

STATE OF CALIFORNIA  
DEPARTMENT OF PUBLIC WORKS

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REPORTS OF THE  
DIVISION OF WATER RESOURCES  
EDWARD HYATT, STATE ENGINEER

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REPORT ON  
WATER MASTER SERVICE  
ON  
SUSAN RIVER AND ITS TRIBUTARIES  
LASSEN COUNTY, CALIFORNIA  
DURING SEASON OF 1940

By

J. W. McPartland  
Water Master

Sacramento, California  
January, 1941

TABLE OF CONTENTS

	<u>Page</u>
<u>LETTER OF TRANSMITTAL</u>	
<u>INTRODUCTION</u> . . . . .	1
<u>DISCUSSION OF RESULTS</u> . . . . .	2
Precipitation . . . . .	2
Water Supply . . . . .	3
Distribution . . . . .	5
<u>SUMMARY</u> . . . . .	11
<u>CONTROVERSIES</u> . . . . .	11
<u>RECOMMENDATIONS</u> . . . . .	12
<u>PENDING APPLICATIONS BEFORE DIVISION OF WATER RESOURCES</u> .	12

TABLES

1. Precipitation at Susanville, California.
2. Daily Discharge in Cubic Feet per Second, Natural Flow of Susan River above Ramsey Ditch, May 21 to September 30, 1940.
3. Daily Discharge in Cubic Feet per Second, Susan River above Ramsey Ditch Including Water Released from Storage, May 21 to September 30, 1940.
4. Daily Discharge in Cubic Feet per Second, of Susan River below Ramsey Ditch Including Water Released from Storage, May 21 to September 30, 1940.
5. Daily Discharge in Cubic Feet per Second, Old Channel of Susan River below Woodstock Dam June 12 to September 30, 1940.
6. Daily Discharge in Cubic Feet per Second, Susan River at Johnstonville, June 1 to September 30, 1940.
7. Daily Discharge in Cubic Feet per Second, Willow Creek at Cummings Bridge, June 1 to September 30, 1940.

TABLES:(continued)

8. Daily Discharge in Cubic Feet per Second, Gold Run Creek above Diversions, June 1 to September 30, 1940.
9. Estimated Daily Discharge in Cubic Feet per Second, Ramsey Ditch at Head, May 9 to September 30, 1940.
10. Estimated Daily Discharge in Cubic Feet per Second, Water Released from McCoy Flat and Hog Flat Reservoirs and Available for Rediversion at Susanville, June 17 to September 20, 1940.

PLATE:

1. Hydrographs of Water Supply at Recorder Stations on Susan River, Willow Creek and Gold Run Creek, 1935 and 1940.

EDWARD HYATT, STATE ENGINEER  
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STATE OF CALIFORNIA  
**Department of Public Works**

SACRAMENTO

DIVISION OF WATER RESOURCES  
401 PUBLIC WORKS BUILDING

March 25, 1941

Mr. Harold Conkling  
Deputy State Engineer  
Sacramento, California

Attention: Mr. Gordon Zander,  
Supervising Hydraulic Engineer.

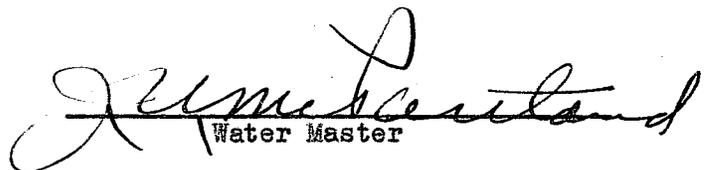
Dear Sir:

A report on water master service on Susan River and its tributaries in Lassen County, California, during the 1940 irrigation season, is submitted herewith.

The report includes a history of the court reference proceedings during the 1936, 1937, 1938, 1939 and 1940 seasons, a description of precipitation and water supply conditions in the area during 1940, and a discussion of the distribution and use of water available for diversion during the 1940 irrigation season.

Runoff records on the principal streams have been tabulated and are included with hydrographs of the main sources of supply.

