STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES

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EARL WARREN, Governor
C. H. PURCELL, Director of Public Works
EDWARD HYATT, State Engineer

SHACKLEFORD CREEK ADJUDICATION

Report on

WATER SUPPLY AND USE OF WATER

on

SHACKLEFORD CREEK AND TRIBUTARIES

SISKIYOU COUNTY, CALIFORNIA

January 1945

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Sacramento, California
January 19, 1945

Mr. Harold Conkling
Deputy State Engineer
Sacramento, California

Dear Sir:

The accompanying "Report on Water Supply and Use of Water on Shackleford Creek and its Tributaries, Siskiyou County, California", is submitted herewith for your approval.

This report has been prepared pursuant to the order entered by the Division of Water Resources on June 22, 1944, granting the petition of Abbie C. Albee, L. D. Mulloy, C. J. Mulloy, Essee J. Mulloy, W. A. Hicks, Robert P. Davis, Arthur L. Soderquist, Frances Vanarsdell, Edward Burton, Lucie M. Walker and Gladys Burton for the determination of the rights of the various claimants to the waters of Shackleford Creek and its tributaries, in Siskiyou County, California. The purpose of this report is to present engineering data relative to the water supply and water requirements of the lands involved in the above mentioned proceeding, which data were collected during the field investigation made under the supervision of the undersigned.

The field investigation covered the period extending from April 18 to November 21, 1944. The investigation included measurements of the water supply and of the various diversions from the stream system, a study of the duty of water on the irrigated lands and surveys of the diversion systems and the irrigated areas.

Certain data relative to climate previously collected by the United States Weather Bureau, which are pertinent to the purpose of this report, have been included herein.

A map showing the stream courses, the conduits diverting water therefrom, lands irrigated and capable of being irrigated by each conduit, and the kind of culture upon the irrigated land on Shackleford Creek and its tributaries on a scale of one inch to 1320 feet has been prepared and is submitted as a part of this report.

Respectfully submitted,

GORDON ZANDER
Supervising Hydraulic Engineer

BEFORE THE DEPARTMENT OF PUBLIC WORKS
OF THE STATE OF CALIFORNIA
DIVISION OF WATER RESOURCES

STATE ENGINEER

IN THE MATTER OF THE DETERMINATION OF THE RIGHTS OF THE VARIOUS CLAIMANTS TO THE WATERS OF SHACKLEFORD CREEK AND ITS TRIBUTARIES, IN SISKIYOU COUNTY, CALIFORNIA.

I, Harold Conkling, Deputy State Engineer in charge of Water Rights, Division of Water Resources, Department of Public Works of the State of California, hereby approve the within contained report entitled "Report on Water Supply and Use of Water on Shackleford Creek and Tributaries, Siskiyou County, California", dated January, 1945.

Dated this 19th day of January, 1945.

HAROLD CONKLING
Deputy State Engineer in charge
of Water Rights.

I, Edward Hyatt, State Engineer and Chief of the Division of Water Resources, Department of Public Works, State of California, hereby approve and adopt the within contained report entitled "Report on Water Supply and Use of Water on Shackleford Creek and its Tributaries, Siskiyou County, California", dated January, 1945, as the report of the Division of Water Resources in the above entitled proceeding.

WITNESS my hand and the seal of the Department of Public Works of the State of California, this 19th day of January, 1945.

DEPARTMENT OF PUBLIC WORKS

By EDWARD HYATT
State Engineer and Chief of the
Division of Water Resources.

(Seal)

ORGANIZATION

C. H. Purcell	Director of Public Works
Edward Hyatt	State Engineer
Harold Conkling	Deputy State Engineer in Charge of Water Rights

This report was prepared under the direction of

GORDON ZANDER

Supervising Hydraulic Engineer

By

Harrison Smitherum	Senior Hydraulic Engineer
Paul E. Stephenson	Assistant Hydraulic Engineer
J. Victor Scammon	Assistant Hydraulic Engineer

INTRODUCTION

A petition requesting a determination, in accordance with Sections 2500 to 2900, both inclusive, of the Water Code, of the rights of the various claimants in and to the use of the water of Shackleford Creek and its tributaries in Siskiyou County, California, was filed in the office of the Division of Water Resources on January 18, 1944. The petition was signed by Abbie C. Albee, L. D. Mulloy, C. J. Mulloy, Essee J. Mulloy, W. A. Hicks, Robert P. Davis, Arthur L. Soderquist, Frances Vanarsdell, Edward Burton, Lucie M. Walker and Gladys Burton.

A conference with the water users on the Shackleford Creek Stream System was held by the Division of Water Resources at Fort Jones on February 8, 1944, as a part of the Division's investigation preliminary to action upon the petition. Action was then deferred pending further preliminary investigation in the field, which was undertaken after the commencement of the 1944 irrigation season.

Based upon its investigation, the Division of Water Resources found the facts and conditions to be such that the public interest and necessity would be served by the determination sought. The Division of Water Resources accordingly granted the petition by order under date of June 22, 1944, and thereafter duly gave notice by publication setting forth the pendency of the proceeding and specifying that the examination of the stream system would be commenced on September 1, 1944.

GENERAL DESCRIPTION OF WATERSHED

The watershed of the Shackleford Creek Stream System embraces the heavily forested, steep, mountainous terrain on the northeasterly slopes of the Salmon Mountains in the westerly portion of Siskiyou County, California. It ranges in elevation from about 7500 feet along its west rim to about 3000 feet at the foot slopes bordering Quartz Valley, an airline distance of about eight and one-half miles. The principal streams draining this area are Shackleford Creek in the central part of the basin and its tributary Mill Creek which rises east of the headwaters of Shackleford Creek. Evans Creek, a small stream, is tributary to Mill Creek from the south. The combined drainage area of these streams above the rim of Quartz Valley is about thirty-one square miles, of which twenty square miles are tributary to Shackleford Creek, nine square miles to Mill Creek and two square miles to Evans Creek. The stream system is tributary to Scott River at the lower end of Scott Valley.

Quartz Valley embraces the entire agricultural area within the basin. It is about two miles wide by about six miles long with the main axis and drainage running from south to north. Elevations on the agricultural area range from about 3100 feet at the south to about 2650 feet at Scott River.

Shackleford Creek has its source in the north and south forks which rise at an elevation of about 6500 feet. These forks unite at a point about two miles below their respective sources and, together with numerous small tributaries principally from the north, form the main stream. The main stream flows in a northeasterly direction through its steep, mountainous canyon for a distance of about six miles to Quartz Valley and thence across the valley for about two miles to the junction of Mill Creek in the NW$\frac{1}{4}$ NE$\frac{1}{4}$

of Section 11, T 43 N, R 10 W, M.D.B.&M. From this point the stream follows a northerly course through Quartz Valley to Scott River, a distance of about two and one-half miles.

Cliff and Campbell Lakes on the headwaters of the south fork have been utilized as storage reservoirs by the construction of dams across their respective outlets. A small unnamed lake and Summit Lake are on the headwaters of the north fork and Log Lake drains into the north fork near the junction of the two forks. The lakes on the north fork have no control works for artificial storage.

The total area of the watershed above the mouth of the canyon is about 20 square miles.

Mill Creek rises about two miles east of the headwaters of Shackleford Creek. The stream flows northeasterly to and across the southern end of Quartz Valley and thence northerly through Quartz Valley to its junction with Shackleford Creek.

The drainage area tributary to Mill Creek above the mouth of its canyon is about 9 square miles.

Evans Creek finds its source in the comparatively low range of mountains bordering the watershed on the south. It flows in a general northeasterly direction for a distance of about two and one-half miles to its junction with Mill Creek near the southern end of Quartz Valley.

The drainage area tributary to Evans Creek above the mouth of the canyon is about 2 square miles.

CLIMATE

The climatic characteristics of Quartz Valley, in common with similar mountain valley areas in the north central portion of California, are scarcity of rainfall, wide range of temperature, low humidity and rapid evaporation during the growing season. The precipitation, a large portion of which is in the form of snow, is generally confined to the winter months. Thunder showers occur during the summer months but cannot be depended upon for crop growth. More than 90 percent of the rainfall normally occurs between October 1 and May 31. These climatic features indicate the importance of irrigation for successful production of crops in this area.

Summaries of precipitation records kept by the United States Weather Bureau at Yreka and Etna are presented in Table 5. There are also records of precipitation for 1942-43 and 1943-44 seasons at Fort Jones. The totals for these seasons are 22.96 and 15.58 inches, respectively.

There is no long time record of killing frosts available for the Scott Valley or Quartz Valley areas; however, from the similarity of crops grown, it is probable that the length of growing season in these areas would be about the same as that in Shasta Valley. The average growing season in Shasta Valley is about 140 days.

CROPS

Due to the short growing season in Quartz Valley crops are limited to the hardier group of grasses and grains. Small acreages of corn, potatoes, clover and alfalfa are grown but represent only a small percentage of the total irrigated area. The grains are grown largely for the production of grain hay and the meadow and pasture crops for the purpose of grazing. Very little grass hay was harvested during the 1944 season.

RUN-OFF RECORDS

The standard method of collecting run-off records was used in this investigation. This consisted in the selection of a measuring station with a control of a permanent character. The station was equipped with a staff gage and an automatic water stage recorder which gave a continuous record of gage heights.

Sufficient current meter measurements were made at each station to prepare a rating curve for same, and the gage heights recorded for the various stations were applied to the respective rating curves to determine the corresponding discharges. All discharges obtained have been shown in tables included with this report, and are expressed in cubic feet per second. Multiplication by fifty converts cubic feet per second into miners inches under a four inch pressure, which is the common unit of measurement in this vicinity.

Measuring stations were established and maintained on Shackleford and Mill Creeks, as follows:

Shackleford Creek below Shackleford Ditch

This station was established to determine the water supply for the upper group of ditches diverting from Shackleford Creek and is in the SW$\frac{1}{4}$ NE$\frac{1}{4}$ of Section 9, T 43 N, R 10 W, M.D.B.&M., about 600 feet downstream from the head of the Shackleford Ditch. There are two ditches diverting from Shackleford Creek above the station.

An automatic water stage recorder was installed on April 20, 1944 and was maintained until June 26, 1944, at which time the station was abandoned on account of the unstable control. The measurements of flow up to 60.0 cubic feet per second are considered reliable. The discharge for the period from April 20 to June 26, 1944 has been tabulated in Table 6.

Shackleford Creek below Camp Ditch

This station was established to determine the losses by percolation between this point and the junction of Shackleford and Mill Creeks and is in the SE¼ NW¼ of Section 10, T 43 N, R 10 W, M.D.B.&M., about 700 feet below the head of the Camp Ditch. There are four ditches diverting from Shackleford Creek above the station and four ditches between the station and the junction of Shackleford and Mill Creeks. Measuring stations were maintained on all of these ditches, excepting two below the station.

An automatic water stage recorder was installed on April 25, 1944, and was maintained until August 3, 1944, at which time the flow passing the station was not measurable. The discharge during the period April 25 to September 30, 1944 has been tabulated in Table 7. The combined discharge at this station and of the four ditches above for the period May 2 to September 30, 1944 has been tabulated in Table 26.

Shackleford Creek above Junction with Mill Creek

A measuring station was not installed here due to the nature of the stream channel. Stations were maintained on Mill Creek above and on Shackleford Creek below the junction as hereinafter described, to determine the discharge at this point. The discharge is tabulated in Table 8.

Shackleford Creek below Junction with Mill Creek

This station is in the NW¼ NE¼ of Section 11, T 43 N, R 10 W, M.D.B.&M., about 150 feet downstream from the junction of Shackleford and Mill Creeks. It was established in conjunction with the station on Mill Creek above the junction to determine the discharge of Shackleford Creek above the junction.

An automatic water stage recorder was installed on April 21, 1944 and was maintained throughout the period of investigation. The discharge for

the period April 21 to September 30, 1944 has been tabulated in Table 9.

Shackleford Creek below Goodale Ditch

This station was established to determine the outflow from the area and to determine accretion or channel loss between this point and the junction of Shackleford and Mill Creeks. It is in SE$\frac{1}{4}$ NW$\frac{1}{4}$ of Section 35, T 44 N, R 10 W, M.D.B.&M., just downstream from the County Road Bridge and about 3100 feet upstream from the mouth of Shackleford Creek. There are two diversions from Shackleford Creek below this station.

An automatic water stage recorder was installed on April 23, 1944 and was maintained throughout the period of investigation. The discharge for the period April 23 to September 30, 1944 is tabulated in Table 10.

Mill Creek above Eastlick Ditch

This station is above all diversions from Mill Creek, and is in the SW$\frac{1}{4}$ SW$\frac{1}{4}$ of Section 22, T 43 N, R 10 W, M.D.B.&M., about 100 feet upstream from the head of the Eastlick Ditch.

An automatic water stage recorder was installed on April 21, 1944 and was maintained until July 20, 1944. Subsequent to that time the Eastlick Ditch diverted the entire flow of Mill Creek and the record of flow was obtained at the Station on that ditch. The discharge for the period April 21 to September 30, 1944 is tabulated in Table 11.

Mill Creek at County Road Bridge

This station was established to determine accretions or losses in Mill Creek between this point and the junction of Shackleford and Mill Creeks. It is in the SW$\frac{1}{4}$ NE$\frac{1}{4}$ of Section 14, T 43 N, R 10 W, M.D.B.&M. at the County Road Bridge over Mill Creek.

An automatic water stage recorder was installed on June 1, 1944 and was maintained throughout the period of investigation. The discharge for the period June 1 to September 30, 1944 has been tabulated in Table 12.

Mill Creek above Junction with Shackleford Creek

This station is in the NW¼ NE¼ of Section 11, T 43 N, R 10 W, M.D.B.&M., about 200 feet above the junction of Mill and Shackleford Creeks. It was established in conjunction with the gage on Shackleford Creek below the junction to determine the discharge of Shackleford Creek above the junction.

An automatic water stage recorder was installed on April 20, 1944, and was maintained until July 15, 1944. Subsequent to that date Shackleford Creek above the junction was dry and the station was discontinued in favor of continuing the record at the station below the junction. The discharge for the period April 20 to September 30, 1944 is tabulated in Table 13.

There are two small ditches diverting from Mill Creek between this station and the station on Mill Creek at the County Road Bridge.

WATER SUPPLY

The main source of water supply of Shackleford Creek and its tributaries is from the melting of the winter snows which fall upon the tributary drainage area during the winter months. The spring freshets from the melting snows usually begin about the first of May and continue into latter part of June. Following this period the flow shows a rapid uniform decrease until about July 15th and then a more gradual decrease until about the last of August when the sustained late summer flow stage of the stream is reached.

By comparison of the precipitation records presented in Table 5, it will be noted that the average precipitation at Etna in Scott Valley for the four year period of record is about 25 percent greater than the average of precipitation for the same period at Yreka which is located in the Shasta Valley area about 22 miles northeast of Etna. The precipitation for the 1943-44 season at Yreka was 63 percent of the four year mean and 72 percent of the 29 year mean. The precipitation at Etna for the 1943-44 season was 62 percent of the four year mean. It is assumed that the precipitation on the Shackleford Creek Stream System would have about the same relation to the normal precipitation as indicated by the above comparisons; therefore, the water supply for the Shackleford Creek area would be less than normal for the 1944 season.

The Shackleford Creek Stream System is naturally divided into five hydrographic divisions described as follows:

1. Upper Shackleford Creek

This division of the Shackleford Creek Stream System is located in the Shackleford Creek Canyon above the Whipple Ditch (Diversion 7).

There are four ditches diverting from Shackleford Creek within

this division, namely; Ralph Eastlick Ditch, Shackleford Ditch, Howard-Jones Ditch and Camp Ditch shown on the Division of Water Resources Map as Diversions 3, 4, 5 and 6, respectively. The lands served by these ditches lie some distance from Shackleford Creek, and there is no return flow from irrigation to the creek in this division. These diversion systems are hereinafter described in Tables 2, 3 and 4 and in the Appendix.

The water supply for this area is derived mainly from snow pack on the upper reaches of the watershed. Two storage reservoirs are located near the headwaters of Shackleford Creek and are used to supplement the irrigation supply of the Shackleford Ditch during the late summer months.

The total available water supply for the period from May 2 to September 30, 1944 is tabulated in Table 26. A hydrograph of this water supply is shown on Plate I. Table 26 was compiled by adding the discharges of the four ditches diverting from Shackleford Creek in this division to the flow of Shackleford Creek below the Camp Ditch. The discharge of Shackleford Creek below the Camp Ditch and that of the four ditches are tabulated in Tables 7, 14, 15, 16 and 17, respectively.

The increases in flow subsequent to about August 25 and September 1, as shown in Table 26, are from water released at Cliff and Campbell Lakes. Commencing on about August 20, water was released from Cliff Lake to Campbell Lake, thereby increasing the leakage through Campbell Lake Dam with the resultant increase in the flow of Shackleford Creek. The outlet gate at Campbell Lake was opened on about September 1, and the release of water therefrom was continued during the month of September.

On July 15 and August 15, 1944, measurements and observations were made at Cliff and Campbell Lakes and on Shackleford Creek above the intake of the Ralph Eastlick Ditch (Diversion 3) to determine the natural flow of Upper Shackleford Creek. These measurements were made prior to the

time any water was released from storage, other than the leakage through Campbell Lake Dam. On July 15, the water level in Campbell Lake was up to spillway crest level and on August 15 it was about six feet below that level. On the respective dates the leakage from Campbell Lake as measured was 4.75 and 2.90 cubic feet per second. The estimated inflow to Cliff and Campbell Lakes was 2.0 cubic feet per second and 0.50 cubic foot per second; and the measured flow of Shackleford Creek was 13.8 and 7.7 cubic feet per second. The resultant natural flow of Upper Shackleford Creek was about 11.0 cubic feet per second on July 15 and 5.3 cubic feet per second on August 15.

2. Middle Shackleford Creek

This division of Shackleford Creek Stream System is located between the mouth of the Shackleford Creek Canyon and the junction of Shackleford and Mill Creeks.

The Hobart and Dangle Ranches lie adjacent to the creek channel in this division and contribute considerable direct return flow from irrigation.

There are four ditches diverting from Shackleford Creek within this division, namely; Whipple Ditch, Hobart Domestic Ditch, Hobart Ditch and Dangle Shackleford Creek Ditch shown on the Division of Water Resources map as Diversions 7, 8, 9 and 10, respectively. These diversions are hereinafter described in Tables 2, 3 and 4 and in the Appendix.

The water supply for this section is flow from Upper Shackleford Creek in excess of the requirements of the diversions within that division hereinbefore described. The supply available for this division was inadequate to furnish any water to the ditches diverting from this portion of the creek subsequent to June 27, 1944, excepting the Hobart Domestic Ditch

which received a small flow throughout the period of investigation.

The rate of percolation in this section of stream was extremely high. A compilation of the flow in excess of that diverted within the division is tabulated in Table 27 and a hydrograph of this surplus is shown in Plate 2. The outflow from this division is represented by the flow of Shackleford Creek above the junction with Mill Creek and is tabulated in Table 8. A hydrograph of this flow is shown on Plate 2 and the interval between the two hydrographs represents the net channel loss from percolation. The apparent increase in channel loss between May 15 and June 2 is probably due to diversion by the Dangle Shackleford Creek Ditch, which was not measured.

3. Lower Shackleford Creek

This division of the Shackleford Creek Stream System is located between the junction of Shackleford Creek and Mill Creeks and the mouth of Shackleford Creek at Scott River.

There are seven ditches diverting from Shackleford Creek within this division, namely; Freitas Ditch, Chester Ditch, Hammond-Crawford-Lewis Ditch, Burton-Meamber Ditch, Goodale Ditch, Burton West Side Ditch and Burton East Side Ditch shown on the Division of Water Resources Map as Diversions 17, 18, 19, 20, 21, 22 and 23, respectively. These diversions are hereinafter described in Table 2, 3 and 4 and in the Appendix.

The water supply for this division is made up from several sources. In the early season the major portion of the water supply is surface flow from Shackleford and Mill Creeks and generally is in excess of the requirements of the seven ditches named above. Subsequent to about July 1 the surface contribution from Shackleford Creek was negligible and the water supply was made up of surface flow from Mill Creek, rising water in the Shackleford Creek channel below the junction of Shackleford

and Mill Creeks and return flow from irrigation of lands adjacent to the Shackleford Creek channel below the junction. The water supply in this division was sufficient to supply all normal demands prior to about August 1, 1944.

The total available water supply for the period from July 30 to September 30, 1944 has been tabulated in Table 28. This record was compiled from a summation of the discharges of the Freitas Ditch, Hammond-Crawford-Lewis Ditch, Burton-Meamber Ditch, Goodale Ditch and of Shackleford Creek below the Goodale Ditch as tabulated in Tables 20, 21, 22, 23 and 10, respectively. Diversions by the Chester Ditch were omitted due to lack of an adequate record. A hydrograph of this supply together with a hydrograph of the discharge of Shackleford Creek below the junction with Mill Creek, is shown on Plate 3. The interval between the two hydrographs represents the accretions from return flow and rising water in the stream channel.

