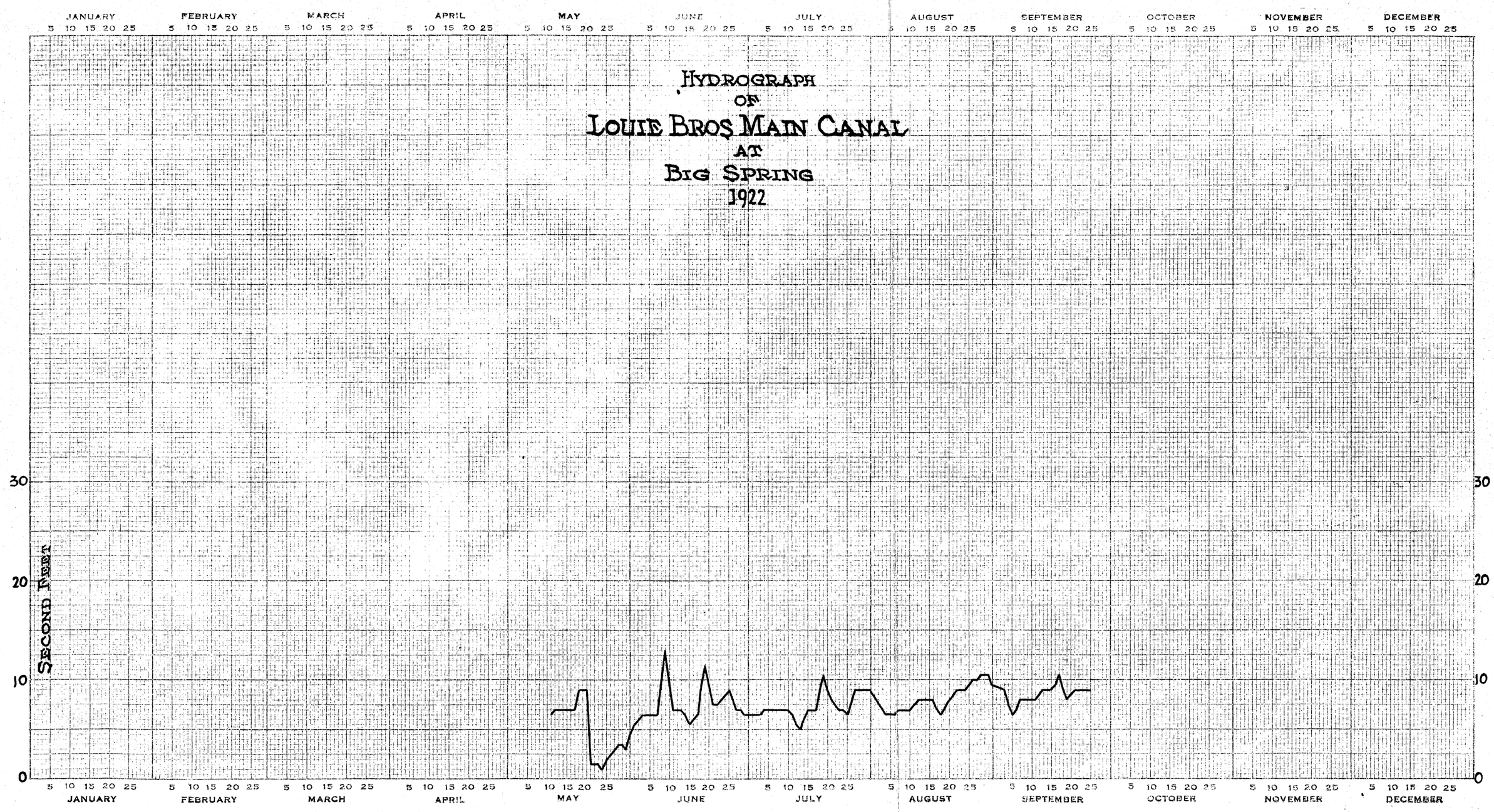

HYDROGRAPH
OF
LOUIE BROS MAIN CANAL
AT
BIG SPRING
1922
SECOND FEET
0
10
20
30
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25