Respectfully submitted,

  
Water Master

Report on  
Water Master Service  
on  
Susan River and Its Tributaries  
Lassen County, California  
During Season of 1940

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INTRODUCTION

The case of J. J. Fleming, et al. vs. J. R. Bennett, et al., Superior Court, County of Lassen, No. 4573, was referred to the Division of Water Resources by order of reference dated August 21, 1934. The case involved the determination of the rights to the use of water from Susan River and its tributaries. A decree defining the various water rights on the stream system was entered by the Honorable J. O. Moncur, Judge Presiding of the Superior Court of the State of California in and for the County of Lassen, on April 18, 1940. An appeal in the matter is now pending before the State Supreme Court.

Water master service has been rendered on the Susan River stream system during the irrigation seasons of 1935 to 1940, inclusive. This service was authorized for 1935 by an agreement entitled "Agreement Re Distribution of Waters of Susan River and Its Tributaries During the 1935 Season"; for 1936 by an agreement entitled "Agreement Re Distribution of Waters of Susan

River and Its Tributaries During the 1936 Season"; for 1937 and 1938 by the provisions of paragraph 49 of the Stipulation for Judgment, dated July 15, 1936, filed in the above entitled case; for 1939 by an interlocutory decree entered by the Court in the above entitled case on March 24, 1939; and for 1940 by a supplemental decree entered by the Court in said case on April 18, 1940. These agreements were subscribed to by a substantial majority of the water right owners on the stream system and the decrees were entered by the Court upon the showing by the water right owners that water master service was both necessary and desirable for the peaceable exercise of their rights. In general the agreements and decrees provided a basis for the distribution of the available water supply of the Susan River stream system by a water master appointed by the Division of Water Resources.

As authorized by the above mentioned supplemental decree, water master service on the Susan River stream system for the 1940 season covered the period from April 18 to October 15, inclusive, and distribution of the available water supply was administered by a water master during said period in accordance with the water rights defined in the judgment and decree entered April 18, 1940 in the aforesaid case of J. J. Fleming, et al. vs. J. R. Bennett, et al. G. M. Vickroy served as water master from April 18 to June 30 and from October 1 to 15, all dates inclusive. J. W. McPartland was water master from July 1 to September 30, inclusive. The water masters served under the immediate supervision of Harrison Smitherum, Senior Hydraulic Engineer, and the general supervision of the Division of Water Resources.

#### DISCUSSION OF RESULTS

##### Precipitation

Data on the precipitation recorded at Susanville, as compiled from the records of the United States Weather Bureau, are presented in Table 1 of

this report. This table gives a comparison of the monthly and seasonal precipitation for the 1939-40 season with the mean monthly and mean seasonal precipitation for 41 years of record, together with a comparison of the recorded snowfall.

In 1939-40, the total seasonal precipitation was 21.97 inches, for the months of October to March, inclusive, 19.36, and for the remainder of the season 2.61 inches, as compared to the mean over 41 years of record for like periods of 18.56 inches, 14.97 inches and 3.51 inches, respectively. Stated in per cent the total precipitation for the 1939-40 season was 118 per cent; that for October to March, inclusive, 129 per cent; and that for the remainder of the season 84 per cent of normal.

The total snowfall as recorded at Susanville for the 1939-40 season amounted to 26.4 inches as compared to a normal of 64.1 inches.

The results of the "California Cooperative Snow Surveys" published April 10, 1940, shows that the snowpack as of April 1, 1940 was in excess of normal at elevations of 7500 feet and over, but that the wide belt between elevations of 5000 and 6000 feet, usually snow covered on April 1, was almost completely bare. The water content of the snow as measured at Fredonyer Pass, elevation 5750 feet, was about 37 per cent of normal. At other snow courses at higher elevations in the Feather River area, adjoining the Susan River watershed, the water content was more nearly normal. Based upon the available data it was estimated that the run-off of the Susan River for the period from April 1 to July 31, 1940 would be about 75 per cent of normal.

#### Water Supply

Measuring stations equipped with water stage recorders were maintained on Susan River below the Ramsey Ditch and at Johnstonville; on Old Channel of Susan River below Woodstock Dam; on Gold Run Creek above all

diversions; and on Willow Creek at Cummings Bridge. Intermittent measurements and gage height observations were made on various streams and ditches not equipped with water stage recorders. The data compiled from the records obtained at the various measuring stations are presented at the end of this report in Tables 2 to 10, inclusive.