4. Upper Mill Creek

This division of the Shackleford Creek Stream System is located above the mouth of the Mill Creek Canyon.

There are two ditches diverting from Mill Creek in this division, namely; Eastlick Ditch (Mill Creek) and Couch Ditch shown on the Division of Water Resources map as Diversions 11 and 12, respectively. These diversions are described hereinafter in Tables 2, 3 and 4 and in the Appendix.

The water supply for this area is derived mainly from the snow pack on the upper reaches of the watershed. The discharge of Mill Creek above the diversions is tabulated in Table 11. A hydrograph of these discharges is shown on Plate 4 together with a hydrograph of the combined diversions of the two ditches. The interval between the two hydrographs prior to about June 5 represents the flow in excess of the demands by the

two ditches. This excess flow was entirely dissipated in the 0.5 mile of channel between the lower diversion and the Shackleford Ditch (Diversion 4) crossing during the 1944 season.

The Shackleford Ditch has on occasion in the past diverted water from Mill Creek at the ditch crossing to supplement its diversion from Shackleford Creek. The flow in Mill Creek at the Shackleford Ditch is unreliable and probably would only occur when there was more than sufficient water available in Shackleford Creek to satisfy all demands therefrom.

5. Lower Mill Creek

This division of the Shackleford Creek Stream System is located between the various channels of Mill Creek in the S½ of Section 14, T 43 N, R 10 W, M.D.B.&M., and the junction of Mill Creek with Shackleford Creek.

There are four ditches diverting from Mill Creek within this division, namely; Mulloy Spring Ditch, China Ditch, Dangle Mill Creek Ditch and Denny Bar Ditch shown on the Division of Water Resources map as Diversions 13, 14, 15 and 16, respectively. These diversions are hereinafter described in Tables 2, 3 and 4 and in the Appendix.

The water supply for this area is made up from rising water in the creek channels and return flow from irrigation. The rising water occurs in numerous channels located in the S½ of Section 14 throughout the entire irrigation season. There is a continuous surface flow contribution to Mill Creek from Evans Creek which varies with the return flow from irrigation in areas adjacent to the stream channel. A contribution is also made to the China Ditch by means of a tunnel through the hill from the Shackleford Ditch.

The discharge of Mill Creek at the County Road Bridge has been tabulated in Table 12 and the discharge of Mill Creek above the junction

with Shackleford Creek is tabulated in Table 13. Hydrographs of the discharge at these two stations are shown on Plate 5. The interval between the hydrographs indicates considerable accretion to Mill Creek between the two stations until about September 5. Subsequent to this date channel loss is indicated. The accretion is principally return flow from irrigation on the Pereira and Hobart Ranches. There are two small diversions from Mill Creek between these two stations, namely; Dangle Mill Creek Ditch and Denny Bar Ditch. The average combined diversion made by these two ditches is estimated to be about 1.5 cubic feet per second. There is considerable transportation loss in both ditches. If these ditches had been taken into consideration, there would have been some accretion indicated by the hydrographs throughout the entire season.

USE OF WATER

The waters of Shackleford Creek and its tributaries are used for irrigation, domestic, stock-watering, and power purposes. Domestic and stock-watering uses are incidental to irrigation. The power use is confined to two small hydro-mechanical installations and is also incidental to irrigation. The total area receiving irrigation water is 2635 acres.

A plane table survey of the diversion systems and of the areas irrigated thereunder and the various crops grown thereon was made in 1944. A map was prepared from the surveys drawn to a scale of one inch to 1320 feet. A copy of this map has been included in a pocket in the cover of this report.

The points of diversion of the various diversion systems have been indicated on the map by numbers 1 to 27, inclusive. A description of these diversion systems are submitted in Tables 2, 3 and 4 and in the Appendix.

The areas irrigated under the various diversion systems were computed by the use of the planimeter from the plane table sheets and the irrigated acreage and ownerships thereof in each 40 acre subdivision is indicated on the map. A tabulation of these data is submitted in Table I.

The crops grown on these areas have been grouped into five classes and are designated by letters on the map as follows:

a - alfalfa, clover
g - grains
c - corn, potatoes and garden
m - meadow pasture and meadow hay
p - irrigated pasture

The common irrigation practice in Quartz Valley is to apply the water to the higher ridges of the tracts by means of laterals and other take-outs from the main conduits. From these take-outs the water spreads more or less at random on the area served by the ditch.

In the area served by the ditches diverting from Middle Shackleford Creek the water available for use normally fails prior to July 1 of

each year. Due to this shortage, it is the practice to apply large quantities of water to the higher bench lands during the period of high stream flow, which results in delayed seepage and sub-irrigation on the adjacent lower lands. This method of applying the water to the land requires quantities of water several times that necessary for similar types of soils and crops under the common irrigation practice described above.

Measurements of daily discharge were obtained on the principal ditches by means of weirs, equipped with water stage recorders, installed as near the intake of each ditch as was practicable. The records of discharge for these ditches are submitted in Tables 14 to 25, inclusive, and a description of the measuring stations follows:

Ralph Eastlick Ditch

The measuring station in this ditch was located in the SW¼ NE¼ of Section 9, T 43 N, R 10 W, M.D.B.&M., about 1700 feet below the point of diversion. The measuring device was a temporary three foot rectangular weir built in the ditch section.

An automatic water stage recorder was installed on May 20, 1944 and was maintained until August 22, 1944. Subsequent to this date the ditch was dry for the remainder of the season. The discharge at this station for the period May 9 to September 30, 1944 is tabulated in Table 14.

Shackleford Ditch

The measuring station on this ditch was located in SE¼ NE¼ of Section 9, T 43 N, R 10 W, M.D.B.&M., about 1000 feet below the point of diversion. The measuring device was a temporary five foot weir attached to the transition structure at the inlet end of a long flume.

An automatic water stage recorder was installed on April 22, 1944 and was maintained throughout the period of investigation. The

discharge at this station for the period April 23 to September 30, 1944 is tabulated in Table 15.

Howard-Jones Ditch

The measuring station in this ditch was located in SE¼ NE¼ of Section 9, T 43 N, R 10 W, M.D.B.&M., about 200 feet below the point of diversion. The measuring device was a three foot rectangular weir installed in the upstream end of the fish screen structure.

An automatic water stage recorder was installed on April 25, 1944 and was maintained throughout the season. The discharge at this station for the period May 25 to September 30, 1944 is tabulated in Table 16.

Camp Ditch

The measuring station in this ditch is located in SW¼ NW¼ of Section 10, T 43 N, R 10 W, M.D.B.&M., about 700 feet below the point of diversion. The measuring device is a permanent rectangular weir with a three foot crest and eighteen inch freeboard. The weir structure is constructed of concrete. The weir opening is made of steel set in the concrete walls.

An automatic water stage recorder was installed on April 24, 1944 and was maintained throughout the period of investigation. The discharge at this station for the period April 25 to September 30, 1944 is tabulated in Table 17.

Whipple Ditch

The measuring station in this ditch was located in SE¼ NW¼ of Section 10, T 43 N, R 10 W, M.D.B.&M., about 450 feet below the point of diversion. The measuring device was a three foot rectangular weir constructed in the ditch section.

An automatic water stage recorder was installed on April 25, 1944

and was maintained until June 29, 1944. Subsequent to this date the ditch was dry for the remainder of the season. The discharge at this station for the period April 25 to September 30, 1944 is tabulated in Table 18.

Hobart Ditch

The measuring station in this ditch was located in the SW¼ NE¼ of Section 10, T 43 N, R 10 W, M.D.B.&M., about 900 feet below the point of diversion. The measuring device was a temporary four foot rectangular weir constructed in the ditch section.

An automatic water stage recorder was installed on April 27, 1944 and maintained until June 27, 1944. Subsequent to this date the ditch was dry for the remainder of the season. The discharge at this station for the period April 27 to September 30, 1944 is tabulated in Table 19.

Freitas Ditch

The measuring station in this ditch was located in the NW¼ SE¼ of Section 2, T 43 N, R 10 W, M.D.B.&M., about 1200 feet below the point of diversion. The measuring device was a temporary three foot rectangular weir installed in the upstream end of the fish screen structure.

An automatic water stage recorder was installed on July 30, 1944 and was maintained throughout the remainder of the season. The discharge at this station for the period July 30 to September 30, 1944 is tabulated in Table 20.

Hammond-Crawford-Lewis Ditch

The measuring station in this ditch was located in the NW¼ SE¼ of Section 35, T 43 N, R 10 W, M.D.B.&M., about 900 feet below the point of diversion. The measuring device was a temporary five foot weir installed at the upstream end of an abandoned fish screen structure.

An automatic water stage recorder was installed on July 29, 1944 and maintained throughout the remainder of the season. The discharge at

this station for the period July 29 to September 30, 1944 is tabulated in Table 21.

Burton-Meamber Ditch

The measuring station in this ditch was located in the NE¼ SW¼ of Section 35, T 44 N, R 10 W, M.D.B.&M., about 350 feet below the point of diversion. The measuring device was a temporary three foot rectangular weir installed in the upstream end of the fish screen structure.

An automatic water stage recorder was installed on July 29, 1944 and was maintained throughout the remainder of the season. The discharge at this station for the period July 29 to September 30, 1944 is tabulated in Table 22.

Goodale Ditch

The measuring station in this ditch was located in the SE¼ NW¼ of Section 35, T 44 N, R 10 W, M.D.B.&M., about 900 feet downstream from the point of diversion. The measuring device was a temporary three foot rectangular weir installed in the upstream end of the fish screen structure.

An automatic water stage recorder was installed on July 23, 1944 and maintained throughout the remainder of the season. The discharge at this station for the period July 23 to September 30, 1944 is tabulated in Table 23.

Eastlick Ditch (Mill Creek)

The measuring station in this ditch was located in the SW¼ SW¼ of Section 22, T 43 N, R 10 W, M.D.B.&M., about 50 feet below the point of diversion. The measuring device was a temporary three foot rectangular weir installed in the upstream end of the fish screen structure.

An automatic water stage recorder was installed on April 29, 1944 and was maintained throughout the period of investigation. The discharge at this station for the period April 29 to September 30, 1944 is tabulated

in Table 24.

Couch Ditch

The measuring station in this ditch was located in the NE$\frac{1}{4}$ SW$\frac{1}{4}$ of section 22, T 43 N, R 10 W, M.D.B.&M., about 150 feet below the point of diversion. The measuring device was a temporary three foot rectangular weir installed in the upstream end of the fish screen structure.

An automatic water stage recorder was installed on April 29, 1944 and was maintained throughout the period of investigation. The discharge at this station for the period April 30 to September 30, 1944 is tabulated in Table 25.

A summary of the amounts of water used for irrigation under the ditches diverting from Shackleford Creek above the junction of Mill Creek and the two ditches diverting from Upper Mill Creek is submitted in Table 29. The results presented in the last column thereof represent the gross use per acre, or gross duty, of the water diverted as measured at the head gates of the respective ditches.

The high gross use of water under the Shackleford Ditch is due to transportation losses of about one-half of the gross diversion.

The low gross use of water under the Camp Ditch is due to a supplementary supply from the Freitas Ditch (Diversion 17) to over 60 percent of the acreage irrigated. Also, the amounts of water diverted by the Camp Ditch were curtailed from time to time due to construction work on the distribution system.

The high gross use of water under the Whipple and Hobart Ditches is due to high transportation losses and to the method of irrigation employed.

The low gross use of water under the Eastlick Ditch (Mill Creek) is largely accounted for by the shortage of water after about the first of July. Subsequent to that date, the water available for diversion by the ditch was not sufficient to meet normal irrigation requirements on the 413

acres of land served thereunder.

The high gross use of water under the Couch Ditch is due to transportation losses.

The Ralph Eastlick and Howard-Jones Ditches were closed prior to the end of the irrigation season.

DUTY OF WATER

The use of water on Shackleford Creek and its tributaries is confined almost entirely to consumptive uses for domestic, stock-watering and irrigation purposes. There are two minor uses for power purposes, but in each of these cases the water is reused for irrigation.

A summary of the amounts of water used for irrigation purposes under certain ditches diverting from Shackleford Creek and its tributaries is submitted in Table 30. The results in the two columns under the heading "Gross Duty" represent the gross duty of water diverted as was measured near the intakes of the respective ditches for the periods shown. These periods were selected as representing the periods during which there was adequate water available for diversion and during which the areas under the respective ditches were fully irrigated.

The "Estimated Transportation Loss" for the respective ditches, excepting the Shackleford Ditch, is based upon measurements of ditch losses made by the Division of Water Resources on ditches in Shasta Valley and in other areas, where conditions are similar to those in the Shackleford Creek area. The loss for the Shackleford Ditch was determined from measurements made on that ditch during the investigation.

The "Net Duty" shown in the last column of the table was computed by applying the transportation loss to the gross duty for the respective ditches. The average net duty for the four ditches is one cubic foot per second to 49 acres.

The soil types in Quartz Valley and the crops grown therein are generally in the same class as to water requirements; therefore, the same net duty of water can be applied to all of the irrigated lands. Based on the data presented in Table 30, a net duty of one cubic foot per second to 50 acres is considered ample to meet the water requirements in the Quartz Valley area.

APPLICATIONS BEFORE THE DIVISION OF WATER RESOURCES

Two applications to appropriate water from Shackleford Creek and its tributaries have been filed under the provisions of the Water Commission Act (now Water Code). Descriptions of the projects under these applications follow:

Application 7825

This application was filed by Mary J. Lewis on January 26, 1934 requesting a permit to appropriate 0.62 cubic foot per second of water from Mill Creek from March 1 to November 1 of each year for the irrigation of 30 acres. Permit 4305, issued on April 5, 1934, approved the appropriation as sought under the application. On April 4, 1937 the rights under this application were assigned to L. E. Elliot, and on July 29, 1939, License 1966 was issued confirming the appropriation. On October 16, 1942 this appropriation was assigned to Robert L. and Gracia L. Couch.

The point of diversion under this project is the Eastlick Ditch (Mill Creek), Diversion 11. The diversion system and use of water under this ditch is hereinafter described in Tables 2, 3 and 4 and in the Appendix.

Application 10350

This application was filed by Jesse Arnold Cason on December 31, 1941, requesting a permit to appropriate from Shackleford Creek one cubic foot per second of water from January to December 31 of each year. Permit 6113 was issued February 25, 1943, approving the application to the extent of one cubic foot per second from March 15 to July 1 of each year for the irrigation of 36 acres and water only as required for domestic purposes from October 1 of each year to March 15 of the succeeding year.

The point of diversion described in the application is that of

the Howard-Jones Ditch (Diversion 5). The diversion system and the use of water under the Howard-Jones Ditch is hereinafter described in Tables 2, 3 and 4 and in the Appendix.

TABLE 1

DESCRIPTION OF AREAS IRRIGATED FROM
SHACKLEFORD CREEK AND ITS TRIBUTARIES

Abbie C. Albee

28.8 acres in SW¼ SE¼ of Section 19, T. 43 N., R. 9 W., M.D.B.&M.
19.3 acres in NW¼ SE¼ of Section 19, T. 43 N., R. 9 W., M.D.B.&M.
28.2 acres in NE¼ SW¼ of Section 19, T. 43 N., R. 9 W., M.D.B.&M.
29.5 acres in SE¼ SW¼ of Section 19, T. 43 N., R. 9 W., M.D.B.&M.
105.8 acres - Total. (Oro Fino Ranch)

15.2 acres in SW¼ SW¼ of Section 13, T. 43 N., R. 10 W., M.D.B.&M.
5.6 acres in NW¼ SW¼ of Section 13, T. 43 N., R. 10 W., M.D.B.&M.
7.9 acres in NE¼ SE¼ of Section 14, T. 43 N., R. 10 W., M.D.B.&M.
21.6 acres in SE¼ SE¼ of Section 14, T. 43 N., R. 10 W., M.D.B.&M.
39.3 acres in NE¼ NE¼ of Section 23, T. 43 N., R. 10 W., M.D.B.&M.
29.3 acres in SE¼ NE¼ of Section 23, T. 43 N., R. 10 W., M.D.B.&M.
37.0 acres in SW¼ NE¼ of Section 23, T. 43 N., R. 10 W., M.D.B.&M.
17.3 acres in NW¼ NE¼ of Section 23, T. 43 N., R. 10 W., M.D.B.&M.
5.2 acres in NE¼ SE¼ of Section 23, T. 43 N., R. 10 W., M.D.B.&M.
7.6 acres in NW¼ SE¼ of Section 23, T. 43 N., R. 10 W., M.D.B.&M.
16.2 acres in SE¼ NW¼ of Section 23, T. 43 N., R. 10 W., M.D.B.&M.
2.4 acres in NW¼ NW¼ of Section 24, T. 43 N., R. 10 W., M.D.B.&M.
204.6 acres - Total. (Quartz Valley Ranch)

B. M. Burton

5.1 acres in SW¼ SE¼ of Section 26, T. 44 N., R. 10 W., M.D.B.&M.
12.1 acres in NW¼ NE¼ of Section 35, T. 44 N., R. 10 W., M.D.B.&M.
17.2 acres - Total. (Burton East Side Ditch)

1.2 acres in SW¼ SE¼ of Section 26, T. 44 N., R. 10 W., M.D.B.&M.
*9.7 acres in NE¼ SW¼ of Section 26, T. 44 N., R. 10 W., M.D.B.&M.
34.7 acres in SE¼ SW¼ of Section 26, T. 44 N., R. 10 W., M.D.B.&M.
45.6 acres - Total. (Burton West Side Ditch)

25.0 acres in NE¼ NW¼ of Section 35, T. 44 N., R. 10 W., M.D.B.&M.
4.0 acres in SE¼ NW¼ of Section 35, T. 44 N., R. 10 W., M.D.B.&M.
29.0 acres - Total. (Burton-Meamber Ditch)
*Denotes lands irrigated by B. M. Burton on property of Robert E. McCauley

Edward Burton and Frances Vanarsdell

24.1 acres in SE¼ NW¼ of Section 35, T. 44 N., R. 10 W., M.D.B.&M.
32.3 acres in SW¼ NW¼ of Section 35, T. 44 N., R. 10 W., M.D.B.&M.
32.6 acres in NW¼ NW¼ of Section 35, T. 44 N., R. 10 W., M.D.B.&M.
89.0 acres - Total. (Burton-Meamber Ditch)

TABLE 1 (Cont'd.)

Edward Burton and Frances Vanarsdell (Cont'd)

14.0 acres in NE¼ NE¼ of Section 34, T. 44 N., R. 10 W., M.D.B.&M.
29.0 acres in SE¼ NE¼ of Section 34, T. 44 N., R. 10 W., M.D.B.&M.
7.1 acres in SW¼ NW¼ of Section 35, T. 44 N., R. 10 W., M.D.B.&M.
4.4 acres in NW¼ NW¼ of Section 35, T. 44 N., R. 10 W., M.D.B.&M.
54.5 acres - Total. (Freitas Ditch)

C. B. Camblin

37.1 acres in NE¼ NW¼ of Section 31, T. 44 N., R. 9 W., M.D.B.&M.
27.1 acres in SE¼ NW¼ of Section 31, T. 44 N., R. 9 W., M.D.B.&M.
38.7 acres in SW¼ NW¼ of Section 31, T. 44 N., R. 9 W., M.D.B.&M.
37.9 acres in NW¼ NW¼ of Section 31, T. 44 N., R. 9 W., M.D.B.&M.
140.8 acres - Total.

J. A. Cason and Roy J. Helm

10.0 acres in SW¼ SE¼ of Section 10, T. 43 N., R. 10 W., M.D.B.&M.
3.7 acres in NE¼ SW¼ of Section 10, T. 43 N., R. 10 W., M.D.B.&M.
1.3 acres in SE¼ SW¼ of Section 10, T. 43 N., R. 10 W., M.D.B.&M.
9.7 acres in NW¼ SW¼ of Section 10, T. 43 N., R. 10 W., M.D.B.&M.
24.7 acres - Total.

Supplemental supply for irrigation purposes in SE¼ SW¼ and SW¼ SE¼ of Section 10, T. 43 N., R. 10 W., M.D.B.&M. (Cason Spring)

Henry F. Chester

21.2 acres in SW¼ SE¼ of Section 35, T. 43 N., R. 10 W., M.D.B.&M.
1.8 acres in NW¼ SE¼ of Section 35, T. 43 N., R. 10 W., M.D.B.&M.
23.0 acres - Total. (Chester Ditch)

6.9 acres in NW¼ SE¼ of Section 35, T. 43 N., R. 10 W., M.D.B.&M.
6.9 acres - Total. (Hammond - Crawford - Lewis Ditch)

Robert L. Couch and Gracia L. Couch

9.7 acres in NE¼ SE¼ of Section 22, T. 43 N., R. 10 W., M.D.B.&M.
1.9 acres in SE¼ SE¼ of Section 22, T. 43 N., R. 10 W., M.D.B.&M.
8.2 acres in SW¼ SE¼ of Section 22, T. 43 N., R. 10 W., M.D.B.&M.
0.8 acre in NW¼ SE¼ of Section 22, T. 43 N., R. 10 W., M.D.B.&M.
1.4 acres in SE¼ SW¼ of Section 22, T. 43 N., R. 10 W., M.D.B.&M.
22.0 acres - Total.