PLATE L

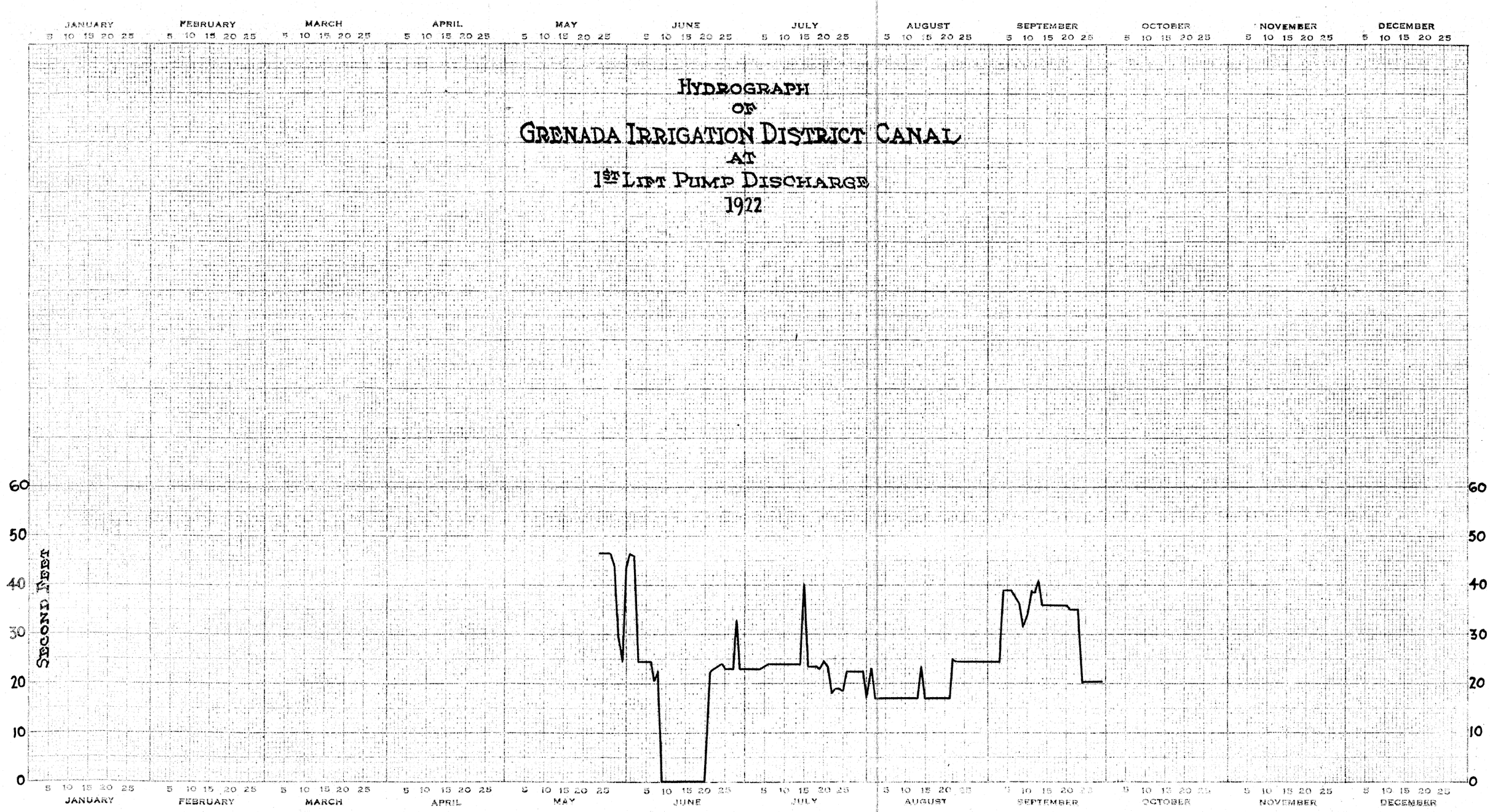

HYDROGRAPH
OF
GRENADA IRRIGATION DISTRICT CANAL
AT
1ST LIFT PUMP DISCHARGE
1922
SECOND FEET
0
10
20
30
40
50
60
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25