Tables 4 to 9, inclusive, are tabulations of the flows recorded for the key measuring stations maintained during the 1940 season. Table 3 gives the flow of Susan River above the Ramsey Ditch as compiled from a summation of the flow of Susan River below the Ramsey Ditch, Table 4, and the discharge of the Ramsey Ditch, Table 9. Table 2 gives the natural flow of Susan River above the Ramsey Ditch, as determined by deducting the adjusted storage releases from McCoy Flat and Hog Flat Reservoirs as tabulated in Table 10, from the flow of Susan River above the Ramsey Ditch, Table 3. Table 10 gives the net amount of storage released from the McCoy Flat and Hog Flat Reservoirs measured at Susanville.

Hydrographs of Susan River below the Ramsey Ditch, Gold Run Creek above all diversions and Willow Creek at Cummings bridge for the period April 1 to September 1 in 1935 and in 1940 are shown on Plate 1, presented at the end of this report.

Sufficient run-off records for the Susan River stream system are not available to permit of a direct comparison of the run-off for the 1940 irrigation season and that of a so-called normal season. It appears, however, from the records presented in this report, that the run-off for 1940 followed the pattern of the distribution and the character of the precipitation as discussed above. Therefore, it is probable that the run-off for the 1940 irrigation season was below normal. It is to be noted that the total precipitation, as measured at Susanville was 118 per cent of normal, but that

the precipitation which fell in the form of snow and precipitation during the irrigation season were below normal. Also, that the snowpack on the ground on April 1 indicated a run-off from April 1 to July 31, inclusive, 1940, of only about 75 per cent of normal. Susan River and Gold Run Creek in following this pattern showed a high run-off up to about May 5, subsequent to which date the flows of these streams decreased very rapidly. Normally the melting snows would sustain the spring run-off until about the first week in June.

### Distribution

As stated above, the waters of the Susan River stream system were distributed during the 1940 season in accordance with the water rights defined in the decree in the case of J. J. Fleming, et al. vs. J. R. Bennett, et al., Superior Court, Lassen County, No. 4573, entered April 18, 1940.

The decree divides the water rights in the Susan River stream system into three groups according to the source, or sources, of water supply. Schedule 3 defines the water rights from upper and lower Willow Creek including the water rights from that source appurtenant to lands in the Susan River delta area. Schedule 4 defines the water rights from Gold Run Creek, Lassen Creek and Piute Creek above the confluence of those creeks with Susan River. Schedules 5 and 6 define the water rights from Susan River exclusive of the tributaries. Other related rights to these three groups are defined in paragraphs 41 to 52, inclusive, of the decree.

A description of the distribution of the available water in the three groups in accordance with the schedules and related rights and of the results accomplished in the distribution follows:

Willow Creek (Schedule 3)

Upper Willow Creek is largely dependent upon springs for its water supply during the irrigation season. The flow available for direct diversion at the beginning of the irrigation season was 15.0 cubic feet per second. This supply held nearly constant through May and into June but gradually decreased to a low of 13.0 cubic feet per second about the middle of August.

During April and May and up to about June 15, the available water supply, supplemented by water released from the Walsh Reservoir, was adequate to insure full allotments to all the water users in Willow Creek valley. Subsequent to June 15, the stored water being exhausted, deliveries to the second priority rights dropped to about 34 per cent of allotments by the end of June, and remained at about that percentage throughout July, August and September. The first priority allotments were delivered in full throughout the season.

Lower Willow Creek is supplied by springs, lying below Willow Creek valley, by drainage water from Willow Creek valley and by water released from the Walsh Reservoir. The water supply from these sources averaged about 20.0 cubic feet per second in April, 15.0 cubic feet per second in May and, by releasing all the water stored in the Walsh Reservoir during the first one-half of June, 14.0 cubic feet per second in June. During July and August the flow averaged about 10.0 cubic feet per second and in September about 13.0 cubic feet per second. The Lower Willow Creek water supply described above was supplemented by water from Susan River during May and June so that both the first and second priority users in Schedule 3 received approximately full allotments during April, May and June, with about 35 percent of the second priority water coming from Susan River during June.

The following table has been prepared to show the average monthly amounts of water available in Willow Creek above diversions in the Upper and

Lower Willow Creek areas. The deficiency in the water supply as compared with the per cent allotments of water delivered was made up by return water and storage release from the Walsh Reservoir in the upper area and by return water and Susan River water in the lower area.