Jacob Dangle

12.2 acres in NE¼ NE¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
3.6 acres in SE¼ NE¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
*2.5 acres in SW¼ NE¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
*2.4 acres in NW¼ NE¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M
20.7 acres - Total. (Dangle Mill Creek Ditch)

TABLE 1 (Cont'd)

Jacob Dangle (Cont'd)

11.0 acres in NW¼ SE¼ of Section 2, T. 43 N., R. 10 W., M.D.B.&M.
26.8 acres in SW¼ SE¼ of Section 2, T. 43 N., R. 10 W., M.D.B.&M.
16.6 acres in SE¼ SW¼ of Section 2, T. 43 N., R. 10 W., M.D.B.&M.
12.5 acres in NW¼ NE¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
10.3 acres in NE¼ NW¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
77.2 acres - Total (Dangle Shackleford Creek Ditch)

*7.7 acres in NE¼ SE¼ of Section 2, T. 43 N., R. 10 W., M.D.B.&M.
3.2 acres in NE¼ SE¼ of Section 2, T. 43 N., R. 10 W., M.D.B.&M.
0.3 acre in SE¼ SE¼ of Section 2, T. 43 N., R. 10 W., M.D.B.&M.
11.2 acres - Total (Denny Bar Ditch)

Power purposes in SW¼ NE¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
(Dangle Mill Creek Ditch)

*Denotes lands irrigated by Jacob Dangle on property of Abbie C. Albee

Robert P. Davis

18.4 acres in SW¼ SE¼ of Section 23, T. 43 N., R. 10 W., M.D.B.&M.
19.3 acres in NW¼ SE¼ of Section 23, T. 43 N., R. 10 W., M.D.B.&M.
22.5 acres in NE¼ SW¼ of Section 23, T. 43 N., R. 10 W., M.D.B.&M.
40.0 acres in SE¼ SW¼ of Section 23, T. 43 N., R. 10 W., M.D.B.&M.
40.0 acres in SW¼ SW¼ of Section 23, T. 43 N., R. 10 W., M.D.B.&M.
17.1 acres in NW¼ SW¼ of Section 23, T. 43 N., R. 10 W., M.D.B.&M.
12.2 acres in NW¼ NE¼ of Section 26, T. 43 N., R. 10 W., M.D.B.&M.
30.9 acres in NE¼ NW¼ of Section 26, T. 43 N., R. 10 W., M.D.B.&M.
200.4 acres - Total

Douglas Eastlick

8.4 acres in SE¼ SW¼ of Section 13, T. 43 N., R. 10 W., M.D.B.&M.
16.0 acres in SW¼ SW¼ of Section 13, T. 43 N., R. 10 W., M.D.B.&M.
0.1 acre in NE¼ NE¼ of Section 23, T. 43 N., R. 10 W., M.D.B.&M.
8.8 acres in SE¼ NE¼ of Section 23, T. 43 N., R. 10 W., M.D.B.&M.
3.6 acres in NE¼ SE¼ of Section 23, T. 43 N., R. 10 W., M.D.B.&M.
1.5 acres in SW¼ NE¼ of Section 24, T. 43 N., R. 10 W., M.D.B.&M.
28.0 acres in NW¼ NE¼ of Section 24, T. 43 N., R. 10 W., M.D.B.&M.
29.4 acres in NE¼ NW¼ of Section 24, T. 43 N., R. 10 W., M.D.B.&M.
2.4 acres in SE¼ NW¼ of Section 24, T. 43 N., R. 10 W., M.D.B.&M.
24.8 acres in SW¼ NW¼ of Section 24, T. 43 N., R. 10 W., M.D.B.&M.
35.7 acres in NW¼ NW¼ of Section 24, T. 43 N., R. 10 W., M.D.B.&M.
158.7 acres - Total.

Ralph P. Eastlick

2.3 acres in NE¼ NE¼ of Section 3, T. 43 N., R. 10 W., M.D.B.&M.
3.6 acres in SE¼ NE¼ of Section 3, T. 43 N., R. 10 W., M.D.B.&M.
40.0 acres in SW¼ NE¼ of Section 3, T. 43 N., R. 10 W., M.D.B.&M.

TABLE 1 (Cont'd)

Ralph P. Eastlick (Cont'd)

16.5 acres in NW¼ NE¼ of Section 3, T. 43 N., R. 10 W., M.D.B.&M.
6.4 acres in SW¼ SE¼ of Section 3, T. 43 N., R. 10 W., M.D.B.&M.
23.2 acres in NW¼ SE¼ of Section 3, T. 43 N., R. 10 W., M.D.B.&M.
21.7 acres in NE¼ SW¼ of Section 3, T. 43 N., R. 10 W., M.D.B.&M.
24.2 acres in SE¼ SW¼ of Section 3, T. 43 N., R. 10 W., M.D.B.&M.
0.3 acre in SW¼ SW¼ of Section 3, T. 43 N., R. 10 W., M.D.B.&M.
0.3 acre in NE¼ NW¼ of Section 3, T. 43 N., R. 10 W., M.D.B.&M.
9.2 acres in SE¼ NW¼ of Section 3, T. 43 N., R. 10 W., M.D.B.&M.
141.3 acres - Total.

Evelyn C. Edwards

13.8 acres in SW¼ SE¼ of Section 15, R. 43 N., R. 10 W., M.D.B.&M.
13.8 acres - Total.

Robert A. English

14.8 acres in NE¼ NE¼ of Section 15, T. 43 N., R. 10 W., M.D.B.&M.
5.8 acres in NW¼ NE¼ of Section 15, T. 43 N., R. 10 W., M.D.B.&M.
20.6 acres - Total.

Domestic and Stock-watering purposes in NW¼ NE¼ of Section 15, T. 43 N., R. 10 W., M.D.B.&M. (English Spring)

William Hicks

3.0 acres in NW¼ SW¼ of Section 14, T. 43 N., R. 10 W., M.D.B.&M.
3.0 acres - Total.

Ralph M. Hobart and Harvey L. Hobart

3.2 acres in SW¼ SE¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
16.7 acres in NE¼ SW¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
14.7 acres in SE¼ SW¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
9.4 acres in SW¼ SW¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
11.4 acres in NW¼ SW¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
55.4 acres - Total. (Hobart Ditch)

6.7 acres in SW¼ NE¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
11.4 acres in NE¼ SW¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
10.5 acres in SE¼ SW¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
22.1 acres in SE¼ NW¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
50.7 acres - Total. (Hobart East Spring)

9.7 acres in NW¼ SE¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
11.9 acres in NE¼ SW¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
6.1 acres in SW¼ SE¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
27.7 acres - Total. (Hobart West Spring)

Domestic and stock-watering purposes in SW¼ NW¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M. (Hobart Domestic Ditch)

TABLE 1 (Cont'd)

W. I. Honeyball

26.3 acres in NE¼ NW¼ of Section 15, T. 43 N., R. 10 W., M.D.B.&M.
26.3 acres - Total.

O. R. Jordon and O. D. Jordon

1.5 acres in NW¼ SE¼ of Section 2, T. 43 N., R. 10 W., M.D.B.&M.
36.2 acres in NE¼ SW¼ of Section 2, T. 43 N., R. 10 W., M.D.B.&M.
37.7 acres - Total. (Whipple Ditch)

2.3 acres in NW¼ SE¼ of Section 2, T. 43 N., R. 10 W., M.D.B.&M.
2.3 acres - Total. (Below Freitas Ditch)

F. L. Lathrop

20.9 acres in SW¼ SW¼ of Section 26, T. 44 N., R. 10 W., M.D.B.&M.
18.2 acres in NW¼ SW¼ of Section 26, T. 44 N., R. 10 W., M.D.B.&M.
37.9 acres in NE¼ SE¼ of Section 27, T. 44 N., R. 10 W., M.D.B.&M.
6.6 acres in SE¼ SE¼ of Section 27, T. 44 N., R. 10 W., M.D.B.&M.
1.5 acres in SW¼ SE¼ of Section 27, T. 44 N., R. 10 W., M.D.B.&M.
24.9 acres in NW¼ SE¼ of Section 27, T. 44 N., R. 10 W., M.D.B.&M.
2.3 acres in NE¼ SW¼ of Section 27, T. 44 N., R. 10 W., M.D.B.&M.
112.3 acres - Total. (Burton-Meamber Ditch)

7.6 acres in SW¼ SW¼ of Section 26, T. 44 N., R. 10 W., M.D.B.&M.
9.0 acres in SE¼ SE¼ of Section 27, T. 44 N., R. 10 W., M.D.B.&M.
1.8 acres in SW¼ SE¼ of Section 27, T. 44 N., R. 10 W., M.D.B.&M.
18.4 acres - Total. (Freitas Ditch)

Leroy B. Miller

5.1 acres in NW¼ NE¼ of Section 35, T. 44 N., R. 10 W., M.D.B.&M.
5.5 acres in SW¼ NE¼ of Section 35, T. 44 N., R. 10 W., M.D.B.&M.
10.6 acres - Total. (Goodale Ditch)

11.9 acres in SW¼ NE¼ of Section 35, T. 44 N., R. 10 W., M.D.B.&M.
11.9 acres - Total. (Hammond-Crawford-Lewis Ditch)

Cornelius J. Mulloy and L. Dennis Mulloy

28.4 acres in SW¼ NE¼ of Section 14, T. 43 N., R. 10 W., M.D.B.&M.
7.7 acres in SE¼ SE¼ of Section 14, T. 43 N., R. 10 W., M.D.B.&M.
40.0 acres in SW¼ SE¼ of Section 14, T. 43 N., R. 10 W., M.D.B.&M.
26.8 acres in NW¼ SE¼ of Section 14, T. 43 N., R. 10 W., M.D.B.&M.
26.4 acres in NE¼ SW¼ of Section 14, T. 43 N., R. 10 W., M.D.B.&M.
18.0 acres in SE¼ SW¼ of Section 14, T. 43 N., R. 10 W., M.D.B.&M.
22.4 acres in SE¼ NW¼ of Section 14, T. 43 N., R. 10 W., M.D.B.&M.
169.7 acres - Total. (Howard Jones Ditch)

5.0 acres in SW¼ NE¼ of Section 14, T. 43 N., R. 10 W., M.D.B.&M.
*3.2 acres in NE¼ SE¼ of Section 14, T. 43 N., R. 10 W., M.D.B.&M.
13.2 acres in NW¼ SE¼ of Section 14, T. 43 N., R. 10 W., M.D.B.&M.
21.4 acres - Total. (Mulloy Spring Ditch)

*Denotes lands irrigated by Mulloy on property of Abbie C. Albee.

TABLE 1 (Cont'd)

Julio Pereira

0.4 acre in NE¼ SE¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
25.9 acres in SE¼ SE¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
1.9 acres in SW¼ SE¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
17.1 acres in NE¼ NE¼ of Section 14, T. 43 N., R. 10 W., M.D.B.&M.
3.9 acres in SE¼ NE¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
2.9 acres in NW¼ NE¼ of Section 11, T. 43 N., R. 10 W., M.D.B.&M.
52.1 acres - Total.

Joseph Rivallier

8.4 acres in SE¼ SE¼ of Section 26, T. 44 N., R. 10 W., M.D.B.&M.
16.6 acres in SW¼ SE¼ of Section 26, T. 44 N., R. 10 W., M.D.B.&M.
33.2 acres in NE¼ NE¼ of Section 35, T. 44 N., R. 10 W., M.D.B.&M.
11.4 acres in SE¼ NE¼ of Section 35, T. 44 N., R. 10 W., M.D.B.&M.
18.3 acres in NW¼ NE¼ of Section 35, T. 44 N., R. 10 W., M.D.B.&M.
87.9 acres - Total. (Goodale Ditch)

0.5 acre in NE¼ NE¼ of Section 35, T. 44 N., R. 10 W., M.D.B.&M.
3.0 acres in SE¼ NE¼ of Section 35, T. 44 N., R. 10 W., M.D.B.&M.
17.0 acres in NE¼ NE¼ of Section 36, T. 44 N., R. 10 W., M.D.B.&M.
23.7 acres in SE¼ NE¼ of Section 36, T. 44 N., R. 10 W., M.D.B.&M.
29.5 acres in SW¼ NE¼ of Section 36, T. 44 N., R. 10 W., M.D.B.&M.
2.1 acres in NW¼ NE¼ of Section 36, T. 44 N., R. 10 W., M.D.B.&M.
25.1 acres in SE¼ NW¼ of Section 36, T. 44 N., R. 10 W., M.D.B.&M.
21.5 acres in SW¼ NW¼ of Section 36, T. 44 N., R. 10 W., M.D.B.&M.
2.7 acres in NW¼ NW¼ of Section 36, T. 44 N., R. 10 W., M.D.B.&M.
125.1 acres - Total. (Hammond-Crawford-Lewis Ditch)

Lena Silva

10.7 acres in SW¼ NW¼ of Section 26, T. 43 N., R. 10 W., M.D.B.&M.
35.0 acres in NW¼ NW¼ of Section 26, T. 43 N., R. 10 W., M.D.B.&M.
3.9 acres in NE¼ NE¼ of Section 27, T. 43 N., R. 10 W., M.D.B.&M.
49.6 acres - Total

Arthur L. Soderquist

10.8 acres in NW¼ NW¼ of Section 14, T. 43 N., R. 10 W., M.D.B.&M.
10.8 acres - Total.

TABLE 1 (Cont'd)

United States Indian Service

11.0	acres in	NE¼ SE¼	of Section	34,	T. 44 N.,	R. 10 W.,	M.D.B.&M.
8.6	acres in	SE¼ SE¼	of Section	34,	T. 44 N.,	R. 10 W.,	M.D.B.&M.
16.6	acres in	NE¼ SW¼	of Section	35,	T. 44 N.,	R. 10 W.,	M.D.B.&M.
26.0	acres in	SE¼ SW¼	of Section	35,	T. 44 N.,	R. 10 W.,	M.D.B.&M.
40.0	acres in	SW¼ SW¼	of Section	35,	T. 44 N.,	R. 10 W.,	M.D.B.&M.
40.0	acres in	NW¼ SW¼	of Section	35,	T. 44 N.,	R. 10 W.,	M.D.B.&M.
40.0	acres in	NE¼ NW¼	of Section	2,	T. 43 N.,	R. 10 W.,	M.D.B.&M.
40.0	acres in	SE¼ NW¼	of Section	2,	T. 43 N.,	R. 10 W.,	M.D.B.&M.
40.0	acres in	SW¼ NW¼	of Section	2,	T. 43 N.,	R. 10 W.,	M.D.B.&M.
40.0	acres in	NW¼ NW¼	of Section	2,	T. 43 N.,	R. 10 W.,	M.D.B.&M.
9.7	acres in	NW¼ SW¼	of Section	2,	T. 43 N.,	R. 10 W.,	M.D.B.&M.
4.5	acres in	NE¼ NE¼	of Section	3,	T. 43 N.,	R. 10 W.,	M.D.B.&M.
7.7	acres in	SE¼ NE¼	of Section	3,	T. 43 N.,	R. 10 W.,	M.D.B.&M.
27.0	acres in	NE¼ SE¼	of Section	3,	T. 43 N.,	R. 10 W.,	M.D.B.&M.
3.7	acres in	SE¼ SE¼	of Section	3,	T. 43 N.,	R. 10 W.,	M.D.B.&M.
354.8	acres - Total.						

TABLE 2

POINTS OF DIVERSION FROM SHACKLEFORD CREEK

AND ITS TRIBUTARIES

Name of Diversion Ditch System	Number of Diversion on Division of water Resources Map	Approximate Location of Point of Diversion: Legal Sub-Division in which diversion occurs M.D.B.&M.	Reference corner for distance and bearing M.D.B.&M.	Bearing from reference corner	Distance in feet from reference corner
Cliff Lake	1	SE¼SE¼ Sec.33 T 43 N, R 11 W	SE Cor. Sec. 33 T 43 N, R 11 W	N 85° W	1150
Campbell Lake	2	SW¼ NW¼ Sec.34 T 43 N, R 11 W	NW Cor. Sec. 34 T 43 N, R 11 W	S 20° E	2700
Ralph Eastlick Ditch	3	SE¼ SW¼ Sec. 9	S¼ Cor. Sec. 9	N 4° W	1220
Shackleford Ditch	4	NW¼ SE¼ Sec. 9 T 43 N, R 10 W	E¼ Cor. Sec. 9 T 43 N, R 10 W	S 75° W	1900
Howard-Jones Ditch	5	SE¼ NE¼ Sec. 9 T 43 N, R 10 W	E¼ Cor. Sec. 9 T 43 N, R 10 W	N 66° W	570
Camp Ditch	6	SW¼ NW¼ Sec.10 T 43 N, R 10 W	W¼ Cor. Sec.10 T 43 N, R 10 W	N 65° E	800
Whipple Ditch	7	SE¼ NW¼ Sec.10 T 43 N, R 10 W	W¼ Cor. Sec.10 T 43 N, R 10 W	N 76° E	2050
Hobart Domestic Ditch	8	SE¼ NW¼ Sec.10 T 43 N, R 10 W	W¼ Cor. Sec.10 T 43 N, R 10 W	N 79° E	2380
Hobart Ditch	9	NE¼ SE¼ Sec.10 T 43 N, R 10 W	E¼ Cor. Sec.10 T 43 N, R 10 W	S 83° W	600
Dangle Shackleford Creek Ditch	10	SW¼ NW¼ Sec.11 T 43 N, R 10 W	W¼ Cor. Sec.11 T 43 N, R 10 W	N 45° E	1560
Eastlick Ditch (Mill Creek)	11	SW¼ SW¼ Sec.22 T 43 N, R 10 W	SW Cor. Sec.22 T 43 N, R 10 W	N 46° E	1600
Couch Ditch	12	NE¼ SW¼ Sec.22 T 43 N, R 10 W	S¼ Cor. Sec.22 T 43 N, R 10 W	N 13° W	1650
Mulloy Spring Ditch	13	SE¼ SE¼ Sec.14 T 43 N, R 10 W	S¼ Cor. Sec.14 T 43 N, R 10 W	N 55° E	1580
China Ditch	14	NE¼ SE¼ Sec.14 T 43 N, R 10 W	S¼ Cor. Sec.14 T 43 N, R 10 W	N 45° E	2080
Dangle Mill Creek Ditch	15	NW¼ NE¼ Sec.14 T 43 N, R 10 W	N¼ Cor. Sec.14 T 43 N, R 10 W	S 75° E	1150
Denny Bar Ditch	16	SW¼ NE¼ Sec.11 T 43 N, R 10 W	S¼ Cor. Sec.11 T 43 N, R 10 W	N 9° E	2800
Freitas Ditch	17	SW¼ SE¼ Sec. 2 T 43 N, R 10 W	S¼ Cor. Sec. 2 T 43 N, R 10 W	N 48° E	1530
Chester Ditch	18	NW¼ SE¼ Sec. 2 T 43 N, R 10 W	S¼ Cor. Sec. 2 T 43 N, R 10 W	N 15° E	2130

TABLE 2 (Cont'd)

POINTS OF DIVERSION FROM SHACKLEFORD CREEK

AND ITS TRIBUTARIES

Name of Diversion System	Number of Diversion on Division of Water Resources Map	Approximate Location of Point of Diversion: Legal Sub-Division in which diversion occurs M.D.B.&M.	Reference corner for distance and bearing M.D.B.&M.	Bearing from reference corner	Distance in feet from reference corner
Hammond-Crawford-Lewis Ditch	19	SE¼ SW¼ Sec.35 T 44 N, R 10 W	S¼ Cor. Sec.35 T 44 N, R 10 W	N 18° W	930
Burton-Meamber Ditch	20	SE¼ SW¼ Sec.35 T 44 N, R 10 W.	S¼ Cor. Sec.35 T 44 N, R 10 W	N 27° W	1300
Goodale Ditch	21	SE¼ NW¼ Sec.35 T 44 N, R 10 W	W¼ Cor. Sec.35 T 44 N, R 10 W	N 86° E	2430
Burton West Side Ditch	22	NE¼ NW¼ Sec.35 T 44 N, R 10 W	N¼ Cor. Sec.35 T 44 N, R 10 W	S 4° W	1340
Burton East Side Ditch	23	NE¼ NW¼ Sec.35 T 44 N, R 10 W	N¼ Cor. Sec.35 T 44 N, R 10 W	S 2° W	1090
Cason Spring	24	NE¼ NW¼ Sec.15 T 43 N, R 10 W	N¼ Cor. Sec.15 T 43 N, R 10 W	S 61° W	370
English Spring	25	NE¼ NW¼ Sec.15 T 43 N, R 10 W	N¼ Cor. Sec.15 T 43 N, R 10 W	S 4° W	980
Hobart West Spring	26	SE¼ SW¼ Sec.11 T 43 N, R 10 W	S¼ Cor. Sec.11 T 43 N, R 10 W	N 33° W	1060
Hobart East Spring	27	NE¼ SW¼ Sec.11 T 43 N, R 10 W	S¼ Cor. Sec.11 T 43 N, R 10 W	N 26° W	1460