PLATE LI

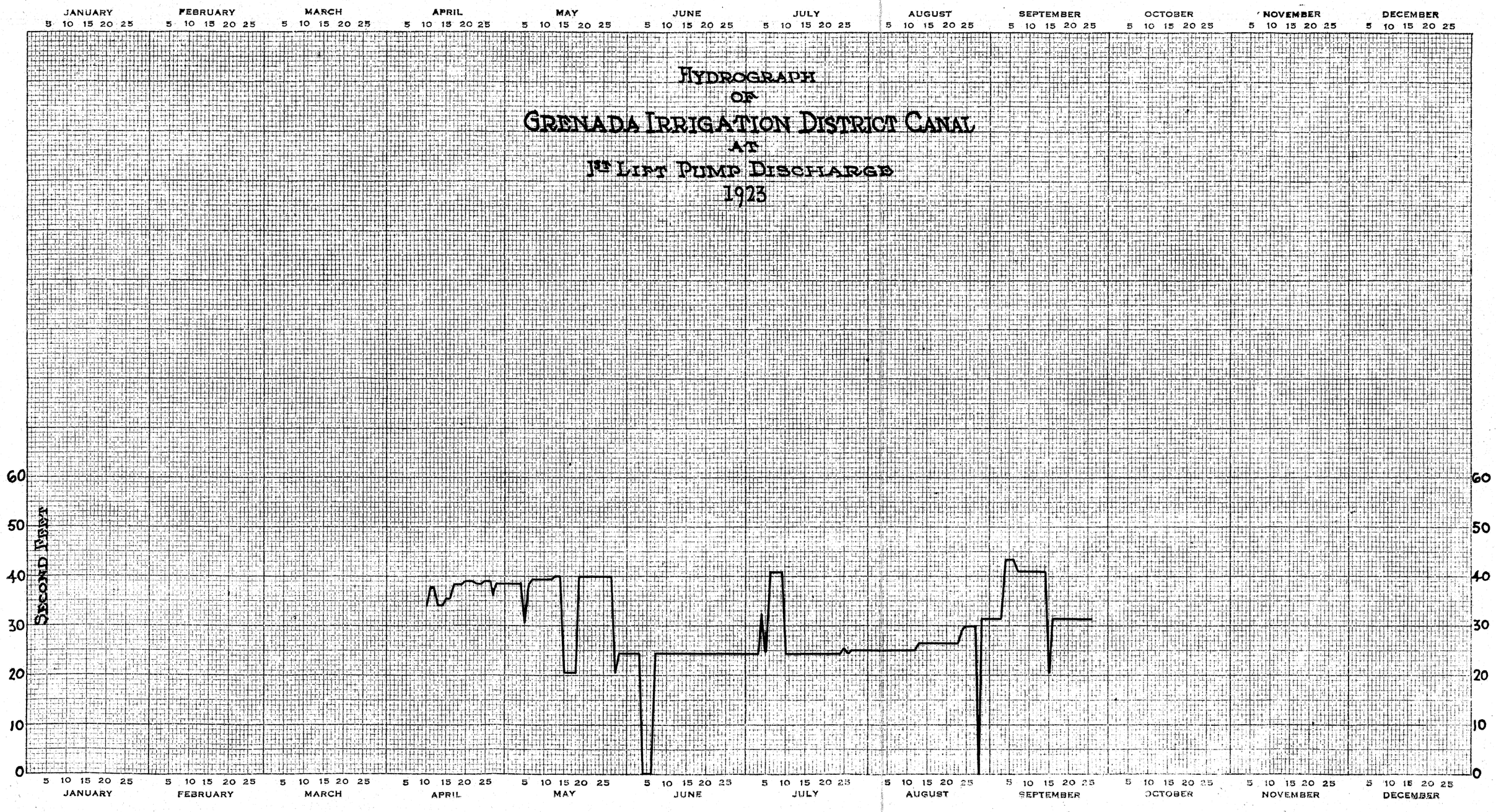

HYDROGRAPH
OF
GRENADA IRRIGATION DISTRICT CANAL
AT
1ST LIFT PUMP DISCHARGE
1923
SECOND FEET
0
10
20
30
40
50
60
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25