Month	Water Supply Available		Per Cent Allotments Delivered			
	Above Diversions in c.f.s.		Upper Willow Creek		Lower Willow Creek	
	Upper Willow Creek at Old	Lower Willow Creek at Cummings Bridge	1st Priority	2nd Priority	1st Priority	2nd Priority
			5.98 cfs	25.0 cfs	3.10 cfs	19.35 cfs
Apr. 18 to 30	15.0	20.0	100	100	100	100
May	15.0	15.0	100	100	100	100
June	15.0	14.3	100	64	100	100
July	14.0	10.5	100	35	100	40
August	13.0	10.0	100	32	100	39
Sept.	13.5	13.5	100	34	100	56

Walsh Reservoir was filled to its capacity of 2500 acre-feet during the early spring months and continued to spill until about May 15. By that date the overflow from the reservoir had decreased to less than the second priority allotments in Willow Creek valley below the dam and it became necessary to release stored water. Between May 15 and 31, sufficient water was released to maintain a flow of about six cubic feet per second below the dam and on June 1 the discharge from the reservoir was increased to about thirty cubic feet per second to provide supplemental water to the lower Willow Creek area. The reservoir was empty by June 16. With the reservoir empty the discharge of Willow Creek at the dam was about five cubic feet per second.

An attempt was made to get supplementary water for the lower Willow Creek area from Horse Lake. The outlet from the lake was opened completely on May 28th, but the maximum discharge was only about eight cubic feet per second. This flow was insufficient to reach through Petes Valley and no water from Horse Lake reached Lower Willow Creek or the Susan River delta area.

Lassen, Gold Run, Hills and Piute Creeks (Schedule 4)

Lassen Creek supplied full allotments to all priorities during April, May and the first part of June. Throughout the remainder of the season the flow of Lassen Creek diminished so that it was entirely utilized in supplying the first priority rights.

Gold Run Creek: The flow of Gold Run Creek was sufficient during the month of April for full allotments to all three priority classes, but diminished rapidly so that there was no water for the third priority class after May 15, and none for the second priority class after June 1. The flow available for the first priority class was from 100 per cent of allotments on June 1, about 55 per cent on June 30, 40 per cent during August and about 50 per cent for September.

Hills Creek: The flow of Hills Creek failed the latter part of July, and during the remainder of the season sufficient water was available for garden and stock use on the E. T. Clark ranch.

Piute Creek: Full allotments of 3.14 cubic feet per second were available for all water users on Piute Creek during April, May and the first half of June. Subsequent thereto, the flow decreased so that only 52 per cent of allotments was available during the remainder of the season.

The California-Pacific Utilities Company is the upper diverter from Piute Creek and ordinarily conveys its share of the water to Susanville for

municipal and industrial purposes. To assure that the proper amount of water is delivered to the other users on the stream, the company has constructed a by-pass line from the main pipe line and returns the lower users' share of the water to the creek above the Marmo property. The company maintains a weir, equipped with an automatic water stage recorder, on the creek below the outlet to the by-pass pipe to record the delivery to the lower users.

#### Susan River (Schedules 5 and 6)

Distribution of the available water supply on Susan River was carried on in accordance with the allotments and priorities set forth in Schedules 5 and 6 of the Susan River decree.

The water supply during the latter part of April was more than adequate to fill all requirements and a surplus was permitted to flow into Honey Lake. During May an increasing use was made of the water with water available for full allotments in all priority classes until May 7. After that date the water supply failed so that no water was available for the fifth and sixth priorities after May 19, none for the fourth priority after May 25, none for the third priority after May 29th and only 79 per cent allotment was available for the second priority at the end of the month. During June the river continued to drop so that only 30 per cent of allotments was available for the second priority right on June 16 and only 25 per cent on June 30. The first priority right continued to divert 100 per cent allotment throughout the month.

The average flow of Susan River above the Ramsey Ditch and the per cent of allotments delivered to the first and second priority rights in Schedules 5 and 6 during July, August and September are tabulated as follows:

Month	Average Available Natural Flow of Susan River above Ramsey Ditch c.f.s.	Per Cent Allotments Delivered	
		1st Priority *4.90 c.f.s.	2nd Priority 67.55 c.f.s.
July	11.4	100	9.5
August	6.46	100	2.2
September	6.20	100	1.8

\*Does not include 11.05 cubic feet per second allocated to lands upstream from the gaging station.