TABLE 3

SUMMARY OF DIVERSION SYSTEMS DIVERTING
FROM SHACKLEFORD CREEK AND ITS TRIBUTARIES

Name of Owner	Diversion Number as per D.W.R. Map	Name of Diversion	Acreage Irrigated under Diversion	Total Acreage Irrigated on Ranch
Abbie C. Albee	1	Cliff Lake		
	2	Campbell Lake		
	4	Shackleford Ditch	310.4	310.4
B. M. Burton	20	Burton-Meamber Ditch	29.0	
	22	Burton West Side Ditch	45.6	
	23	Burton East Side Ditch	17.2	91.8
Edward Burton and Frances Vanarsdell	17	Freitas Ditch*	54.5	
	20	Burton-Meamber Ditch	89.0	143.5
C. B. Camblin	19	Hammond-Crawford-Lewis Ditch	140.8	140.8
J. A. Cason and Roy J. Helm	5	Howard-Jones Ditch	24.7	
	24	Cason Spring	Supplemental	24.7
Henry F. Chester	18	Chester Ditch	23.0	
	19	Hammond-Crawford-Lewis Ditch	6.9	29.9
Robert L. Couch and Gracia L. Couch	11	Eastlick Ditch (Mill Creek)	4.0	
	12	Couch Ditch	18.0	22.0
Jacob Dangle	10	Dangle Shackleford Creek Ditch	77.2	
	15	Dangle Mill Creek Ditch	20.7	
	16	Denny Bar Ditch	11.2	109.1
Robert P. Davis	11	Eastlick Ditch (Mill Creek)	200.4	200.4
Douglas Eastlick	11	Eastlick Ditch (Mill Creek)	158.7	158.7
Ralph P. Eastlick	3	Ralph Eastlick Ditch	141.3	141.3
Evelyn C. Edwards	4	Shackleford Ditch	13.8	13.8
Robert A. English	5	Howard-Jones Ditch	20.6	
	25	English Spring	Domestic	20.6

TABLE 3 (Cont'd)

Name of Owner	Diversion Number as per D.W.R.Map	Name of Diversion	Acreage Irrigated under Diversion	Total Acreage Irrigated on Ranch
William Hicks	5	Howard-Jones Ditch	3.0	3.0
Ralph M. Hobart and Harvey L. Hobart	9	Hobart Ditch	55.4	
	8	Hobart Domestic Ditch	Domestic	
	26	Hobart West Spring	27.7	
	27	Hobart East Spring	50.7	133.8
W. I. Honeyball	4	Shackleford Ditch	26.3	26.3
O. R. Jordon and O. D. Jordon	7	Whipple Ditch	40.0	40.0
F. L. Lathrop	20	Burton-Meamber Ditch	112.3	
	17	Freitas Ditch	18.4	130.7
Leroy B. Miller	21	Goodale Ditch	10.6	
	19	Hammond-Crawford-Lewis Ditch	11.9	22.5
Cornelius J. Mulloy and L. Dennis Mulloy	5	Howard-Jones Ditch	169.7	
	13	Mulloy Spring Ditch	21.4	191.1
Julio Pereira	14	China Ditch	52.1	52.1
Joseph Rivallier	19	Hammond-Crawford-Lewis Ditch	125.1	
	21	Goodale Ditch	87.9	213.0
Lena Silva	11	Eastlick Ditch (Mill Creek)	49.6	49.6
Arthur L. Soderquist	5	Howard-Jones Ditch	10.8	10.8
United States Indian Service	6	Camp Ditch		
	17	Freitas Ditch	354.8	354.8
		Total		2634.7

TABLE 4

SUMMARY OF DESCRIPTION OF DIVERSION SYSTEMS

Number of Diversion	Owner or Owners	Description of Diversion System: Type Dam	Size of Dam Feet	Head Gate	Conduit: Type	Size Feet	Length Miles	Capacity c.f.s.	Total Acres Irrigated
1	Abbie C. Albee	Earth & Rock Rubble	20x6	Wood 2.5 ft.wide 6.0 ft.high	Storage Reservoir Capacity 150 Acre Feet				
2	Abbie C. Albee	Earth & Rock Rubble	30x25	24" Pipe with Screw Gate	Storage Reservoir Capacity 350 Acre Feet				
3	Ralph Eastlick	Log Crib	44x6	Wood Box	Wood Flume and Earth Ditch	2.5x2 3x2	1.0	3.5	141.3
4	Abbie C. Albee	Log Crib	44x7	Wood Box	Earth Ditch	6x2	6.0	12.0	350.5
5	L.D. and C.J. Mulloy Robert A. English Arthur L. Soderquist William Hicks J.A.Cason and Roy J. Helm	Temporary Rock & Gravel		Wood Box	Earth Ditch	2.5x 1.5	2.0	9.0	228.8
6	United States Indian Service	Concrete	60 ft. long submerged	Concrete Box	Earth Ditch	4x1	2.0	8.0	354.8
7	O.R. and O.D. Jordon	Temporary Brush & Gravel	60x2	None	Earth Ditch	3x2	1.0	8.0	40.0
8	Ralph M. and Harvey L. Hobart	Temporary Gravel		None	Wood Box Pipe	0.5x 0.5 2 inch	0.35 0.35	0.02	Domestic
9	Ralph M. and Harvey L. Hobart	Temporary Gravel		Wood Box 4x3	Earth Ditch	3x2	0.5	5.0	55.4
10	Jacob Dangle	Temporary Gravel		None	Earth Ditch	3x1	0.5	5.0	77.2
11	Robert P.Davis Douglas Eastlick Lena Silva	Log & Pole Crib	25x5	Concrete 4.75x3	Earth Ditch	3x2	1.75	16.0	412.7
12	Robert L.Couch Robert P.Davis Douglas Eastlick	Temporary Gravel & Rock		None	Earth Ditch	3x1	0.7	2.0	18.0

TABLE 4 (Cont'd)

Number of Diversion	Owner or Owners	Description of Diversion System: Type Dam	Size of Dam Feet	Head Gate	Conduit: Type	Size Feet	Length Miles	Capacity c.f.s.	Total Acres Irrigated
13	C.J. and L.D. Mulloy	Earth	20x10	None	Earth Ditch	2x0.5	0.3	1.0	21.4
					Wood Flume	1x1	0.1		
14	Julio Pereira	Temporary Gravel		4x3 Concrete Box	Earth Ditch	3x2	1.0	5.0	52.1
15	Jacob Dangle	Temporary Gravel		None	Earth Ditch	2x1	0.7	1.5	20.7
16	Jacob Dangle	Temporary Gravel		None	Earth Ditch	2x1	0.7	1.5	11.2
17	United States Indian Service Edward Burton F.L.Lathrop	Temporary Gravel		None	Earth Ditch	3x2	2.0	6.5	72.9
18	Henry F. Chester	Temporary Gravel		None	Earth Ditch	2x1	0.75	2.0	23.0
19	C.B.Camblin Joseph Rivallier Leroy Miller Henry F. Chester	Temporary Gravel		Wood Waste Gate	Earth Ditch	5x2	3.0	7.0	284.7
20	B.M.Burton Edward Burton F.L.Lathrop	Temporary Gravel		None	Earth Ditch	3x2	2.5	7.0	230.3
21	Leroy B.Miller Joseph Rivallier	Temporary Gravel		Wood Waste	Earth Ditch	4x1	0.5	4.0	98.5
22	B.M.Burton	Temporary Gravel		None	Earth Ditch	3x0.5	0.5	3.0	45.6
23	B.M.Burton	Temporary Gravel		None	Earth Ditch	3x1	0.3	4.0	17.2
24	J.A.Casoni and Roy J. Helm	None		None	None			0.1	Supplemental
25	Robert A. English	None		None	See Diversion #5				Domestic
26	Ralph M. and Harvey L. Hobart	Temporary		None	Earth Ditch	3x1	0.25	2.0	27.7
27	Ralph M. and Harvey L. Hobart	10x2		None	Earth Ditch	3x1	0.5	2.0	50.7
							Total		2634.7

TABLE 5

PRECIPITATION (inches) - YREKA, SISKIYOU COUNTY
Elevation 2625 Feet

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Seasonal
1934-35	1.83	3.09	1.43	2.75	1.16	.19	2.31	.09	.00	.41	.11	.47	13.84
1935-36	1.94	1.57	2.98	7.25	2.24	.23	.55	1.16	.90	.17	.19	.02	19.20
1936-37	T	T	1.19	1.84	2.92	2.37	2.16	.62	2.37	.00	.00	.43	13.90
1937-38	1.97	5.03	4.86	3.51	5.46	4.05	.64	.44	.11	.95	.00	.41	27.43
1938-39	.82	.80	1.38	2.15	1.23	1.51	.42	.45	.04	.35	.00	2.35	11.50
1939-40	.89	.00	6.12	2.36	5.13	3.52	.69	.32	.56	.09	.00	1.71	21.39
1940-41	1.34	.98	4.13	2.85	2.99	1.51	2.07	1.66	.95	.70	.54	.81	20.53
1941-42	1.01	1.84	8.01	1.88	2.65	.33	1.60	3.96	.30	.00	.13	.47	22.18
1942-43	0.34	6.26	5.01	4.22	1.41	1.21	1.07	.66	1.07	.09	.01	.00	21.35
1943-44	2.24	1.17	.85	1.25	1.43	1.44	1.00	.73	.68	.60	.25	.22	11.86
29 Year Mean	1.13	2.44	2.99	2.32	2.38	1.40	1.05	.82	.66	.37	.18	.59	16.31
4 year Mean	1.23	2.56	4.50	2.55	2.12	1.12	1.44	1.75	.75	.34	.23	.38	18.98

PRECIPITATION (inches) ETNA, SISKIYOU COUNTY
Elevation 2945 Feet

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Seasonal
1940-41	1.73	1.11	6.72	3.13	4.56	2.35	2.57	1.83	.92	1.38	.61	.51	27.42
1941-42	1.21	2.91	9.71	3.46	3.91	.32	1.21	2.81	.20	.00	.00	.13	25.87
1942-43	.52	10.30	7.33	8.17	1.35	1.91	1.61	.61	.59	.40	.00	.00	32.79
1943-44	3.24	1.03	1.03	2.69	1.42	2.50	.79	.62	.70	.89	.25	.22	15.38
4 Year Mean	1.68	3.84	6.20	4.36	2.81	1.77	1.54	1.47	.80	.67	.22	.22	25.38

TABLE 6

DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
SHACKLEFORD CREEK BELOW SHACKLEFORD DITCH
FOR THE PERIOD APRIL 20 to JUNE 26, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1		59.2	60.2				
2		65.5	60.2				
3		75.5	57.1				
4		91.2	50.0				
5		116.	46.1				
6	NO RECORD	135.	46.1	NO RECORD	NO RECORD	NO RECORD	
7		118.	45.3				
8		105.	43.8				
9		89.5	42.3				
10		75.5	42.3				
11		64.4	41.5				
12		61.3	39.3				
13		57.1	36.4				
14		58.1	35.7				
15		55.0	35.7				
16		50.0	32.9				
17		52.0	32.2				
18		50.0	32.2				
19		50.0	34.3				
20	24.8	52.0	35.0				
21	23.1	57.1	34.3				
22	26.6	57.1	33.6				
23	32.2	50.0	30.8				
24	30.8	50.0	30.2				
25	28.4	51.0	29.0				
26	27.8	55.0	26.6				
27	27.8	60.2	NO RECORD				
28	35.7	61.3					
29	43.8	61.3					
30	53.0	60.2					
31		60.2					
Total Sec.Ft. Days	*354.0	2103.7	**1033.1				68 day Period
Mean Sec.Ft.	*32.2	67.9	**39.7				51.3
Maximum Sec.Ft.	*53.0	135.	**60.2				135.
Minimum Sec.Ft.	*23.1	50.0	**26.6				23.1
Total Acre Ft	*702.	4170.	**2050.				6920.

* 11 day Period
** 26 day Period

TABLE 7

DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
SHACKLEFORD CREEK BELOW CAMP DITCH
FOR THE PERIOD APRIL 25 to SEPTEMBER 30, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1			56.0	2.0	0.1	0.1	
2		73.0	56.0	1.5	.1	.1	
3		83.0	50.0	1.2	.1	.1	
4		90.0	43.5	1.0	.1	.1	
5		116.0	36.7	.9	.1	.1	
6		120.0	33.0	.2	.1	.1	
7		106.0	33.0	.2	.1	.1	
8	- NO RECORD -	94.0	31.5	.2	.1	.1	
9		78.0	30.5	.2	.1	.1	
10		68.0	29.5	.2	.1	.1	
11		54.0	28.9	.2	.1	.1	
12		45.3	26.3	.2	.1	.1	
13		42.6	23.3	.2	.1	.1	
14		41.7	23.3	.2	.1	.1	
15		41.4	23.3	.2	.1	.1	
16		41.1	21.1	.2	.1	.1	
17		40.8	19.5	.2	.1	.1	
18		36.7	20.0	.2	.1	.1	
19		42.6	22.2	.2	.1	.1	
20		49.0	22.8	.2	.1	.1	
21		55.0	21.7	.2	.1	.1	
22		55.0	20.6	.2	.1	.1	
23		44.4	18.1	.2	.1	.1	
24		42.6	17.7	.2	.1	.1	
25	25.6	43.5	17.7	.2	.1	.1	
26	25.6	49.0	15.9	.1	.1	.1	
27		55.0	11.8	.1	.1	.1	
28	NO RECORD	60.0	5.4	.1	.1	.1	
29		60.0	3.6	.1	.1	.1	
30		55.0	2.2	.1	.1	.1	
31		59.0		.1	.1		
Total Sec.Ft. Days	*51.2	** 1841.7	765.1	11.2	3.1	3.0	155 day Period
Mean Sec.Ft.	*25.6	**59.4	25.5	.4	.1	.1	17.3
Maximum Sec.Ft.	*25.6	** 120.0	56.0	2.0	.1	.1	120.0
Minimum Sec.Ft.	*25.6	**36.7	2.2	.1	.1	.1	.1
Total Acre Ft	*102.	** 3650.	1520.	22.	6.	6.	5310.

* 2 day Period
** 30 day Period

TABLE 8

DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
SHACKLEFORD CREEK ABOVE JUNCTION WITH MILL CREEK
FOR THE PERIOD APRIL 21 to SEPTEMBER 30, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1		37.1	28.1	4.4			
2		42.1	29.3	2.6			
3		52.8	28.1	1.8			
4		59.6	22.8	1.0			
5		77.2	19.3	1.0			
6		90.4	17.7	.2			
7	NO RECORD	79.8	15.9	.4			
8		69.3	16.5	.7			
9		60.4	13.1				
10		41.6	13.1				
11		32.2	13.1				
12		26.2	12.0				
13		25.7	10.8		NO FLOW	NO FLOW	
14		24.5	9.8				
15		21.2	10.5				
16		19.4	7.6	NO FLOW			
17		19.3	7.6				
18		17.3	7.6				
19		18.2	7.6				
20		20.5	7.6				
21	11.6	25.3	7.6				
22	13.0	25.3	6.2				
23	15.4	20.5	5.1				
24	12.4	19.3	4.9				
25	9.4	18.2	4.0				
26	9.4	19.3	4.0				
27	7.6	24.0	4.6				
28	11.6	26.5	5.5				
29	20.5	27.4	5.7				
30	30.9	27.1	4.8				
31		26.5					
Total Sec.Ft. Days	*141.8	1094.2	350.5	** 12.1			79 Day Period
Mean Sec.Ft.	* 14.2	35.3	11.7	**1.5			20.2
Maximum Sec.Ft.	* 30.9	90.4	29.3	**4.4			90.4
Minimum Sec.Ft.	* 7.6	17.3	4.0	** .2			.2
Total Acre Ft.	*281.	2170.	695.	** 24.			3170.

* 10 day Period
** 8 day Period

TABLE 9

DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
SHACKLEFORD CREEK BELOW JUNCTION WITH MILL CREEK
FOR THE PERIOD APRIL 21 to SEPTEMBER 30, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1	NO RECORD	52.7	52.7	17.8	10.4	3.8	
2		57.7	56.5	16.0	9.6	3.3	
3		65.7	52.7	15.2	8.0	3.3	
4		72.5	46.5	14.4	7.3	3.3	
5		91.6	43.0	14.4	6.6	2.8	
6		106.	39.6	13.6	6.6	2.8	
7		98.6	39.6	12.8	6.6	2.8	
8		88.8	38.4	12.8	5.9	2.8	
9		79.2	35.0	12.0	5.2	2.8	
10		59.0	35.0	12.0	5.2	2.8	
11		49.0	35.0	12.0	5.2	2.8	
12		43.0	33.0	12.0	5.2	2.8	
13		41.9	31.0	12.0	5.2	2.8	
14		41.9	30.0	12.0	5.2	2.8	
15		40.7	30.0	11.2	5.2	2.8	
16		39.6	25.0	10.4	5.2	2.8	
17		43.0	25.0	10.4	4.5	2.4	
18		41.9	25.0	10.4	4.5	2.4	
19		41.9	25.0	9.6	4.5	2.0	
20		44.2	25.0	9.6	4.5	2.0	
21	26.0	49.0	25.0	9.6	3.8	2.0	
22	28.0	49.0	25.0	9.6	3.8	2.0	
23	31.0	44.2	23.2	9.6	3.8	2.4	
24	28.0	43.0	22.3	8.8	3.8	2.4	
25	25.0	41.9	21.4	8.8	3.8	2.4	
26	25.0	43.0	21.4	9.6	3.8	2.4	
27	23.2	47.7	21.4	14.4	3.8	2.4	
28	27.0	50.2	20.5	12.0	3.8	2.4	
29	36.1	50.2	19.6	12.8	3.8	2.4	
30	46.5	49.0	18.7	12.0	3.8	2.4	
31		50.2		10.4	3.8		
Total Sec.Ft. Days	*295.8	1716.3	941.5	368.2	162.4	79.3	163 day Period
Mean Sec.Ft.	* 29.6	55.4	31.4	11.9	5.2	2.6	21.9
Maximum Sec.Ft.	* 46.5	106.	56.5	17.8	10.4	3.8	106.
Minimum Sec.Ft.	* 23.2	39.6	18.7	8.8	3.8	2.0	2.0
Total Acre Ft.	*587.	3400.	1870.	730.	322.	157.	7070.

* 10 day Period

TABLE 10

DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
SHACKLEFORD CREEK BELOW GOODALE DITCH
FOR THE PERIOD APRIL 22 to SEPTEMBER 30, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1		57.6	58.8	20.2	10.0	1.6	
2		57.6	61.2	19.6	11.0	1.6	
3		66.0	61.2	18.4	11.0	1.6	
4		75.0	54.0	17.8	10.0	2.0	
5		102.	43.8	17.8	9.5	2.0	
6	NO RECORD	117.	41.1	17.8	9.0	2.5	
7		114.	40.2	17.3	8.5	2.5	
8		100.	39.3	16.6	8.1	2.5	
9		84.2	35.7	16.0	7.7	2.5	
10		57.6	35.7	15.0	7.3	2.5	
11		50.8	35.7	14.5	7.3	2.5	
12		43.8	34.0	14.0	7.3	2.5	
13		41.1	31.6	13.0	7.3	2.5	
14		42.9	30.9	11.0	6.9	2.5	
15		42.9	32.4	11.0	6.5	2.5	
16		41.1	30.2	11.0	6.5	2.5	
17		43.8	29.5	11.0	6.1	2.5	
18		45.8	29.5	11.0	5.3	2.5	
19		43.8	29.5	11.0	5.3	2.5	
20		45.8	29.5	11.0	4.9	2.5	
21		50.8	29.5	9.5	4.5	2.5	
22	33.2	52.9	29.5	9.5	4.1	2.5	
23	39.3	46.8	28.8	9.0	4.1	2.5	
24	39.3	45.8	26.7	9.0	2.9	2.5	
25	33.2	44.8	26.0	8.6	1.6	2.5	
26	30.9	46.8	25.4	9.5	1.6	2.5	
27	29.5	50.8	23.4	14.5	1.6	2.5	
28	30.2	54.0	22.8	11.5	1.6	2.5	
29	37.5	56.4	22.1	11.0	1.6	2.5	
30	49.8	55.2	22.1	12.5	1.6	2.5	
31		55.2		10.5	1.6		
Total Sec.Ft. Days	*322.9	1832.3	1040.1	410.1	182.3	71.3	162 day Period
Mean Sec.Ft.	*35.9	59.1	34.7	13.2	5.9	2.4	23.8
Maximum Sec.Ft.	*49.8	117.	61.2	20.2	11.0	2.5	117.
Minimum Sec.Ft.	*29.5	41.1	22.1	8.6	1.6	1.6	1.6
Total Acre Ft.	*640.	3630.	2060.	813.	360.	140.	7640.