PLATE LII

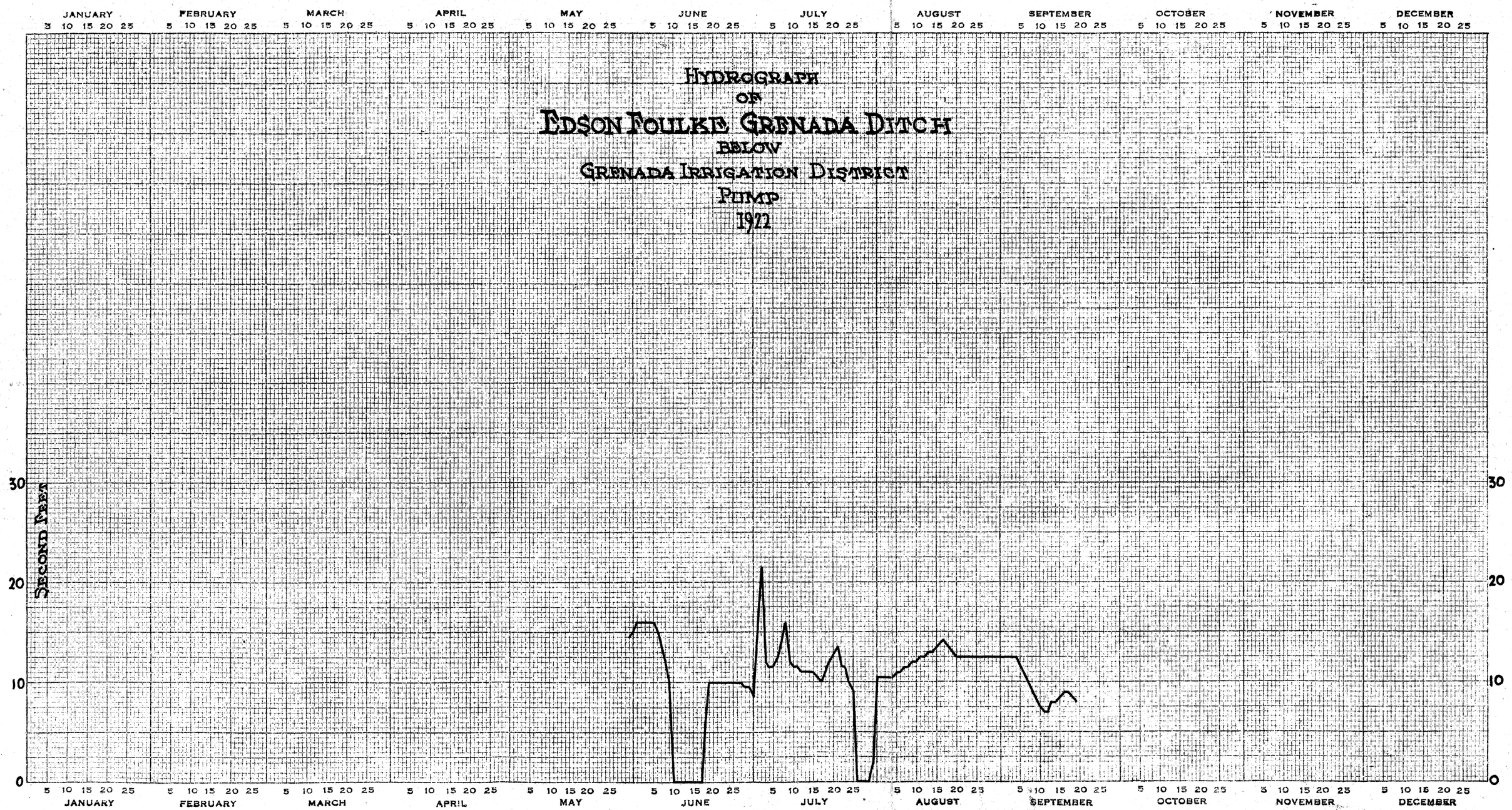