The Barham, Johnson and Chappius, Coulthurst and Colony Dams were not used in 1940 due to having been damaged by the high water early in the spring. The areas normally irrigated from these dams were only partly irrigated and most of the water to which they were entitled flowed into the Tule area to fill later priorities.

Susan River (Reservoirs) 1940

The Lassen Irrigation Company maintain two reservoirs in the upper Susan River drainage area, namely, McCoy Flat Reservoir and Hog Flat Reservoir. Water to fill the reservoirs is from melting snows in the early spring and is later released during the summer months and rediverted to supply irrigation water to the shareholders of the company largely in the vicinity of Standish.

McCoy Flat Reservoir filled to capacity in 1940 with approximately 13,000 acre feet of storage available when the outlet was opened on June 16. A discharge of about 100 cubic feet per second was released from the reservoir from that date until July 16 when the outlet was closed to permit a check on the natural flow in Susan River at Susanville. The outlet was again opened on July 23 and discharged about 100 cubic feet per second until the fifth of August when the flow began to fail. The outlet gates were closed for the season on August 15.

1940

Hog Flat Reservoir filled to about 80 per cent of its full capacity with approximately 5100 acre feet of storage available when the outlet was opened on August 8. A discharge of about 50 cubic feet per second was released from the reservoir from that date until August 15, when the discharge began to fail. The outlet gate was closed for the season on August 20.

Sufficient water was left in both reservoirs to provide resting places for wild fowl in the vicinity.

#### Summary

In summarizing the foregoing discussion as to the allotments of water delivered to the various rights and priorities in the several schedules of use in the Susan River decree, it is apparent that the water supply was inadequate to fill all rights and priorities through the irrigation season. However, the crops grown in 1940 produced nearly normal yields indicating that the systematic distribution of a water supply somewhat below normal was a distinct advantage to the water users.

After the haying season very little water was available in excess of that required for stock and garden purposes.

#### Controversies

The water right owners cooperated fully with the water master during the entire season and there were no controversies over the regulation of diversions from the stream system. Two disputes arose among owners in the Ramsey Ditch. Both disputes involved John C. Milsap, who alleged interference with his use of water by A. Farris and by the State Forestry Susanville Fire Station. S. Hidenour, on Gold Run Creek, objected to water master service on that stream.

### Recommendations

Measuring stations, equipped with metal staff gages and water stage recorders, should be maintained at locations as follows: Susan River at Haws, Old Channel of Susan River at Woodstock Dam, Susan River at Johnstonville, A & B Canal at Johnstonville, Gold Run, Piute and Lassen Creeks above diversions and Willow Creek at Old Mill and Cummings Bridge.

A control structure should be built at the head of Old Channel of Susan River to facilitate the regulation of water at the Woodstock Dam.

The Tanner Slough Head Dam should be replaced.

A new diversion structure should be built at the head of Hartson Slough to properly divide the water between Dill and Hartson Sloughs. Hartson Slough should also be cleaned to prevent excessive loss in the delivery of water to the users thereon.

A diversion box or weir should be installed at the head of Emerson's Ditch on Hills Creek to divide the water between Emerson and Ridenour and Clark.

### Pending Applications

Application 9123 was filed by the Tanner Slough Irrigation Association on September 21, 1937, requesting a permit to appropriate 2600 acre-feet from Willow Creek tributary to Susan River, to be stored from October 15th of each year to May 1st of the succeeding year. Permit 5139 was issued on April 25, 1938.

Application 9160 was filed by the Tanner Slough Irrigation Association on October 28, 1937, requesting a permit to appropriate 3500 acre-feet from Petes Valley Creek and Willow Creek, tributary to Susan River, to be stored from October 15th of each year to April 15th of the succeeding year. No permit has been issued.

Application 9161 was filed by the Tanner Slough Irrigation Association on October 28, 1937, requesting a permit to appropriate 3500 acre-feet from Willow Creek, tributary to Susan River, to be stored from October 15th of each year to April 15th of the succeeding year. No permit has been issued.