* 9 day Period

TABLE 11

DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
MILL CREEK ABOVE EASTLICK DITCH (MILL CREEK)
FOR THE PERIOD APRIL 21 to SEPTEMBER 30, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1	NO RECORD	18.9	18.0	3.9	2.0	0.7	
2		19.8	19.8	3.8	2.2	.7	
3		21.2	16.2	3.6	1.9	.7	
4		24.4	13.5	3.4	1.7	.7	
5		28.6	12.0	3.2	1.6	.7	
6		35.6	12.0	3.0	1.5	.7	
7		36.4	11.5	3.0	1.5	.7	
8		34.0	11.0	3.0	1.5	.7	
9		33.2	10.2	3.0	1.5	.7	
10		28.6	10.2	2.9	1.5	.7	
11		25.1	9.5	2.8	1.2	.7	
12		23.7	8.8	2.7	1.1	.7	
13		23.0	8.4	2.6	1.0	.7	
14		23.7	8.4	2.6	1.0	.7	
15		22.1	8.8	2.4	1.0	.7	
16		17.0	7.8	2.3	1.0	.7	
17		17.5	7.5	2.2	1.0	.7	
18		16.2	7.5	2.1	1.0	.7	
19		16.2	7.5	2.0	.9	.7	
20		16.2	7.5	1.9	.9	.7	
21	9.7	17.0	7.5	1.9	.8	.7	
22	10.0	17.0	7.2	1.9	.8	.7	
23	10.6	14.0	5.9	1.8	.9	.7	
24	10.6	14.7	5.6	1.7	.7	.7	
25	10.6	15.4	5.4	1.9	.7	.7	
26	10.6	17.0	4.9	1.9	.7	.7	
27	10.6	18.9	4.7	2.3	.7	.7	
28	11.5	19.8	4.4	2.4	.7	.7	
29	14.0	19.8	3.5	2.2	.7	.7	
30	17.0	18.9	4.0	2.0	.7	.7	
31		22.1		1.9	.7		
Total Sec.Ft. Days	*115.2	676.0	284.1	78.3	35.1	21.0	163 day Period
Mean Sec.Ft.	*11.5	21.8	9.5	2.5	1.1	.7	7.4
Maximum Sec.Ft.	*17.0	36.4	19.8	3.9	2.2	.7	36.4
Minimum Sec.Ft.	* 9.7	14.0	5.0	1.7	.7	.7	.7
Total Acre Ft.	*228.	1340.	563.	155.	69.6	41.6	2400.

* 10 day Period

TABLE 12

DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
MILL CREEK AT COUNTY ROAD BRIDGE
FOR THE PERIOD JUNE 1 to SEPTEMBER 30, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1			20.9	6.0	6.0	3.4	
2			20.9	6.0	5.6	3.1	
3			20.9	6.0	5.6	2.9	
4			18.1	6.0	5.6	2.9	
5			18.1	5.6	5.6	2.9	
6			18.1	5.2	5.2	2.9	
7			18.1	4.4	5.2	2.9	
8			18.1	4.4	5.2	2.9	
9			17.2	4.8	4.8	2.9	
10			17.2	4.8	4.8	2.9	
11			16.2	4.8	4.8	3.1	
12			16.2	4.8	4.8	3.1	
13			15.3	4.8	4.8	3.1	
14	- NO RECORD -	- NO RECORD -	14.5	4.8	4.8	3.4	
15			14.5	4.8	4.8	4.4	
16			14.5	4.8	4.4	3.4	
17			14.5	4.8	3.8	1.0	
18			14.5	4.8	3.8	1.0	
19			14.5	4.8	3.4	1.6	
20			14.5	4.8	3.4	2.1	
21			14.5	5.2	3.4	2.6	
22			14.5	5.2	3.4	2.6	
23			11.6	5.6	3.4	2.6	
24			10.9	5.6	3.4	2.6	
25			10.2	4.8	3.4	2.9	
26			9.6	3.4	3.4	2.9	
27			9.6	7.0	3.4	2.9	
28			8.5	6.3	3.4	2.9	
29			7.0	6.0	3.4	2.9	
30			6.3	6.3	3.4	3.4	
31				6.0	3.4		
Total Sec.Ft. Days			439.5	162.6	133.8	84.2	122 day Period
Mean Sec.Ft.			14.6	5.2	4.3	2.8	6.7
Maximum Sec.Ft.			20.9	7.0	6.0	4.4	20.9
Minimum Sec.Ft.			6.3	3.4	3.4	1.0	1.0
Total Acre Ft.			872.	322.	265.	167.	1630.

TABLE 13

DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
MILL CREEK ABOVE JUNCTION WITH SHACKLEFORD CREEK
FOR THE PERIOD APRIL 20 to SEPTEMBER 30, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1		15.6	24.6	13.4	10.4	3.8	
2		15.6	27.2	13.4	9.6	3.3	
3		12.9	24.6	13.4	8.0	3.3	
4		12.9	23.7	13.4	7.3	3.3	
5		14.4	23.7	13.4	6.6	2.8	
6	NO RECORD	15.6	21.9	13.4	6.6	2.8	
7		18.8	23.7	12.4	6.6	2.8	
8		19.5	21.9	12.1	5.9	2.8	
9		18.8	21.9	12.1	5.2	2.8	
10		17.4	21.9	12.1	5.2	2.8	
11		16.8	21.9	12.1	5.2	2.8	
12		16.8	21.0	12.1	5.2	2.8	
13		16.2	20.2	12.1	5.2	2.8	
14		17.4	20.2	11.8	5.2	2.8	
15		19.5	19.5	11.4	5.2	2.8	
16		20.2	17.4	10.4	5.2	2.8	
17		23.7	17.4	10.4	4.5	2.4	
18		24.6	17.4	10.4	4.5	2.4	
19		23.7	17.4	9.6	4.5	2.0	
20	14.4	23.7	17.4	9.6	4.5	2.0	
21	14.4	23.7	17.4	9.6	3.8	2.0	
22	15.0	23.7	18.8	9.6	3.8	2.0	
23	15.6	23.7	18.1	9.6	3.8	2.4	
24	15.6	23.7	17.4	8.8	3.8	2.4	
25	15.6	23.7	17.4	8.8	3.8	2.4	
26	15.6	23.7	17.4	9.6	3.8	2.4	
27	15.6	23.7	16.8	14.4	3.8	2.4	
28	15.6	23.7	15.0	12.0	3.8	2.4	
29	15.6	22.8	13.9	12.8	3.8	2.4	
30	15.6	21.9	13.9	12.0	3.8	2.4	
31		23.7		10.4	3.8		
Total Sec.Ft. Days	*168.6	622.1	591.0	356.6	162.4	79.3	164 day Period
Mean Sec.Ft.	*15.3	20.1	19.7	11.5	5.2	2.6	12.1
Maximum Sec.Ft.	*15.6	24.6	27.2	14.4	10.4	3.8	27.2
Minimum Sec.Ft.	*14.4	12.9	13.9	8.8	3.8	2.0	2.0
Total Acre Ft.	*334.	1230.	1170.	707.	322.	157.	3920.

* 11 day Period

TABLE 14

DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
RALPH EASTLICK DITCH
FOR THE PERIOD MAY 9 to SEPTEMBER 30, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1	-NO DIVERSION-	-NO DIVERSION-	2.8	3.6	2.7	-NO DIVERSION-	
2			2.7	3.6	2.3		
3			2.6	3.6	2.1		
4			2.4	3.6	2.1		
5			2.3	3.6	2.0		
6			2.1	3.6	1.9		
7			2.0	3.4	1.9		
8			1.9	3.4	1.9		
9		e 3.6	1.9	3.4	1.8		
10		e 3.6	1.9	3.4	1.8		
11		e 3.0	1.9	3.4	1.7		
12		e 2.8	1.8	3.4	1.8		
13		e 2.6	1.7	3.4	1.7		
14		e 2.6	1.7	3.4	1.8		
15		e 2.6	1.7	3.2	1.9		
16		e 2.6	1.6	3.2	1.9		
17		e 2.6	1.5	3.1	1.8		
18		e 2.6	1.4	3.1	1.7		
19		e 2.6	1.4	3.0	1.6		
20		2.6	1.4	3.0	1.5		
21		2.6	1.4	2.8	.7		
22		2.6	1.4	2.7			
23		2.6	2.7	2.6			
24		2.6	4.0	2.6			
25		2.6	3.9	2.8			
26		2.7	3.9	3.2			
27		3.0	3.8	3.5			
28		3.0	3.8	3.4			
29		2.9	3.8	3.2			
30		2.7	3.7	2.0			
31		2.7		1.6			
Total Sec.Ft. Days		*63.8	71.1	97.8	**38.6		105 day Period
Mean Sec.Ft.		*2.8	2.4	3.1	** 1.8		2.6
Maximum Sec.Ft.		*3.6	4.0	3.6	** 2.7		4.0
Minimum Sec.Ft.		*2.6	1.4	1.6	** .7		.7
Total Acre Ft.		*126.	141.	194.	**76.6		538.

* 23 day Period
** 21 day Period

e - estimated

TABLE 15

DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
SHACKLEFORD DITCH
FOR THE PERIOD APRIL 23 to SEPTEMBER 30, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1		9.9	10.9	10.7	6.7	6.2	
2		9.9	11.1	10.1	7.4	6.0	
3		10.3	11.1	9.7	6.9	8.2	
4		10.5	10.7	9.1	6.4	8.2	
5		10.9	10.1	8.6	6.2	8.0	
6	NO RECORD	10.9	9.9	8.2	6.0	8.0	
7		10.7	9.7	7.8	5.9	7.8	
8		10.5	9.7	7.4	5.9	7.4	
9		10.3	9.5	7.1	5.7	7.4	
10		10.3	9.5	6.7	5.4	7.6	
11		10.1	9.5	6.5	5.0	7.1	
12		10.1	9.3	6.0	4.7	7.1	
13		10.1	8.7	6.0	4.6	7.0	
14		10.1	8.7	5.7	4.4	4.3	
15		10.1	8.7	5.7	4.4	6.4	
16		10.1	8.4	5.4	4.1	5.0	
17		10.7	8.4	5.2	4.1	5.5	
18		10.5	8.4	5.0	4.1	6.9	
19		10.5	8.6	5.0	4.1	6.5	
20		10.5	8.7	5.0	4.1	4.9	
21		10.7	8.4	4.7	4.4	5.1	
22		10.5	8.0	4.4	5.0	5.5	
23	7.2	9.9	8.0	4.4	5.0	5.5	
24	7.1	9.9	7.6	4.2	5.5	4.9	
25	7.1	9.9	7.6	5.5	5.5	3.9	
26	7.2	10.5	7.2	6.7	5.5	4.1	
27	7.4	10.9	9.2	8.6	5.3	3.8	
28	8.2	11.1	11.5	7.8	5.2	4.1	
29	9.1	11.1	11.5	6.5	5.2	2.0	
30	9.7	10.5	10.9	6.9	5.2	1.5	
31		10.9		7.2	5.9		
Total Sec.Ft. Days	*63.0	322.9	279.5	207.8	163.8	175.9	161 day Period
Mean Sec.Ft.	* 7.9	10.4	9.3	6.7	5.3	5.9	7.5
Maximum Sec.Ft.	* 9.7	11.1	11.5	10.7	7.4	8.2	11.5
Minimum Sec.Ft.	* 7.1	9.9	7.2	4.2	4.1	1.5	1.5
Total Acre Ft.	*125.	640.	554.	412.	325.	349.	2400.

* 8 day Period

TABLE 16

DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
HOWARD-JONES DITCH
FOR THE PERIOD MAY 25 to SEPTEMBER 30, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1		5.7	6.3	2.4	1.0		
2		6.0	6.3	2.3	1.0		
3		6.7	6.1	2.1	1.0		
4		6.8	5.6	1.9	1.0		
5		7.2	5.3	1.9	1.0		
6		8.4	5.3	1.9	1.0	-NO DIVERSION-	
7	-NO RECORD-	9.0	5.2	2.6	1.0		
8		7.0	4.9	2.6	.9		
9		6.6	4.9	2.6	.9		
10		6.0	5.0	2.6	.9		
11		5.2	4.9	2.4	.9	-NO	
12		5.3	4.7	2.3	.5		
13		5.9	4.4	2.2	.1		
14		6.0	4.5	2.1	.1	0.3	
15		5.9	4.5	2.1	.1	.3	
16		5.5	4.4	2.0	.1	.4	
17		5.8	4.3	2.0	.1	.5	
18		5.5	4.3	2.0	.1	.4	
19		5.5	4.3	2.0	.1	.3	
20		5.8	4.4	2.0		.3	
21		6.1	4.2	1.9		.3	
22		5.8	3.9	1.9			
23		5.3	3.6	1.9			
24		5.3	3.5	1.8	-NO DIVERSION-	-NO DIVERSION-	
25	3.6	5.6	3.3	1.6			
26	3.7	6.0	3.6	1.3			
27	3.6	6.3	3.4	1.5			
28	4.0	6.3	2.7	1.2			
29	4.7	6.3	2.7	1.2			
30	5.5	6.0	2.6	1.1			
31		6.3		1.0			
Total Sec.Ft. Days	*25.1	191.1	133.1	60.4	**11.8	***2.8	125 day Period
Mean Sec.Ft.	* 4.2	6.2	4.4	1.9	** .6	*** .3	3.4
Maximum Sec.Ft.	* 5.5	9.0	6.3	2.6	** 1.0	*** .5	9.0
Minimum Sec.Ft.	* 3.6	5.2	2.6	1.0	** .1	*** .3	.1
Total Acre Ft.	*49.8	379.	264.	120.	**23.4	***5.6	842.

* 6 day Period
** 19 day Period
*** 8 day Period

TABLE 17

DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
CAMP DITCH
FOR THE PERIOD APRIL 25 to SEPTEMBER 30, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1		3.8	1.9	5.6	1.9	2.1	
2		3.9	2.0	5.4	1.7	1.7	
3		3.6	2.0	5.2	1.0	1.6	
4		4.6	2.6	4.9	.8	2.1	
5		5.2	4.3	4.7	.8	1.9	
6	NO RECORD	7.1	6.3	4.8	.8	1.9	
7		8.2	6.3	4.6	.8	1.9	
8		8.1	6.3	4.4	.8	1.9	
9		7.8	6.3	4.2	.8	1.9	
10		7.7	6.6	3.9	.8	2.0	
11		7.5	6.6	3.5	.8	2.1	
12		7.3	6.6	3.1	.9	2.2	
13		7.3	6.6	2.8	1.4	3.4	
14		7.6	6.6	2.7	1.5	4.5	
15		7.5	6.6	2.6	1.5	3.0	
16		7.3	6.6	2.6	1.5	3.9	
17		7.2	6.7	2.6	1.3	3.5	
18		6.8	6.8	2.5	1.2	3.4	
19		6.6	7.0	2.4	1.2	3.2	
20		6.3	7.1	2.4	1.2	3.0	
21		5.6	7.2	2.3	1.2	4.0	
22		1.1	7.3	2.3	1.5	3.3	
23		1.1	7.5	2.3	1.5	3.3	
24		1.1	7.3	2.2	1.5	3.2	
25	3.6	1.1	7.3	2.1	1.5	3.0	
26	3.6	1.5	7.3	2.0	1.4	2.8	
27	3.6	2.5	7.0	1.5	1.2	2.6	
28	3.6	1.9	6.4	1.5	1.8	2.3	
29	3.6	1.9	6.3	1.9	3.8	4.5	
30	3.7	1.9	5.8	1.9	3.9	4.9	
31		1.9		1.9	2.6		
Total Sec.Ft. Days	*21.7	153.0	181.2	96.8	44.6	85.1	159 day Period
Mean Sec.Ft.	* 3.6	4.9	6.0	3.1	1.4	2.8	3.7
Maximum Sec.Ft.	* 3.7	8.2	7.5	5.6	3.9	4.9	8.2
Minimum Sec.Ft.	* 3.6	1.1	1.9	1.5	.8	1.6	.8
Total Acre Ft.	*43.0	303.	359.	192.	88.5	169.	1160.

* 6 day Period

TABLE 18

DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
WHIPPLE DITCH
FOR THE PERIOD APRIL 25 to JUNE 28, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1	NO DIVERSION	7.3	6.2	NO DIVERSION	NO DIVERSION	NO DIVERSION	
2		6.8	6.3				
3		7.5	6.4				
4		7.5	6.1				
5		7.8	5.7				
6		7.8	5.4				
7		8.0	5.3				
8		7.7	5.3				
9		7.6	4.9				
10		7.5	4.9				
11		7.1	4.8				
12		6.7	4.7				
13		6.6	4.3				
14		6.6	4.2				
15		6.4	4.0				
16		6.0	3.7				
17		6.0	3.4				
18		6.1	3.4				
19		6.1	3.7				
20		6.4	3.8				
21		6.7	3.8				
22		6.8	3.6				
23		6.4	3.2				
24		6.1	3.1				
25	2.1	6.2	3.0				
26	2.2	6.4	2.6				
27	2.2	6.4	1.6				
28	2.5	6.6	.3				
29	7.5	6.4					
30	7.5	6.4					
31		6.4					
Total Sec.Ft. Days	*24.0	210.3	**117.7				65 day Period
Mean Sec. Ft.	* 4.0	6.8	**4.2				5.5
Maximum Sec. Ft.	* 7.5	8.0	**6.4				8.0
Minimum Sec. Ft.	* 2.1	6.0	** .3				.3
Total Acre Ft.	*47.6	417.	**233.				698.

* 6 day Period
**28 day Period

TABLE 19

DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
HOBART DITCH
FOR THE PERIOD APRIL 27 to JUNE 27, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1		9.8	4.7				
2		7.8	5.0				
3		9.0	5.0				
4		e 11.0	4.9				
5		e 16.0	4.6				
6	NO DIVERSION	e 14.0	4.2	NO DIVERSION	NO DIVERSION	NO DIVERSION	
7		e 13.0	4.2				
8		8.8	3.9				
9		7.2	4.6				
10		4.0	5.3				
11		2.9	5.1				
12		3.5	3.7				
13		3.5	3.8				
14		4.7	3.5				
15		4.6	3.7				
16	NO	4.4	2.6	NO	NO	NO	
17		4.0	2.0				
18		3.8	1.8				
19		3.8	2.6				
20		4.9	2.6				
21		5.0	3.1				
22		5.0	2.6				
23		4.6	4.4				
24		4.4	4.2				
25		4.3	3.9				
26		4.4	3.3				
27	3.3	4.9	2.2				
28	4.9	4.9					
29	8.5	5.0					
30	8.0	5.0					
31		4.7					
Total Sec.Ft. Days	* 24.7	192.9	** 101.5				63 day Period
Mean Sec.Ft.	* 6.2	6.2	** 3.8				5.1
Maximum Sec.Ft.	* 8.5	e 16.0	** 5.3				e 16.0
Minimum Sec.Ft.	* 3.3	2.9	** 1.8				1.8
Total Acre Ft.	* 49.0	383.	** 201.				633.

* 4 day Period
**27 day Period

e - estimated

TABLE 20

DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
FREITAS DITCH
FOR THE PERIOD JULY 30 to SEPTEMBER 30, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1					2.2	0.9	
2					2.3	.8	
3					2.2	.7	
4					2.7	1.0	
5					2.6	1.9	
6					2.6	1.6	
7					2.5	2.1	
8					2.4	1.9	
9					2.0	1.7	
10					1.6	1.7	
11	NO RECORD	NO RECORD	NO RECORD	NO RECORD	1.4	1.8	
12					1.5	1.9	
13					1.5	1.9	
14					1.5	1.9	
15					1.5	2.0	
16					1.3	2.1	
17					1.1	1.9	
18					1.2	1.8	
19					1.1	1.7	
20					1.1	1.6	
21					1.0	1.5	
22					1.0	1.5	
23					1.0	1.5	
24					1.0	1.5	
25					.9	1.5	
26					.9	1.4	
27					.9	1.2	
28					.9	1.2	
29					.8	1.3	
30				2.3	.9	1.2	
31				2.1	.9		
Total Sec.Ft. Days				* 4.4	46.5	46.7	63 day Period
Mean Sec.Ft.				* 2.2	1.5	1.6	1.5
Maximum Sec.Ft.				* 2.3	2.7	2.1	2.7
Minimum Sec.Ft.				* 2.1	.9	.7	.7
Total Acre Ft.				* 8.7	92.2	92.6	194.