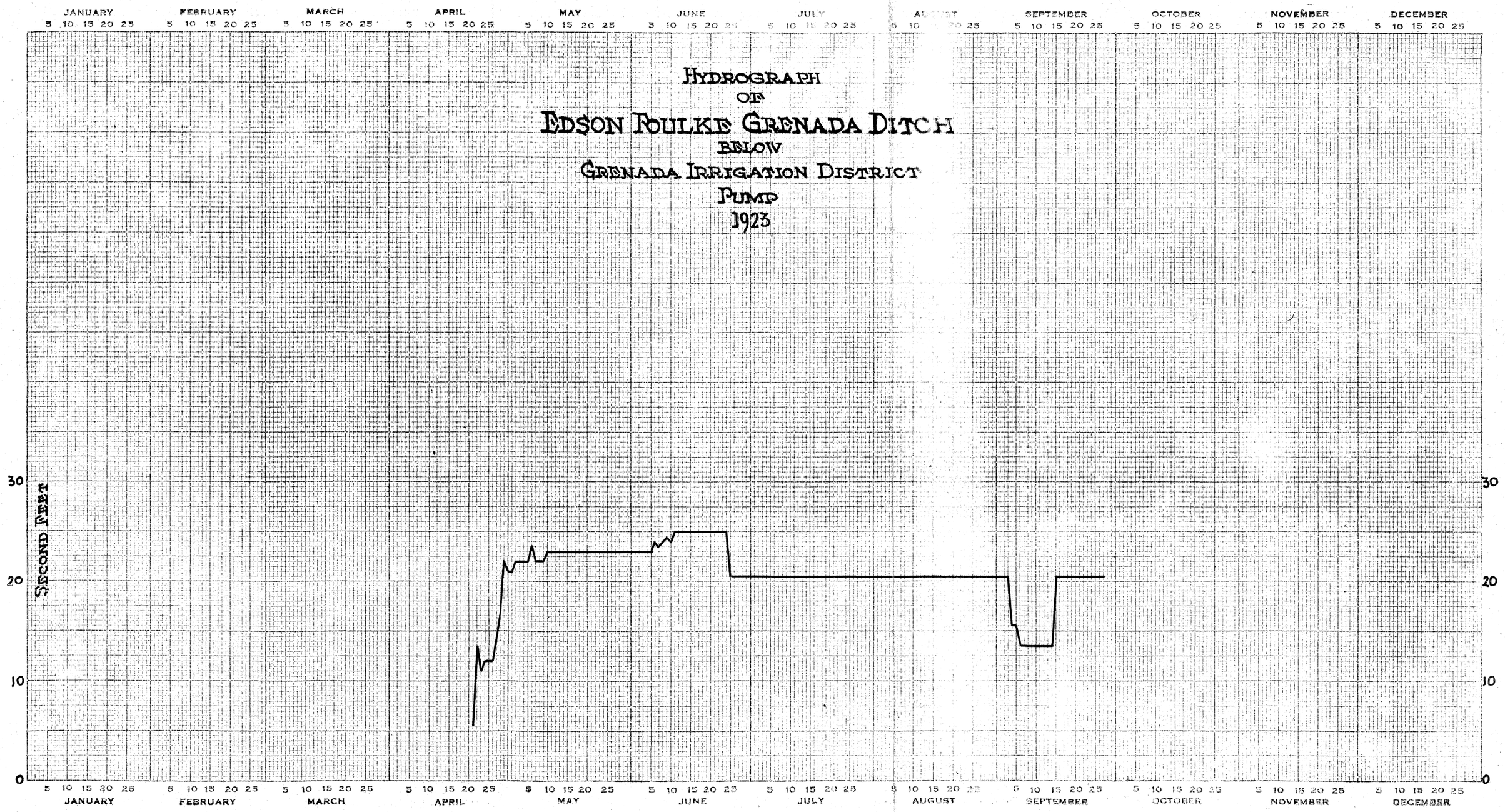