* 2 day Period

TABLE 21

DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
HAMMOND-CRAWFORD-LEWIS DITCH
FOR THE PERIOD JULY 29 to SEPTEMBER 30, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1					1.6	.3	
2					1.7	.3	
3					1.6	.3	
4					1.5	.3	
5					1.5	.3	
6					1.4	.3	
7					1.2	.3	
8					1.2	.3	
9					1.0	.3	
10					.7	.2	
11					.4	.1	
12	-	-	-	-	.4	.1	
13	R	R	R	R	.3	.1	
14	E	E	E	E	.3	.1	
15	C	C	C	C	.3	.1	
16	O	O	O	O	.3	.1	
17	R	R	R	R	.3	.1	
18	D	D	D	D	.3	.1	
19					.3	.1	
20	O	O	O	O	.3	.1	
21	N	N	N	N	.3	.1	
22	-	-	-	-	.3	.1	
23					.3	.1	
24					.3	.1	
25					.3	.1	
26					.3	.1	
27					.3	.1	
28					.3	.1	
29				1.9	.3	.1	
30				1.9	.3	.1	
31				1.6	.3		
Total Sec.Ft. Days				* 5.4	19.9	4.9	64 day Period
Mean Sec.Ft.				* 1.8	.6	.2	.5
Maximum Sec.Ft.				* 1.9	1.7	.3	1.9
Minimum Sec.Ft.				* 1.6	.3	.1	.1
Total Acre Ft.				*10.7	39.5	9.7	59.9

* 3 day Period

TABLE 22

DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
BURTON-MEAMBER DITCH
FOR THE PERIOD July 29 to SEPTEMBER 30, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1					1.5	2.6	
2					1.4	2.5	
3					1.5	2.5	
4					1.5	2.5	
5					1.5	2.6	
6					1.5	2.6	
7					1.5	2.6	
8					1.5	2.6	
9					1.5	2.6	
10					1.5	2.6	
11	NO RECORD	NO RECORD	NO RECORD	NO RECORD	1.5	2.6	
12					1.5	2.6	
13					1.5	2.7	
14					1.5	3.0	
15					1.7	3.2	
16					1.9	3.2	
17					1.9	3.2	
18					1.9	3.1	
19					1.9	3.0	
20					1.8	2.6	
21					1.8	2.8	
22					1.8	3.3	
23					2.3	3.3	
24					2.9	3.3	
25					2.9	3.3	
26					2.8	3.3	
27					2.7	3.2	
28					2.7	3.1	
29				1.7	2.7	3.0	
30				1.7	2.7	3.0	
31				1.4	2.7		
Total Sec.Ft. Days				* 4.8	60.0	86.5	64 day Period
Mean Sec.Ft.				* 1.6	1.9	2.9	2.4
Maximum Sec.Ft.				* 1.7	2.9	3.3	3.3
Minimum Sec.Ft.				* 1.4	1.4	2.5	1.4
Total Acre Ft.				* 9.5	119.	172.	300.

* 3 day Period

TABLE 23

DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
GOODALE DITCH
FOR THE PERIOD JULY 23 to SEPTEMBER 30, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1					1.6	0.3	
2					1.6	.3	
3					1.6	.3	
4					1.6	.3	
5					1.6	.3	
6					1.5	.3	
7					1.5	.3	
8	NO RECORD -	NO RECORD -	NO RECORD -	NO RECORD -	1.5	.3	
9					1.5	.3	
10					1.5	.3	
11					1.3	.3	
12					1.2	.3	
13					1.2	.3	
14					1.2	.3	
15					1.2	.3	
16					1.2	.3	
17					1.2	.3	
18					1.1	.3	
19					1.0	.3	
20					1.0	.3	
21					1.0	.3	
22					1.0	.3	
23				1.6	1.0	.3	
24				1.5	1.0	.3	
25				1.6	.7	.3	
26				1.7	.7	.3	
27				1.7	.7	.3	
28				1.6	.7	.3	
29				1.6	.6	.3	
30				1.7	.5	.3	
31				1.6	.5		
Total Sec.Ft. Days				*14.6	35.5	9.0	70 day Period
Mean Sec.Ft.				* 1.6	1.1	.3	.8
Maximum Sec.Ft.				* 1.7	1.6	.3	1.7
Minimum Sec.Ft.				* 1.5	.5	.3	.3
Total Acre Ft.				* 29.0	70.4	17.9	117.

* 9 day Period

TABLE 24

DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
EASTLICK DITCH (MILL CREEK)
FOR THE PERIOD APRIL 29 to SEPTEMBER 30, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1		2.6	15.1	3.9	2.0	0.7	
2		2.6	15.9	3.8	2.2	.7	
3		5.5	13.5	3.6	1.9	.7	
4		14.1	12.0	3.4	1.7	.7	
5		14.7	12.0	3.2	1.6	.7	
6		14.9	11.5	3.0	1.5	.7	
7		14.3	11.0	3.0	1.5	.7	
8		14.1	10.2	3.0	1.5	.7	
9		13.5	10.2	3.0	1.5	.7	
10		12.9	10.2	2.9	1.5	.7	
11	NO RECORD	11.2	9.5	2.8	1.2	.7	
12		10.8	8.8	2.7	1.1	.7	
13		10.8	8.4	2.6	1.0	.7	
14		10.8	8.4	2.6	1.0	.7	
15		10.4	8.8	2.4	1.0	.7	
16		10.2	7.8	2.3	1.0	.7	
17		10.6	7.5	2.2	1.0	.7	
18		10.2	7.5	2.1	1.0	.7	
19		10.2	7.5	2.0	.9	.7	
20		10.2	7.5	1.9	.9	.7	
21		10.6	7.5	1.9	.8	.7	
22		10.4	7.2	1.9	.8	.7	
23		9.9	5.9	1.8	.9	.7	
24		11.7	5.6	1.7	.7	.7	
25		13.7	5.4	1.9	.7	.7	
26		14.5	4.9	1.9	.7	.7	
27		15.5	4.7	2.3	.7	.7	
28		16.2	4.4	2.4	.7	.7	
29	5.7	16.3	3.5	2.2	.7	.7	
30	3.8	15.6	4.0	2.0	.7	.7	
31		15.5		1.9	.7		
Total Sec.Ft. Days	* 9.5	364.5	256.4	78.3	35.1	21.0	155 day Period
Mean Sec.Ft.	* 4.7	11.8	8.5	2.5	1.1	.7	4.9
Maximum Sec.Ft.	* 5.7	16.3	15.9	3.9	2.2	.7	16.3
Minimum Sec.Ft.	* 3.8	2.6	4.4	1.7	.7	.7	.7
Total Acre Ft.	*18.8	723.	509.	155.	69.6	41.6	1520.

* 2 day Period

TABLE 25

DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
COUCH DITCH
FOR THE PERIOD APRIL 30 to SEPTEMBER 30, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1		1.6	1.5	0.4	0.2	0.2	
2		1.7	1.5	.4	.2	.2	
3		1.6	1.4	.3	.1	.2	
4		1.6	1.3	.3	.1	.2	
5		1.7	1.1	.3	.1	.2	
6		1.8	1.0	.3	.1	.2	
7		1.7	1.0	.3	.1	.2	
8		1.7	1.0	.3	.1	.2	
9		1.8	1.0	.2	.1	.2	
10		1.7	1.0	.2	.1	.2	
11		1.6	.9	.2	.1	.2	
12		1.5	.8	.2	.1	.2	
13		1.4	.8	.2	.1	.2	
14		1.3	.7	.2	.1	.2	
15		1.3	.6	.2	.1	.2	
16		1.3	.6	.2	.1	.2	
17		1.3	.5	.2	.1	.2	
18		1.3	.4	.2	.1	.2	
19		1.3	.4	.2	.1	.2	
20		1.3	.4	.2	.1	.2	
21		1.3	.5	.2	.1	.2	
22		1.3	.6	.2	.1	.2	
23		1.2	.4	.2	.1	.2	
24		1.2	.3	.2	.1	.2	
25		1.3	.3	.2	.2	.2	
26		1.2	.2	.2	.2	.2	
27		1.3	.2	.2	.2	.2	
28		1.3	.2	.2	.2	.2	
29		1.3	.2	.2	.2	.2	
30	1.5	1.3	.4	.2	.2	.2	
31		1.4		.2	.2		
Total Sec.Ft. Days	* 1.5	44.6	21.2	7.2	4.0	6.0	154 day Period
Mean Sec.Ft.	* 1.5	1.4	.7	.2	.1	.2	.6
Maximum Sec.Ft.	* 1.5	1.8	1.5	.4	.2	.2	1.8
Minimum Sec.Ft.	* 1.5	1.2	.2	.2	.1	.2	.1
Total Acre Ft.	* 3.0	88.5	42.0	14.3	7.9	11.9	168.

* NO RECORD

* 1 day Period

TABLE 26

*AVAILABLE WATER SUPPLY IN CUBIC FEET PER SECOND OF
UPPER SHACKLEFORD CREEK
FOR THE PERIOD MAY 2 to SEPTEMBER 30, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1			77.9	24.3	12.4	8.4	
2		92.8	78.1	22.9	12.5	7.8	
3		104.	71.8	21.8	11.1	9.9	
4		112.	64.8	20.5	10.4	10.4	
5		139.	58.7	19.7	10.1	10.0	
6		146.	56.6	18.7	9.8	10.0	
7		134.	56.2	18.6	9.7	9.8	
8		120.	54.3	18.0	9.6	9.4	
9		106.	53.1	17.5	9.3	9.4	
10		95.6	52.5	16.8	9.0	9.7	
11		79.8	51.8	16.0	8.5	9.3	
12	NO RECORD	70.8	48.7	15.0	8.0	9.4	
13		68.5	44.7	14.6	7.9	10.5	
14		68.0	44.8	14.1	7.9	9.2	
15		67.5	44.8	13.8	8.0	9.8	
16		66.6	42.1	13.4	7.7	9.4	
17		67.1	40.4	13.1	7.4	9.6	
18		62.1	40.9	12.8	7.2	10.8	
19		67.8	43.5	12.6	7.1	10.1	
20		74.2	44.4	12.6	6.9	8.3	
21		80.0	42.9	11.9	6.4	9.5	
22		75.0	41.2	11.5	6.6	8.9	
23		63.3	39.9	11.4	6.6	8.9	
24		61.5	40.1	11.0	7.1	8.2	
25		62.7	39.8	12.2	7.1	7.0	
26		69.7	37.9	13.3	7.0	7.0	
27		77.7	35.2	15.2	6.6	6.5	
28		82.3	29.8	14.0	7.1	6.5	
29		82.2	27.9	12.9	9.1	6.6	
30		76.1	25.2	12.0	9.2	6.5	
31		80.8		11.8	8.6		
Total Sec.Ft. Days		** 2553.1	1430.0	474.0	261.9	266.8	152 day Period
Mean Sec.Ft.		**85.1	47.7	15.3	8.4	8.9	32.8
Maximum Sec.Ft.		** 146.	78.1	24.3	12.5	10.8	146.
Minimum Sec.Ft.		**61.5	25.2	11.0	6.4	6.5	6.4
Total Acre Ft.		** 5060.	2840.	940.	519.	529.	9890.

*Summation of Tables 7, 14, 15, 16 and 17
** 30 day Period

TABLE 27

DAILY DISCHARGE IN CUBIC FEET PER SECOND OF
SHACKLEFORD CREEK BELOW CAMP DITCH LESS
WHIPPLE AND HOBART DIVERSIONS
FOR THE PERIOD MAY 2 to SEPTEMBER 30, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1			45.1	2.0			
2		58.4	44.7	1.5			
3		66.5	38.6	1.2			
4		71.5	32.5	1.0			
5		92.2	26.4	.9			
6		98.2	23.4				
7		85.0	23.5				
8		77.5	22.3				
9		63.2	21.0				
10		56.5	19.3				
11		44.0	19.0				
12	NO RECORD	35.1	17.9				
13		32.5	15.2				
14		30.4	15.6				
15		30.4	15.6	NO FLOW	NO FLOW	NO FLOW	
16		30.7	14.8				
17		30.8	14.1				
18		26.8	14.8				
19		32.7	15.9				
20		37.7	16.4				
21		43.3	14.8				
22		43.2	14.4				
23		33.4	10.5				
24		32.1	10.4				
25		33.0	10.8				
26		38.2	10.0				
27		43.7	8.0				
28		48.5	5.1				
29		48.6	3.6				
30		43.6	2.2				
31		47.9					
Total Sec.Ft. Days		*1455.6	545.9	**6.6			65 day Period
Mean Sec.Ft.		*48.5	18.2	**1.3			30.9
Maximum Sec.Ft.		*98.2	45.1	**2.0			98.2
Minimum Sec.Ft.		*30.4	2.2	** .9			.9
Total Ac. Ft.		*2890.	1080.	** 13.0			3980.

* 30 day Period
** 5 day Period

TABLE 28

AVAILABLE WATER SUPPLY IN CUBIC FEET PER SECOND
LOWER SHACKLEFORD CREEK
FOR THE PERIOD JULY 30 to SEPTEMBER 30, 1944

Day	Apr.	May	June	July	Aug.	Sep.	
1					16.9	5.7	
2					18.0	5.5	
3					17.9	5.4	
4					17.3	6.1	
5					16.7	7.1	
6					16.0	7.3	
7					15.2	7.8	
8					14.7	7.6	
9					13.7	7.4	
10					12.6	7.3	
11	NO RECORD	NO RECORD	NO RECORD	NO RECORD	11.9	7.3	
12					11.9	7.4	
13					11.8	7.5	
14					11.4	7.8	
15					11.2	8.1	
16					11.2	8.2	
17					10.6	8.0	
18					9.8	7.8	
19					9.6	7.6	
20					9.1	7.1	
21					8.6	7.2	
22					8.2	7.7	
23					8.7	7.7	
24					8.1	7.7	
25					6.4	7.7	
26					6.3	7.6	
27					6.2	7.3	
28					6.2	7.2	
29					6.0	7.2	
30				20.1	6.0	7.1	
31				17.2	6.0		
Total Sec.Ft. Days				* 37.3	344.2	218.4	63 day Period
Mean Sec.Ft.				* 18.6	11.1	7.3	9.5
Maximum Sec.Ft.				* 20.1	18.0	8.1	20.1
Minimum Sec.Ft.				* 17.2	6.0	5.4	5.4
Total Acre Ft.				* 74.0	683.	433.	1190.

* 2 day Period

TABLE 29

GROSS USE OF WATER ON AREAS IRRIGATED FROM
SHACKLEFORD CREEK AND ITS TRIBUTARIES
DURING THE PERIOD OF INVESTIGATION

Diversion Number	Diversion	Irrigation Period	Acreage Irrigated 1944	Gross Use: Total Acre Feet	Gross Use: Ac. Ft. per Acre
3	Ralph Eastlick Ditch	May 9 to Aug. 21	141	538	3.8
4	Shackleford Ditch	April 23 to Sept. 30	245	2400	9.8
5	Howard-Jones Ditch	April 25 to Aug. 7	205	842	4.1
6	Camp Ditch	April 25 to Sept. 30	355	1160	3.3
7	Whipple Ditch	April 25 to June 28	40	698	17.2
9	Hobart Ditch	April 27 to June 27	55	633	11.5
11	Eastlick Ditch (Mill Creek)	April 29 to Sept. 30	413	1520	3.7
12	Couch Ditch	April 30 to Sept. 30	18	168	9.3

TABLE 30

DUTY OF WATER ON AREAS IRRIGATED
FROM SHACKLEFORD CREEK AND ITS TRIBUTARIES

Diversion Number	Diversion	Irrigation Period	Area Irrigated 1944	Gross Diversion Acre Feet	Gross Duty Ac.Ft. per Acre	Gross Duty Acres per c.f.s.	Estimated Transportation Loss %	*Net Duty Acres per c.f.s.
3	Ralph Eastlick Ditch	May 9 to July 31	141	461	3.3	50	12	56
4	Shackleford Ditch	May 1 to July 31	245	1606	6.5	28	45	51
5	Howard-Jones Ditch	May 1 to June 30	205	643	3.0	39	13	46
11	Eastlick Ditch (Mill Creek)	May 1 to June 30	413	1232	2.9	40	8	44
							Mean	49

*Based upon water delivered at head of irrigated land.

TABLE 30

DUTY OF WATER ON AREAS IRRIGATED
FROM SHACKLEFORD CREEK AND ITS TRIBUTARIES

Diversion Number	Diversion	Irrigation Period	Area Irrigated 1944	Gross Diversion Acre Feet	Gross Duty Ac.Ft. per Acre	Gross Duty Acres per c.f.s.	Estimated Transportation Loss %	*Net Duty Acres per c.f.s.
3	Ralph Eastlick Ditch	May 9 to July 31	141	461	3.3	50	12	56
4	Shackleford Ditch	May 1 to July 31	245	1606	6.5	28	45	51
5	Howard-Jones Ditch	May 1 to June 30	205	643	3.0	39	13	46
11	Eastlick Ditch (Mill Creek)	May 1 to June 30	413	1232	2.9	40	8	44
							Mean	49

*Based upon water delivered at head of irrigated land.

APPENDIX

DESCRIPTION OF DIVERSION SYSTEMS

DESCRIPTION OF DIVERSION SYSTEMS

The diversion systems from Shackleford Creek and its tributaries taken consecutively from 1 to 27, inclusive, as numbered on the Division of Resources map, are described below. Summaries of these descriptions have been heretofore submitted in Tables 2, 3 and 4. Table 2 sets forth the name of each diversion system, the number assigned to the point of diversion thereof and the location of the point of diversion by bearing and distance from an established corner of the public land surveys. In Table 3 the names of the various owners are listed alphabetically with the respective diversion numbers, names of diversion systems and the acreage irrigated thereunder. In Table 4 the numbers of the various diversion systems consecutively from 1 to 27, inclusive, the names of the respective owners thereof, the type and dimensions of the various dams and head gates, the type, dimensions and capacity of each conduit and the total acreage irrigated under each diversion system have been tabulated.

Diversion 1 is that of the dam and outlet works controlling the storage of water in Cliff Lake near the headwaters of the South Fork of Shackleford Creek. The outlet is located within the SE¼ SE¼ of Section 33, T 43 N, R 11 W, M.D.B.&M. as hereinbefore described in Table 2.

The dam is an earth and rock rubble structure approximately twenty feet long and six feet high. The outlet is a wooden box two and one-half feet wide by six feet high extending through the dam. The flow of water through the outlet is controlled by flashboards. The available storage capacity of Cliff Lake is approximately 150 acre-feet.

Water stored in Cliff Lake is released down the natural channel of the South Fork of Shackleford Creek to Campbell Lake.

Diversion 2 is that of the dam and outlet works controlling the storage of water in Campbell Lake near the headwaters of the South Fork of Shackleford Creek. The outlet is located within the SW$\frac{1}{4}$ NW$\frac{1}{4}$ of Section 34, T 43 N, R 11 W, M.D.B.&M.

The dam structure is of earth and rock rubble construction, similar to that at Cliff Lake. It is approximately thirty feet long, twenty-five feet in height and about eight feet wide on the crest. The downstream face has a slope about 1/4 to 1. The outlet is a metal pipe 22 inches in diameter fitted with a screw gate at the downstream end of the pipe. The available storage capacity of Campbell Lake is approximately 350 acre-feet.

The water stored in Campbell Lake is released down the natural channel of Shackleford Creek for rediversion through the Shackleford Ditch (Diversion 4) for use on lands of Abbie C. Albee.

Diversion 3 is that of the Ralph Eastlick Ditch from the north side of Shackleford Creek. The point of diversion is located within the SE$\frac{1}{4}$ SW$\frac{1}{4}$ of Section 9, T 43 N, R 10 W, M.D.B.&M.

The diversion works consist of a log crib dam 44 feet long and six feet high. A flume section two and one-half feet wide by two feet deep and 100 feet long heads at the dam. A six foot fish screen, rotary type, is located at the end of the flume. The conduit below the fish screen is an earth ditch about one mile in length to its terminus in the NW$\frac{1}{4}$ NW$\frac{1}{4}$ of Section 10, T 43 N, R 10 W, M.D.B.&M. At this point the water conveyed by the ditch is spilled into Sniktaw Creek for rediversion and use on the lands of Ralph P. Eastlick. The ditch is about three feet wide on the bottom and two feet deep with steep side slopes. The capacity of the ditch is about 3.5 cubic feet per second. The record of discharge for this ditch is submitted in Table 14.

An area of 141.3 acres of meadow, alfalfa, grain and pasture is irrigated from this ditch on the lands of Ralph Eastlick.

Diversion 4 is that of the Shackleford Ditch from the south side of Shackleford Creek, and is also the point of rediversion of storage water released from Cliff and Campbell Lakes. It is located within the NW¼ SE¼ of Section 9, T 43 N, R 10 W, M.D.B.&M.

The dam is a log crib structure 44 feet long and seven feet high provided with an overflow apron. A wooden flume five feet wide by one and one-half feet deep and 100 feet in length heads at the dam. A seven and one-half foot fish screen, rotary type, is located about 40 feet from the end of the flume. The conduit below the fish screen is an earth ditch with short wooden flume and steel pipe sections across numerous washouts and ravines along the course of the ditch. The ditch is about six feet wide on the bottom and two feet deep with steep side slopes, the flume sections are five feet wide by two feet deep and the pipe sections are twenty-two inches in diameter. The conduit is about six miles in length to its terminus in the SW¼ of Section 13, T 43 N, R 10 W, M.D.B.&M. and has a capacity of about 12.0 cubic feet per second. The record of discharge for this ditch is submitted in Table 15.

The principal use of water from the Shackleford Ditch is on the Albee property in Quartz Valley. The ditch also conveys water to the Albee Oro Fino property, which is outside the Shackleford Creek drainage area. A lateral through a tunnel in the ridge between Quartz Valley and Oro Fino Valley supplies the Oro Fino Ranch. The ditch is also used to transport water diverted from Mill Creek through the Eastlick Ditch (Mill Creek) hereinafter described under Diversion 11.