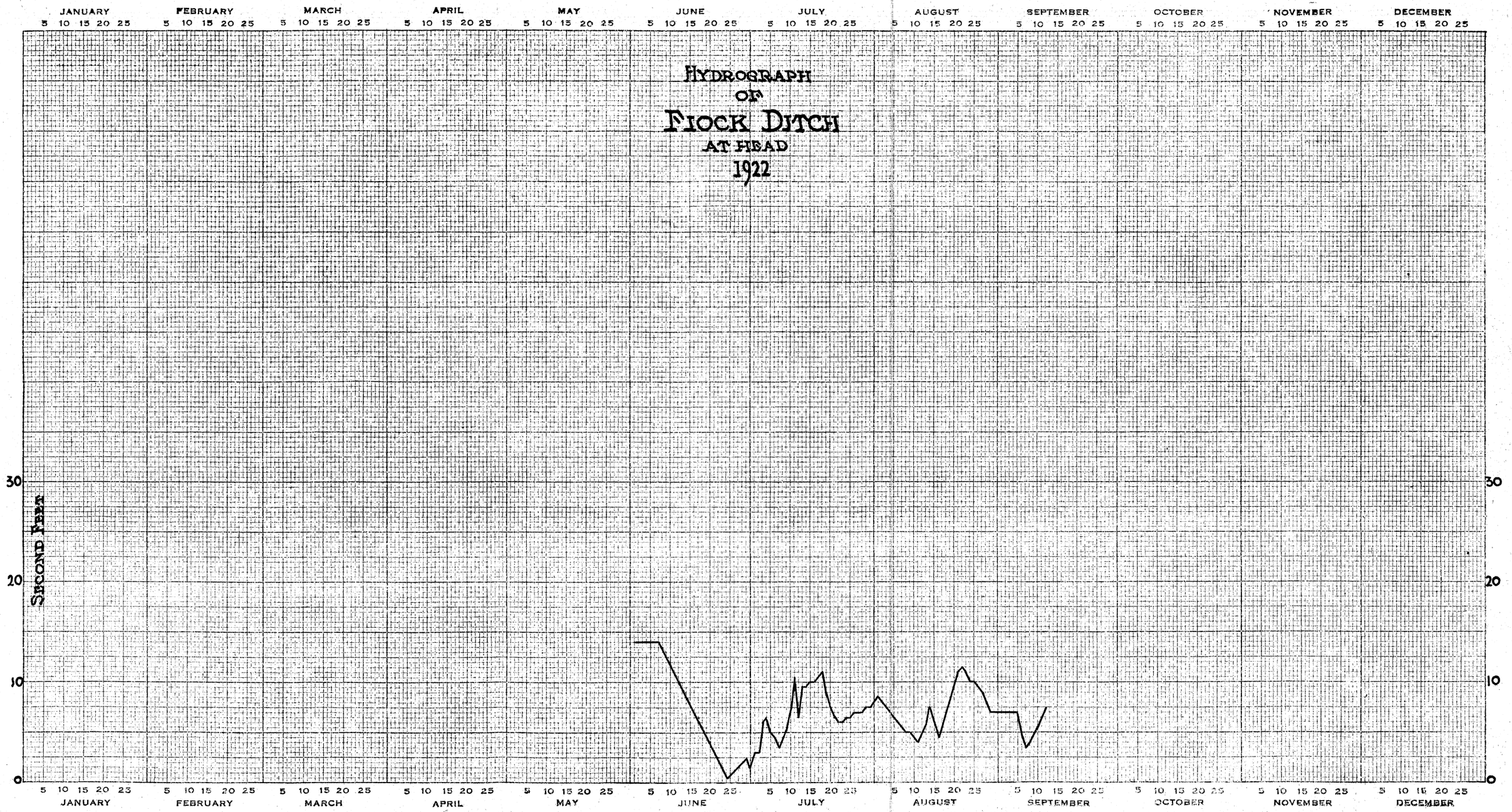

HYDROGRAPH
OF
EDSON FOULKE GRENADA DITCH
BELOW
GRENADA IRRIGATION DISTRICT
PUMP
1922
SECOND FEET
0
10
20
30
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25

PLATE LIII


HYDROGRAPH
OF
EDSON FOULKE GRENADA DITCH
BELOW
GRENADA IRRIGATION DISTRICT
PUMP
1923
SECOND FEET
0
10
20
30
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25


HYDROGRAPH
OF
FLOCK DITCH
AT HEAD
1922
SECOND FEET
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
5 10 15 20 25
0
10
20
30

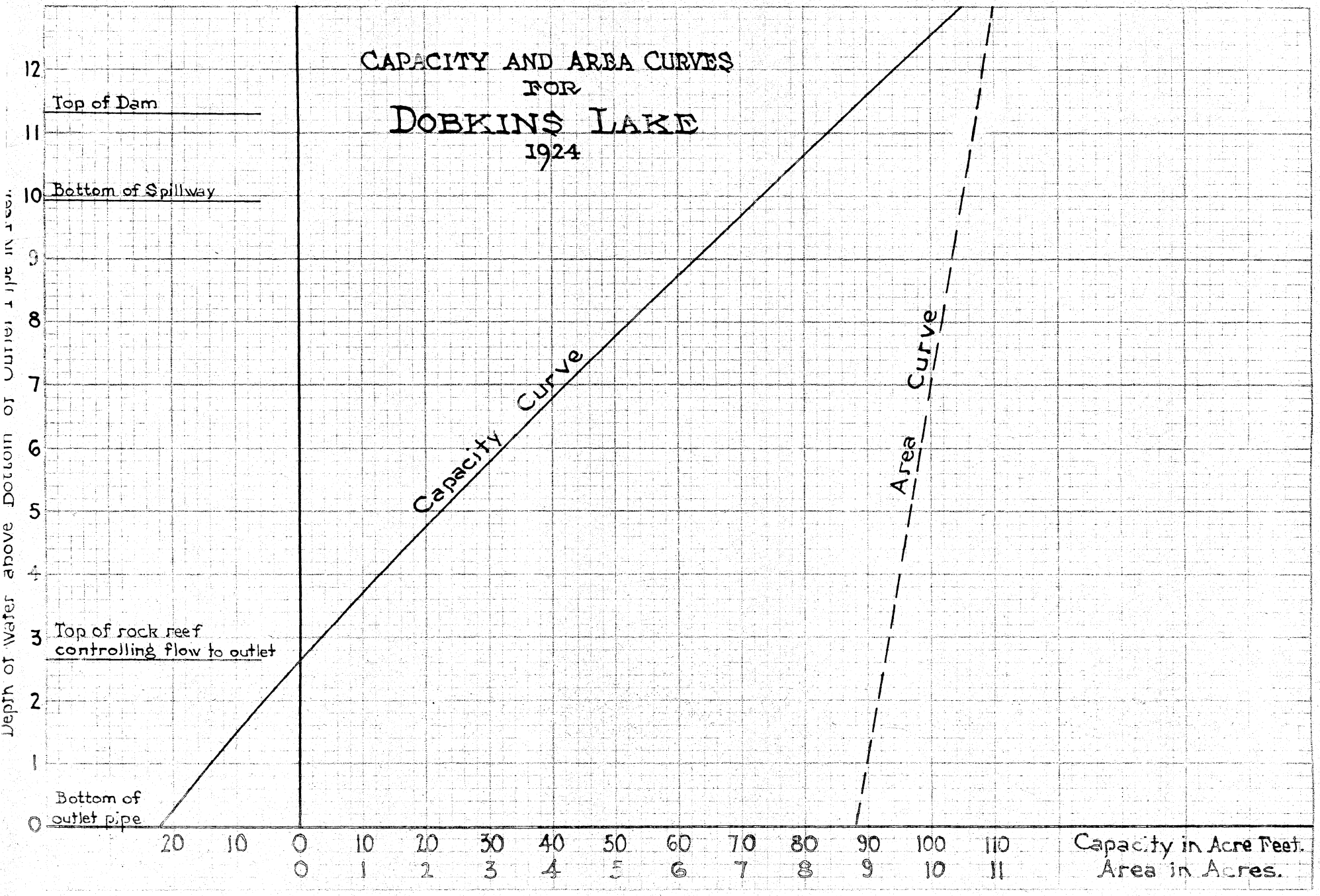

CAPACITY AND AREA CURVES
FOR
DOBKINS LAKE
1924
Top of Dam
Bottom of Spillway
Top of rock reef
controlling flow to outlet
Bottom of
outlet pipe
Capacity Curve
Area Curve
Depth of Water above Bottom of Outlet Pipe in Feet.
0
1
2
3
4
5
6
7
8
9
10
11
12
20
10
0
10
20
30
40
50
60
70
80
90
100
110
Capacity in Acre Feet.
0
1
2
3
4
5
6
7
8
9
10
11
Area in Acres.