A summary of the acreages irrigated by water diverted through the Shackleford Ditch follows:

Owner	Quartz Valley Acres	Oro Fino Acres
Abbie C. Albee	204.6	105.8
W. I. Honeyball	26.3	
Evelyn C. Edwards	13.8	
Total	244.7	105.8

Diversion 5 is that of the Howard-Jones Ditch from the south side of Shackleford Creek. The point of diversion is located within the SE¼ NE¼ of Section 9, T 43 N, R 10 W, M.D.B.&M.

A temporary rock and gravel dam is used to divert water into an earth ditch about two and one-half feet wide on the bottom and one and one-half feet deep. A four foot fish screen, bar type, is located about 150 feet from the head of the ditch. The conduit is about two miles in length and terminates in the SE¼ SW¼ of Section 14, T 43 N, R 10 W, M.D.B.&M. The capacity of the ditch is about 9.0 cubic feet per second. The record of discharge for this ditch is submitted in Table 16.

The ditch serves a total irrigated area of 228.8 acres of grain and pasture, summarized under the several ownerships as follows:

Owner	Acres Irrigated
Cornelius J. Mulloy and L. Dennis Mulloy	169.7
Robert A. English	20.6
William Hicks	3.0
Arthur L. Soderquist	10.8
J. A. Cason and Roy J. Helm	24.7
Total	228.8

Diversion 6 is that of the Camp Ditch from the north side of Shackleford Creek. The point of diversion is located within the SW¼ NW¼ of Section 10, T 43 N, R 10 W, M.D.B.&M.

A submerged concrete dam 60 feet long and eight inches thick on the crest is used to divert water through a concrete head gate two feet wide by three feet high, equipped with a slide gate. From the head gate the conduit is an earth ditch about four feet wide on the bottom and two feet deep and approximately two miles in length to its junction with the Freitas Ditch (Diversion 17) near the northwest corner of Section 2, T 43 N, R 10 W, M.D.B.&M. A six foot fish screen, bar type, is located about 350 feet from the head of the ditch. A permanent rectangular weir with a three foot crest and eighteen inch freeboard is located 700 feet from the point of diversion. The capacity of the ditch is about 8.0 cubic feet per second. The record of discharge for the ditch is submitted in Table 17.

An area of 354.8 acres of grain, pasture and meadow lands owned by the United States Indian Service is irrigated by means of this ditch. A supplementary supply for about 203 acres of this area is obtained through the Freitas Ditch (Diversion 17).

Diversion 7 is that of the Whipple Ditch from the north side of Shackleford Creek. The point of diversion is located within the SE¼ NW¼ of Section 10, T 43 N, R 10 W, M.D.B.&M.

A brush and gravel dam about 60 feet long and two feet high is used to divert water into an earth ditch. The ditch is about three feet wide on the bottom and two feet deep and is about one mile in length to its terminus in the NE¼ SW¼ of Section 2, T 43 N, R 10 W, M.D.B.&M. The capacity of the ditch is about 8.0 cubic feet per second. The conveyance loss in this conduit is extremely high. The record of discharge for this ditch is submitted in Table 18.

The ditch serves an irrigated area of 40.0 acres of grain and pasture lands owned by O. R. and O. D. Jordon.

Diversion 8 is that of the Hobart Domestic Ditch from the south side of Shackleford Creek. The point of diversion is within the SE$\frac{1}{4}$ NW$\frac{1}{4}$ of Section 10, T 43 N, R 10 W, M.D.B.&M.

A temporary gravel dam is used to divert water into a six inch by six inch board lined ditch about 0.35 mile in length. A two-inch pipe 0.35 mile in length extends from the end of the ditch section to the Harvey L. and Ralph M. Hobart property in the SW$\frac{1}{4}$ NW$\frac{1}{4}$ of Section 11, T 43 N, R 10 W, M.D.B.&M., where the water diverted through the system is used for domestic and stock-watering purposes.

Diversion 9 is that of the Hobart Ditch from the south side of Shackleford Creek. The point of diversion is within the NE$\frac{1}{4}$ SE$\frac{1}{4}$ of Section 10, T 43 N, R 10 W, M.D.B.&M.

A temporary gravel dam is used to divert water into an earth ditch. The ditch is about three feet wide on the bottom and two feet deep and is about one-half mile in length to its terminus in the SW$\frac{1}{4}$ of Section 11, T 43 N, R 10 W, M.D.B.&M. The maximum capacity of the ditch is limited to about 5.0 cubic feet per second by two pipe culverts under the County Road. Water diverted in excess of this amount flows north along the County Road to a culvert near the quarter corner common to Sections 10 and 11, T 43 N, R 10 W, M.D.B.&M. and thence down a draw to lands located in the N$\frac{1}{2}$ of Section 11, which are normally irrigated under the Hobart East Spring (Diversion 27). The percolation losses over this route are very high and only a small percentage of this excess water reaches the irrigated land. The record of discharge for this ditch is submitted in Table 19.

This ditch is used for direct irrigation of 55.4 acres of pasture and meadow lands of Harvey L. and Ralph M. Hobart.

Diversion 10 is that of the Dangle Shackleford Creek Ditch from the north side of Shackleford Creek. The point of diversion is within the SW$\frac{1}{4}$ NW$\frac{1}{4}$ of Section 11, T 43 N, R 10 W, M.D.B.&M.

A temporary gravel dam is used to divert water into an earth ditch. The ditch is about three feet wide and one foot deep and is about 0.5 mile in length to its terminus in the SE¼ SW¼ of Section 2, T 43 N, R 10 W, M.D.B.&M. The capacity of the ditch was estimated to be about 5.0 cubic feet per second.

An area of 77.2 acres of grain and alfalfa on the lands of Jacob Dangle is irrigated by this ditch.

No measurements of capacities or amounts of water were made during 1944.

Diversion 11 is that of the Eastlick Ditch (Mill Creek) from the south side of Mill Creek. The point of diversion is within the SW¼ SW¼ of Section 22, T 43 N, R 10 W, M.D.B.&M.

A log and pole crib dam 25 feet long and five feet high is used to divert water through a concrete box four feet eight inches wide, three feet deep and thirteen feet long. The flow of water into the box is controlled by a wooden slide gate at the upstream end. A four foot fish screen, bar type, is located about 50 feet downstream from the head gate. The conduit below the fish screen is an earth ditch about three feet wide on the bottom and two feet deep and is about 1.75 miles in length to its terminus in the SW¼ SE¼ of Section 23, T 43 N, R 10 W, M.D.B.&M. The ditch has a capacity of about 16.0 cubic feet per second. The record of discharge for this ditch is submitted in Table 24.

The ditch is owned by Robert P. Davis and Douglas Eastlick. However, Lena Silva, under agreement with Robert P. Davis and Edward Burton, et al., (now Douglas Eastlick), is entitled to a ten percent share in the ditch and the water flowing therein, and Robert L. Couch is entitled to use of the ditch under agreement with Walter D. Jones, et al., (now Robert P. Davis and Douglas Eastlick), and Abbie C. Albee in connection with the use of water under License Number 1966 issued by the Division of Water Resources, State of California.

License Number 1966 was issued to L. E. Elliot on July 21, 1939 in confirmation of certain rights of appropriation initiated January 26, 1934 by the filing of Application Number 7825 which application was approved by the issuance of Permit Number 4305. The application was for the amount of 0.62 cubic foot per second for the irrigation of 30 acres of alfalfa and general crops. This license was assigned to Robert L. Couch and Gracia L. Couch on October 16, 1942.

The Davis, Silva and Couch properties are irrigated directly from the Eastlick Ditch. The Douglas Eastlick property is served by this ditch in combination with the use of the lower end of the Shackleford Ditch under agreement with Abbie C. Albee.

The Douglas Eastlick water is conveyed by the Eastlick Ditch (Diversion 11) from Mill Creek to a point in the NE¼ NE¼ of Section 27, T 43 N, R 10 W, M.D.B.&M; thence across the Silva and Davis properties to the Shackleford Ditch in the SW¼ SW¼ of Section 23 (above township and range); and thence through the Shackleford Ditch to the Evans Creek crossing. At this point the water is either spilled into Evans Creek for rediversion therefrom at point in the NW¼ SE¼ of Section 23 (above township and range), or is carried on through the Shackleford Ditch to the Eastlick Tap in the NW¼ NE¼ of Section 24 (above township and range), for use on the Douglas Eastlick property.

The following acreages are irrigated under the Eastlick Ditch:

Owner	Acres
Robert P. Davis	200.4
Douglas Eastlick	158.7
Lena Silva	49.6
Robert L. Couch	4.0
Total	412.7

Diversion 12 is that of the Couch Ditch from the south side of Mill Creek. The point of diversion is within the NE$\frac{1}{4}$ SW$\frac{1}{4}$ of Section 22, T 43 N, R 10 W, M.D.B.&M.

A temporary gravel dam is used to divert water into an earth ditch. A four foot fish screen, bar type, is located about 150 feet below the head of the ditch. The conduit below the fish screen is an earth ditch about three feet wide on the bottom and one foot deep. The ditch is about 0.6 mile in length and terminates in the SE$\frac{1}{4}$ SE$\frac{1}{4}$ of Section 22, T 43 N, R 10 W, M.D.B.&M. The capacity of the ditch is about 2.0 cubic feet per second. The record of discharge for this ditch is submitted in Table 25.

An area of about 18.0 acres on the Robert L. Couch property is irrigated by means of this ditch. This area is also susceptible of irrigation under the Eastlick Ditch (Diversion 11).

Diversion 13 is that of the Mulloy Spring Ditch from an unnamed channel of Mill Creek. The point of diversion is within the SE$\frac{1}{4}$ SE$\frac{1}{4}$ of Section 14, T 43 N, R 10 W, M.D.B.&M.

An earth dam about 20 feet long and ten feet high is used to divert water from the channel into an earth ditch about two feet wide and six inches deep and about one hundred feet in length. The conduit from the end of the earth ditch section consists of about 500 feet of wooden flume and 1600 feet of earth ditch. The total length of conduit is about 0.4 mile to its terminus in the NW$\frac{1}{4}$ SE$\frac{1}{4}$ of Section 14, T 43 N, R 10 W, M.D.B.&M. The capacity of the conduit is about 1.0 cubic foot per second.

An area of 21.4 acres of pasture on the lands of Cornelius J. and L. Dennis Mulloy is irrigated from the ditch.

Diversion 14 is that of the China Ditch from the east side of Mill Creek. The point of diversion is within the NE$\frac{1}{4}$ SE$\frac{1}{4}$ of Section 14, T 43 N, R 10 W, M.D.B.&M.

A temporary gravel dam is used to divert water into an earth ditch

about three feet wide on the bottom and two feet deep. A four foot fish screen, bar type, is located approximately 150 feet from the head of the ditch. About 360 feet downstream from the fish screen, water enters the ditch through a tunnel which carries return water from irrigation on the Albee Ranch. The conduit is about one mile in length to its terminus in NE¼ SE¼ of Section 11, T 43 N, R 10 W, M.D.B.&M. The capacity of the ditch is about 5.0 cubic feet per second.

An area of 52.1 acres of corn, pasture and grain on Julio Pereira property is irrigated from the ditch.

Diversion 15 is that of the Dangle Mill Creek ditch from the east side of Mill Creek. The point of diversion is within the NW¼ NE¼ of Section 14, T 43 N, R 10 W, M.D.B.&M.

A temporary gravel dam is used to divert water into an earth ditch about two feet wide and one foot deep. The conduit is about 0.7 miles in length to its terminus in the NE¼ NE¼ of Section 11, T 43 N, R 10 W, M.D.B.&M. and has a capacity of about 1.5 cubic feet per second.

An area of 20.7 acres of potatoes, garden and pasture on the lands of Jacob Dangle is irrigated under this ditch.

Water diverted through the ditch is also used for hydro-mechanical power purposes at the Dangle Ranch house. After such use, the water is spilled into the Denny Bar Ditch (Diversion 16) and used for irrigation purposes.

Diversion 16 is that of the Denny Bar Ditch from the east side of Mill Creek. The point of diversion is within the SW¼ NE¼ of Section 11, T 43 N, R 10 W, M.D.B.&M.

A temporary gravel dam is used to divert water into an earth ditch about two feet wide and one foot deep. The conduit is about 0.7 mile in length to its terminus in the NE¼ SE¼ of Section 2, T 43 N, R 10 W, M.D.B.&M. and has a capacity of about 1.5 cubic feet per second.

An area of 11.2 acres of pasture land owned by Jacob Dangle is irrigated under this ditch.

Diversion 17 is that of the Freitas Ditch from the west side of Shackleford Creek. The point of diversion is within the SW¼ SE¼ of Section 2, T 43 N, R 10 W, M.D.B.&M.

A temporary gravel dam is used to divert water into an earth ditch about three feet wide and two feet deep. A four foot fish screen, bar type, is located about 1200 feet from the head of the ditch. The conduit is about two miles in length to its terminus in the NE¼ NE¼ of Section 34, T 44 N, R 10 W, M.D.B.&M. Near the end of the ditch, F. L. Lathrop's share of the Freitas Ditch water is turned into Sniktaw Creek for rediversion therefrom and use on the Lathrop property. The ditch has a capacity of about 6.5 cubic feet per second. The record of discharge for this ditch is submitted in Table 20.

This ditch is used for the irrigation of grain, alfalfa and pasture on lands of Edward Burton, et al., and F. L. Lathrop as follows:

Owner	Acres
Edward Burton, et al.	54.5
F. L. Lathrop	18.4
Total	72.9

The ditch is also used to supply supplemental water to an area of about 203 acres of the United States Indian Service lands hereinbefore described as irrigated under the Camp Ditch (Diversion 6).

Water from the Freitas Ditch is used for hydro-mechanical power purposes at the Edward Burton, et al., ranch house. This water is reused for irrigation purposes.

Diversion 18 is that of the Chester Ditch from the east side of Shackleford Creek. The point of diversion is within the NW¼ SE¼ of Section 2, T 43 N, R 10 W, M.D.B.&M.

A temporary gravel dam is used to divert water into an earth ditch about two feet wide and one foot deep. The conduit is about 0.75 of a mile in length to its terminus in the SW¼ SE¼ of Section 35, T 44 N, R 10 W, M.D.B.&M. The ditch has an estimated capacity of about 2.0 cubic feet per second.

An area of 23.0 acres of grain on the Henry F. Chester property is irrigated under this ditch.

Diversion 19 is that of the Hammond-Crawford-Lewis Ditch from the east side of Shackleford Creek. The point of diversion is within SE¼ SW¼ of Section 35, T 44 N, R 10 W, M.D.B.&M.

A temporary gravel dam is used to divert water into an earth ditch about five feet wide and two feet deep. A six foot fish screen, rotary type, is located about 750 feet from the head of the ditch. The conduit is about three miles in length to its terminus on the Camblin property in the SE¼ NW¼ of Section 31, T 44 N, R 9 W, M.D.B.&M. The ditch has capacity of about 7.0 cubic feet per second. The record of discharge for this ditch is submitted in Table 21.

The following acreages of alfalfa, meadow and pasture are irrigated under this ditch:

Owners	Acres
Henry F. Chester	6.9
Leroy B. Miller	11.9
Joseph Rivallier	125.1
C. B. Camblin	140.8
Total	284.7

Diversion 20 is that of the Burton-Meamber Ditch from the west side of Shackleford Creek. The point of diversion is within the SE¼ SW¼ of Section 35, T 44 N, R 10 W, M.D.B.&M.

A temporary gravel dam is used to divert water into an earth ditch about 3 feet wide and 2 feet deep. A four foot fish screen, bar type, is located about 350 feet from the point of diversion. The conduit divides at a point about 900 feet from the head of the ditch into two laterals. About 300 feet from this division point, the east lateral also divides into two laterals, each of which is about one-half mile in length. Both of these laterals terminate in the NE¼ NW¼ of Section 35, T 44 N, R 10 W, M.D.B.&M. The west lateral continues for approximately 1500 feet to a point in the SW¼ NW¼ of Section 35, where the water carried by the lateral is emptied into and flowed through a slough channel to a point in the NW¼ NW¼ of Section 35 where it is rediverted for use on the lands of F. L. Lathrop. The conduit has a capacity of about 7.0 cubic feet per second. The record of discharge for this ditch is submitted in Table 22.

The following acreage of alfalfa, clover, grain and pasture are irrigated under this ditch:

Owner	Acres
B. M. Burton	29.0
Edward Burton, et al.	89.0
F. L. Lathrop	112.3
Total	230.3

Diversion 21 is that of the Goodale Ditch from the east side of Shackleford Creek. The point of diversion is within the SE¼ NW¼ of Section 35, T 44 N, R 10 W, M.D.B.&M.

A temporary gravel dam is used to divert water into an earth ditch about four feet wide and one foot deep. A four foot fish screen, bar type, is located about 900 feet below the point of diversion. The conduit is about one-half mile in length to its terminus in the NE¼ NE¼ of Section 35, T 44 N, R 10 W, M.D.B.&M. The ditch has a capacity of about 4.0 cubic feet per second. The record of discharge for this ditch is submitted in Table 23.

The following acreages of meadow and pasture are irrigated under this ditch:

Owner	Acres
Leroy B. Miller	10.6
Joseph Rivallier	87.9
Total	98.5

Diversion 22 is that of the Burton West Side Ditch from the west side of Shackleford Creek. The point of diversion is within the NE¼ NW¼ of Section 35, T 44 N, R 10 W, M.D.B.&M.

A temporary gravel dam is used to divert water into an earth ditch about three feet wide on the bottom and one-half foot deep. The conduit is about one-half mile in length to its terminus in the SW¼ SE¼ of Section 26, T 44 N, R 10 W, M.D.B.&M. The ditch has a capacity of about 3.0 cubic feet per second.

An area of 45.6 acres of grain and pasture is irrigated by B. M. Burton by means of this ditch.

Diversion 23 is that of the Burton East Side Ditch from the east side of Shackleford Creek. The point of diversion is within the NE¼ NW¼ of Section 35, T 44 N, R 10 W, M.D.B.&M.

A temporary gravel dam is used to divert water into an earth ditch about three feet wide and one foot deep. The conduit is about 0.3 mile in length to its terminus in the NE¼ NE¼ of Section 35, T 44 N, R 10 W, M.D.B.&M. The capacity of the ditch is about 4.0 cubic feet per second.

An area of 17.2 acres of pasture on the B. M. Burton property is irrigated under this ditch.

Diversion 24 is that of the Cason Spring. The spring is within the NE¼ NW¼ of Section 15, T 43 N, R 10 W, M.D.B.&M.

The entire flow of the spring is conveyed through its natural channel onto the lands of J. A. Cason and Roy J. Helm. The discharge of

the spring was estimated to be about 0.1 cubic feet per second.

Diversion 25 is that of the English Spring. The spring is within the NE¼ NW¼ of Section 15, T 43 N, R 10 W, M.D.B.&M.

The flow of the spring is diverted into the Howard-Jones Ditch (Diversion 5) and is transported by that ditch for a distance of about 600 feet to the English Tap. The water is used through this tap for garden, domestic and stock-watering purposes on the lands of Robert A. English. The discharge of the spring was estimated to be about 0.1 cubic foot per second.

Diversion 26 is that of the Hobart West Spring. The spring is within the SE¼ SW¼ of Section 11, T 43 N, R 10 W, M.D.B.&M.

A board and earth dam in the spring channel about 800 feet from the spring is used to divert the water into an earth ditch. The ditch is about three feet wide and one foot deep and is about one-fourth mile in length to its terminus in the NE¼ SW¼ of Section 11, T 43 N, R 10 W, M.D.B.&M. The conduit has a capacity of about 2.0 cubic feet per second. The spring had a flow of about 0.30 cubic foot per second in October 1944.

An area of 27.7 acres of meadow on the lands of Harvey L. and Ralph M. Hobart is irrigated under the spring and ditch.

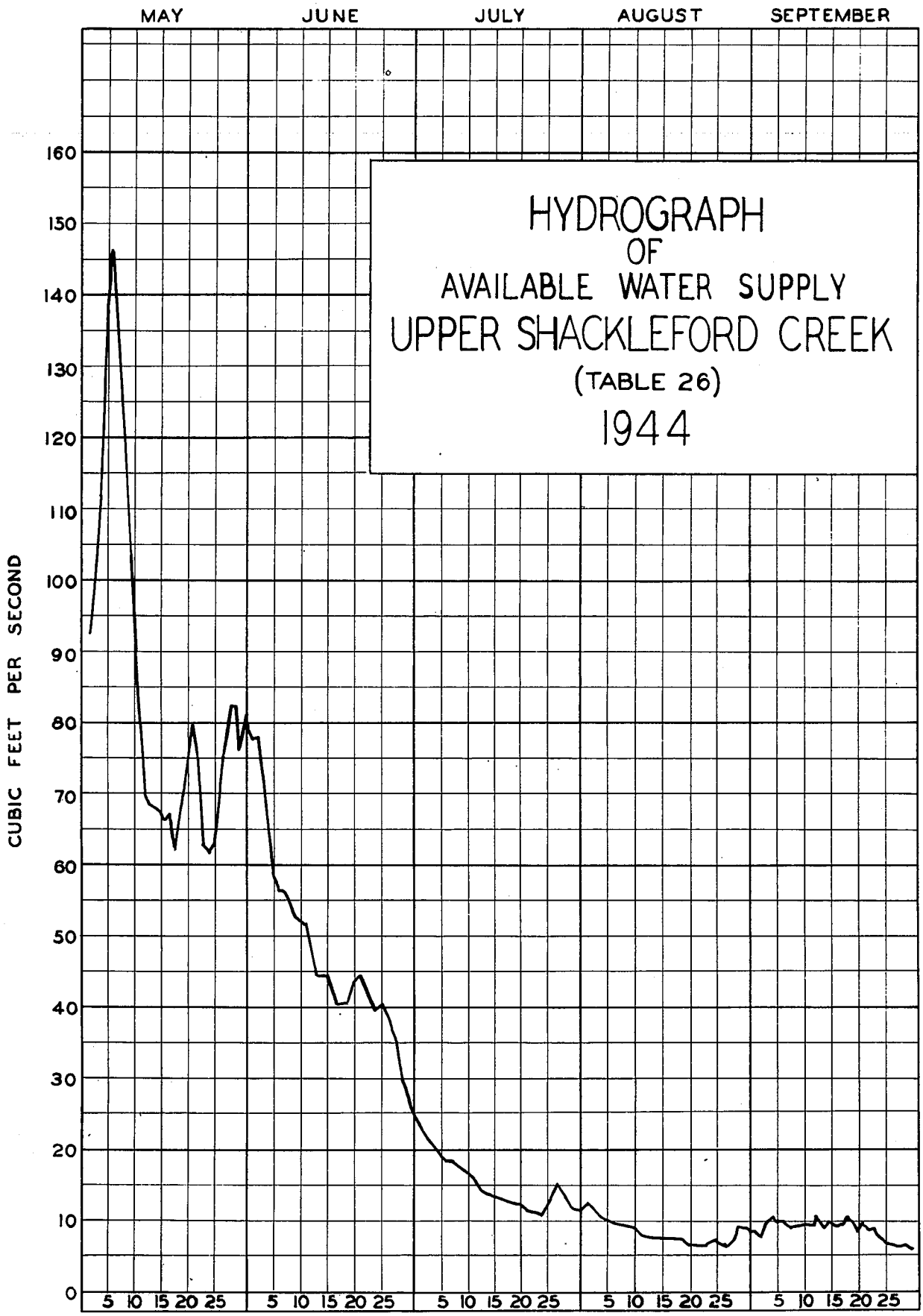
Diversion 27 is that of the Hobart East Spring. The spring is within the NE¼ SW¼ of Section 11, T 43 N, R 10 W, M.D.B.&M.

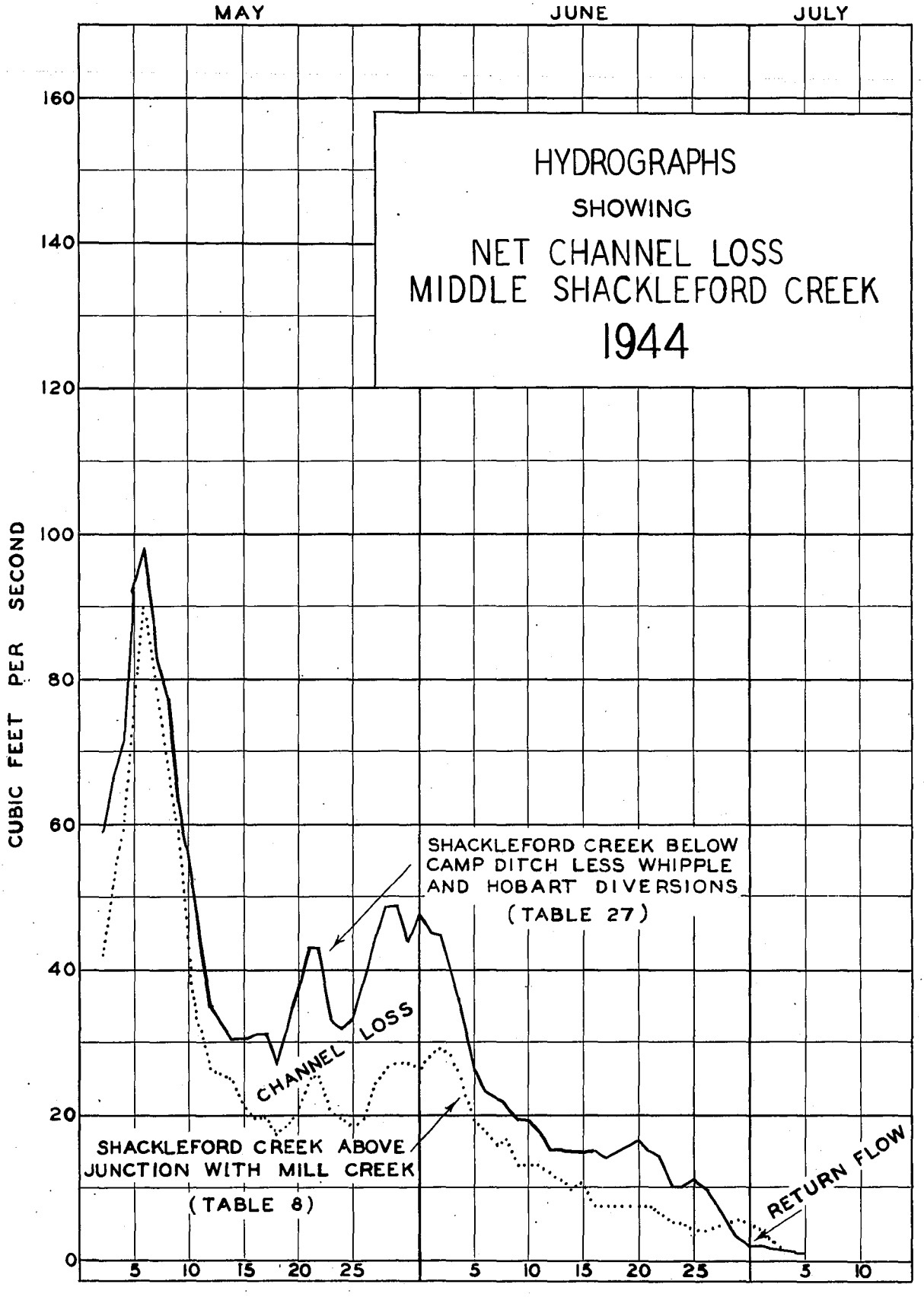
A board and earth dam about ten feet long and two feet high is used to divert water into an earth ditch three feet wide and one foot deep. The conduit is about one-half mile in length to its terminus in SE¼ NW¼ of Section 11, T 43 N, R 10 W, M.D.B.&M. and has a capacity of about 2.0 cubic feet per second. The spring had a flow of 0.40 cubic foot per second in October 1944.

An area of about 50.7 acres of meadow and alfalfa on the lands of Harvey L. and Ralph M. Hobart is irrigated under the spring and ditch.

PLATES

PLATE I.


HYDROGRAPH
OF
AVAILABLE WATER SUPPLY
UPPER SHACKLEFORD CREEK
(TABLE 26)
1944
MAY
JUNE
JULY
AUGUST
SEPTEMBER
CUBIC FEET PER SECOND
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
5 10 15 20 25
5 10 15 20 25
5 10 15 20 25
5 10 15 20 25
5 10 15 20 25


HYDROGRAPHS
SHOWING
NET CHANNEL LOSS
MIDDLE SHACKLEFORD CREEK
1944
MAY
JUNE
JULY
CUBIC FEET PER SECOND
160
140
120
100
80
60
40
20
0
5
10
15
20
25
5
10
15
20
25
5
10
SHACKLEFORD CREEK BELOW CAMP DITCH LESS WHIPPLE AND HOBART DIVERSIONS
(TABLE 27)
CHANNEL LOSS
SHACKLEFORD CREEK ABOVE JUNCTION WITH MILL CREEK
(TABLE 8)
RETURN FLOW

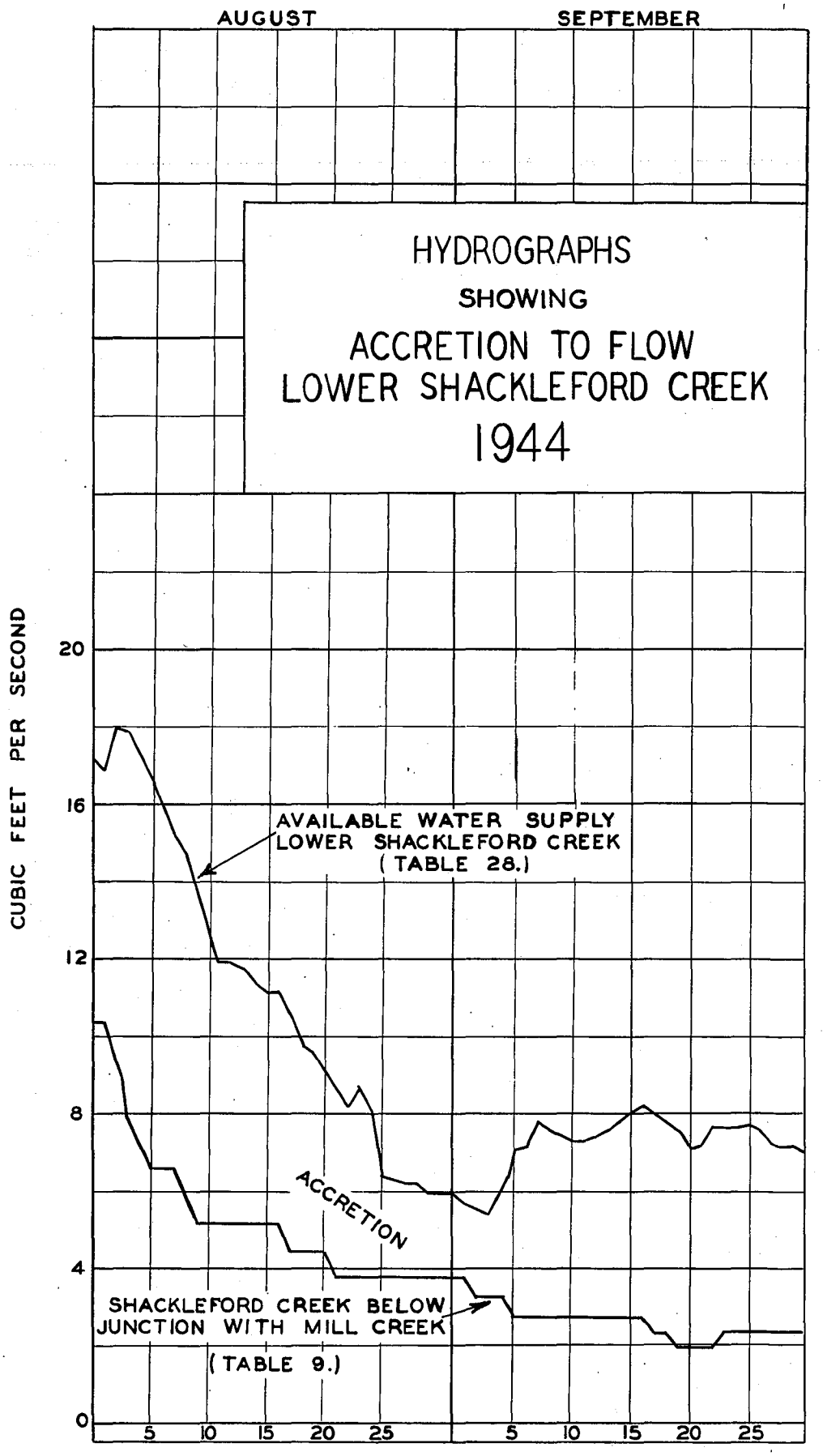
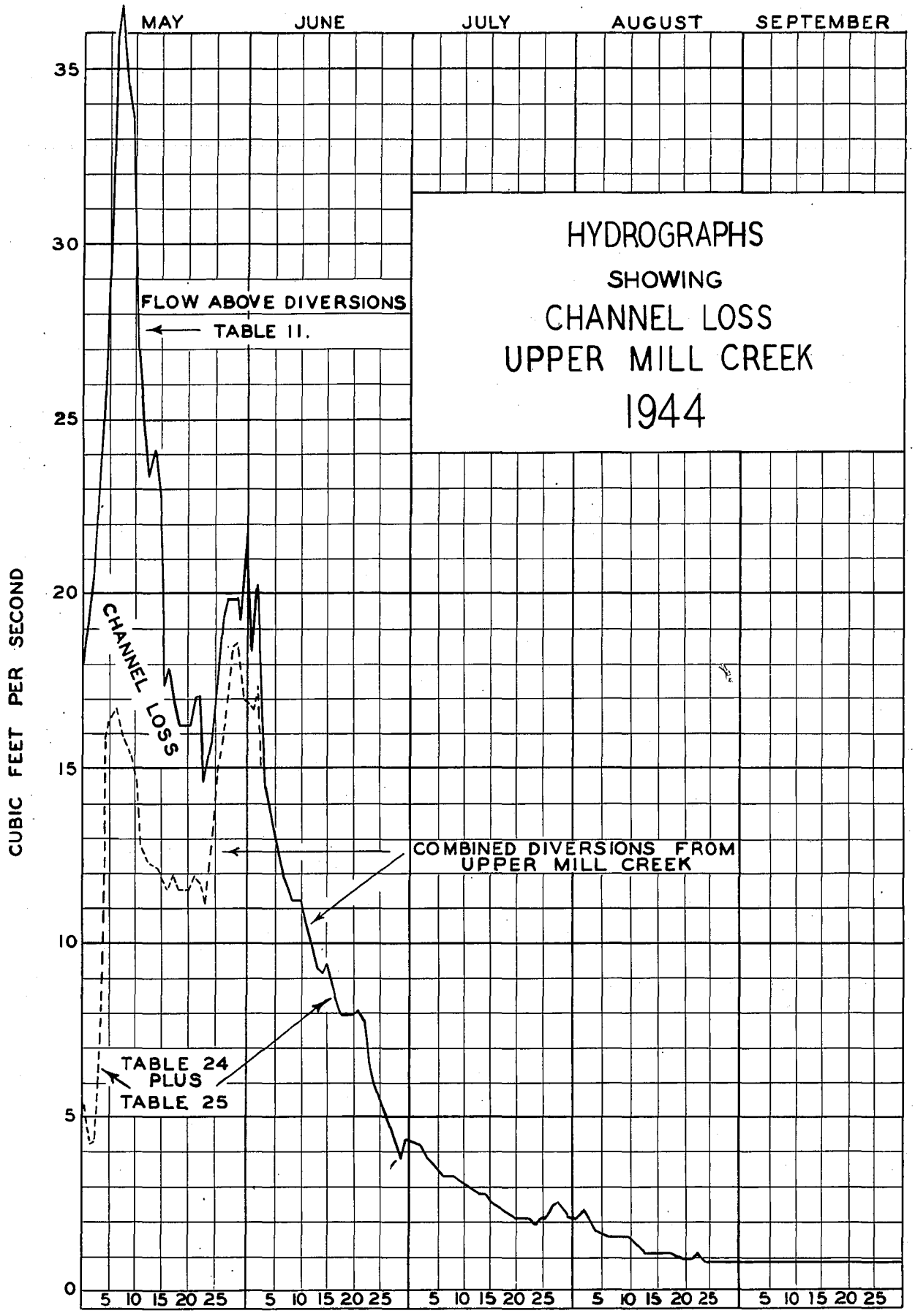
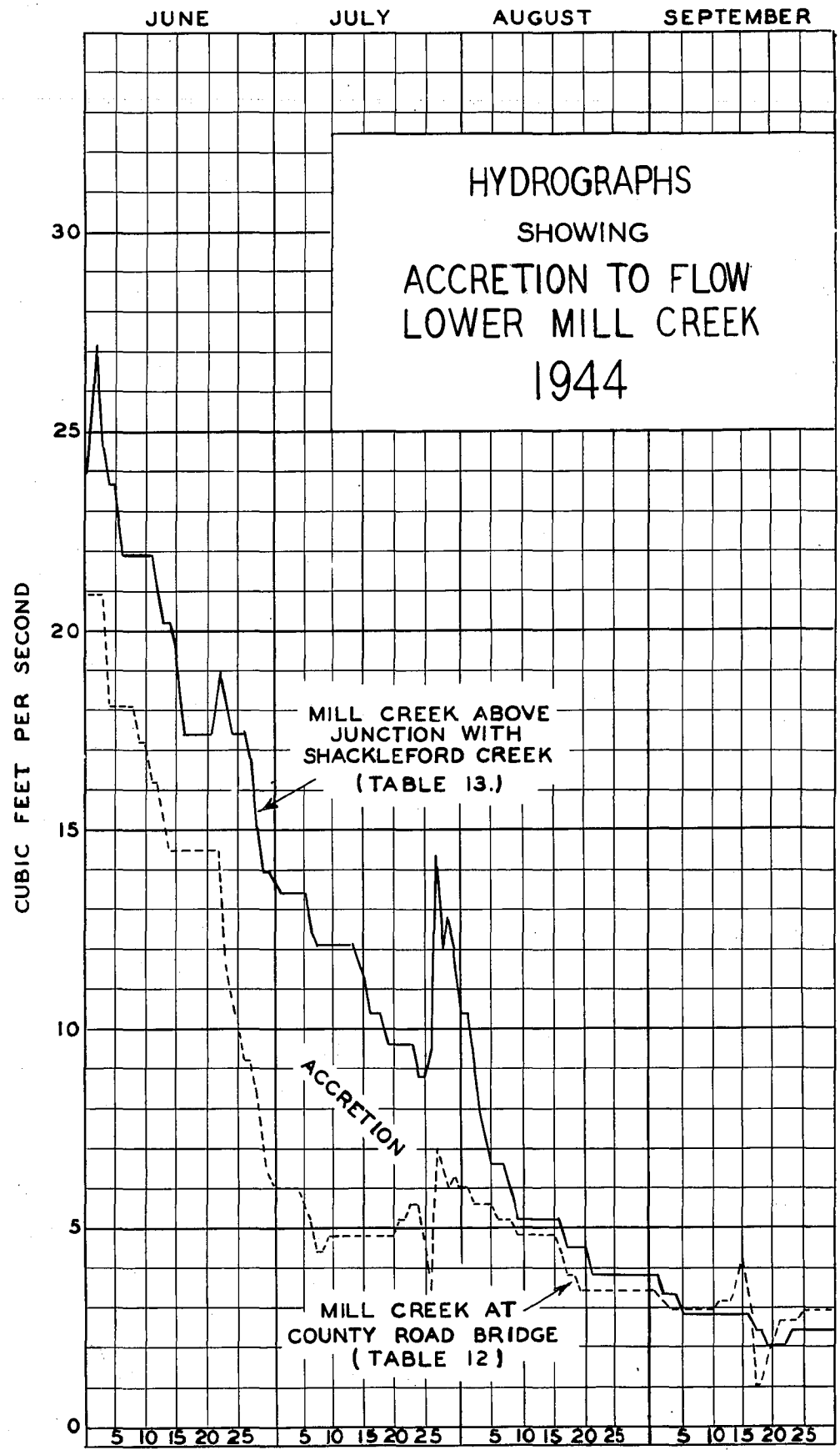

AUGUST
SEPTEMBER
HYDROGRAPHS
SHOWING
ACCRETION TO FLOW
LOWER SHACKLEFORD CREEK
1944
CUBIC FEET PER SECOND
20
16
12
8
4
0
AVAILABLE WATER SUPPLY
LOWER SHACKLEFORD CREEK
(TABLE 28.)
ACCRETION
SHACKLEFORD CREEK BELOW
JUNCTION WITH MILL CREEK
(TABLE 9.)
5
10
15
20
25
5
10
15
20
25

PLATE 4.


HYDROGRAPHS
SHOWING
CHANNEL LOSS
UPPER MILL CREEK
1944
MAY
JUNE
JULY
AUGUST
SEPTEMBER
CUBIC FEET PER SECOND
35
30
25
20
15
10
5
0
FLOW ABOVE DIVERSIONS
TABLE 11.
CHANNEL LOSS
COMBINED DIVERSIONS FROM UPPER MILL CREEK
TABLE 24 PLUS TABLE 25
5 10 15 20 25
5 10 15 20 25
5 10 15 20 25
5 10 15 20 25
5 10 15 20 25


HYDROGRAPHS
SHOWING
ACCRETION TO FLOW
LOWER MILL CREEK
1944
JUNE
JULY
AUGUST
SEPTEMBER
CUBIC FEET PER SECOND
30
25
20
15
10
5
0
5 10 15 20 25
5 10 15 20 25
5 10 15 20 25
5 10 15 20 25
MILL CREEK ABOVE JUNCTION WITH SHACKLEFORD CREEK (TABLE 13.)
ACCRETION
MILL CREEK AT COUNTY ROAD BRIDGE (TABLE 12)