PLATE LV

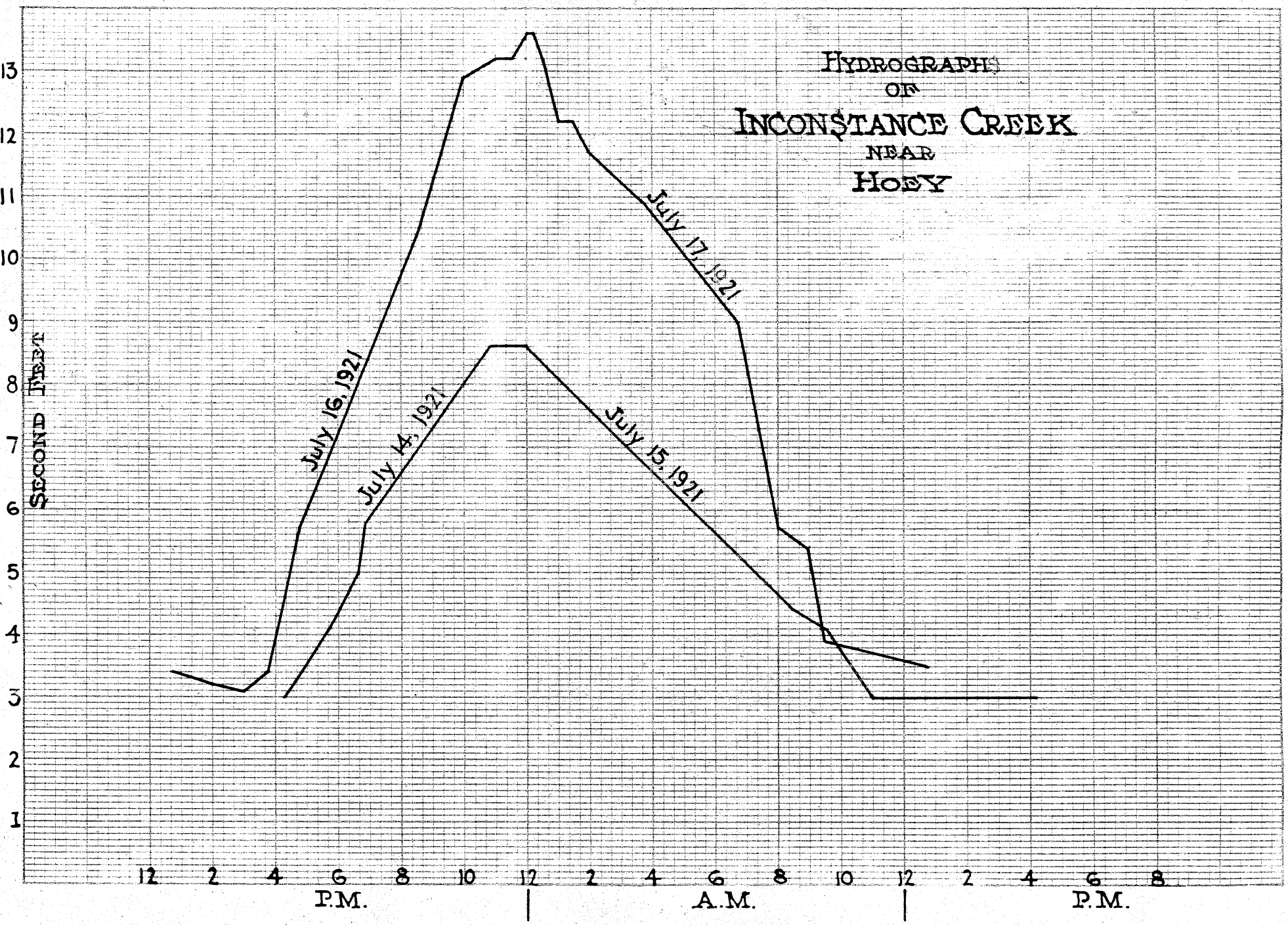

HYDROGRAPH
OF
INCONSTANCE CREEK
NEAR
HOEY
SECOND FEET
13
12
11
10
9
8
7
6
5
4
3
2
1
July 16, 1921
July 14, 1921
July 15, 1921
July 17, 1921
12 2 4 6 8 10 12 2 4 6 8 10 12 2 4 6 8
P.M.
A.M.
P.M.

PLATE LVI