Application 9797 was filed by Johnston and Chappius on January 3, 1940, requesting a permit to appropriate 3.00 cubic feet per second by direct diversion from Willow Creek, tributary to Susan River during the period from February 1st to March 1st for irrigation purposes, and 70 acre-feet for storage, to be stored from November 15th of each year to March 1st of the succeeding year, for stock watering purposes. Permit 5654 was issued on October 24, 1940.

Application 9943 was filed by the Tanner Slough Irrigation Association on June 29, 1940, requesting a permit to appropriate 10,000 acre-feet from Eagle Lake, to be stored from January 1st to December 31st of each year. No permit has been issued.

Application 10026 was filed by Mardis Barry on October 3, 1940, requesting a permit to appropriate 175 acre-feet from an unnamed stream, tributary to Susan River, to be stored from October 15th of each year to April 15th of the succeeding year. No permit has been issued.

Tables

Table 1

Precipitation at Susanville, California  
Elevation 4268 feet.

Comparison Between Precipitation for Seasonal Year  
1939-40 and for 41-year Period

Month	Monthly Means 41 Years		1939-1940		Snowfall in Inches	
	Inches	Percent of total mean	Inches	Percent of Total Mean	Normal	1939-1940
October	1.13	6.1	.79	4.3		
November	2.09	11.3	.15	.8		
December	3.08	16.6	1.96	10.6	15.3	.5
January	3.38	18.2	6.67	35.9	26.3	16.2
February	2.79	15.0	7.70	41.5	11.0	9.3
March	2.50	13.5	2.09	11.3	9.6	.4
April	1.12	6.0	.90	4.8	1.9	.0
May	.83	4.5	.66	3.6		
June	.49	2.6	.10	.5		
July	.28	1.5	.13	.7		
August	.33	1.8	.00	.0		
September	.54	2.9	.82	4.4		
<b>Totals</b>	<b>18.56</b>	<b>100.0</b>	<b>21.97</b>	<b>118.4</b>	<b>64.1</b>	<b>26.4</b>

Table 2

Daily Discharge in Cubic Feet Per Second

NATURAL FLOW OF SUSAN RIVER ABOVE RAMSEY DITCH

April 21 to September 30, 1940

Day	Apr.	May	June	July	Aug.	Sept.	
1		273.	49.5	16.5	7.30	4.50	
2		273.	44.5	16.5	7.30	4.50	
3		282.	42.5	16.0	7.00	4.50	
4		292.	41.5	16.0	7.00	4.50	
5		300.	37.5	16.0	7.00	5.00	
6		300.	33.5	15.5	7.00	5.00	
7		280.	39.5	15.0	7.00	5.50	
8		269.	38.5	15.0	7.00	5.50	
9		262.	37.5	14.5	7.00	5.00	
10		266.	33.5	14.3	7.00	5.00	
11		238.	30.0	14.3	7.00	5.00	
12		232.	26.0	14.0	7.00	5.00	
13		226.	21.8	13.5	7.00	5.50	
14		218.	18.0	13.0	7.00	6.20	
15		211.	19.5	12.3	6.50	6.20	
16		209.	18.5	12.0	6.50	6.20	
17		209.	18.5	11.0	6.50	6.70	
18		196.	18.5	10.0	6.50	7.70	
19		181.	18.5	9.00	6.50	9.00	
20		172.	18.5	8.50	6.00	8.00	
21	288.	136.	18.5	8.00	6.00	7.00	
22	370.	119.	18.5	7.50	6.00	7.00	
23	452.	114.	18.5	7.50	5.70	7.00	
24	447.	104.	18.5	7.50	5.70	7.00	
25	420.	98.0	18.5	7.50	5.70	7.00	
26	412.	96.0	18.5	7.50	5.70	7.00	
27	365.	91.0	18.5	7.50	5.70	7.00	
28	325.	72.0	16.5	7.50	5.70	7.00	
29	300.	71.0	16.5	7.50	5.70	7.00	
30	278.	50.0	16.5	7.50	5.70	7.00	
31		52.0		7.50	5.70		
Tot. Sec.:	*3657.	5892.0	784.8	355.9	200.4	184.5	163 Day
Feet Days:							Period
Mean Sec.:							
Feet	*366.	190.	26.2	11.5	6.46	6.15	67.9
Max.							
Sec. Feet:	*452.	300.	49.5	16.5	7.30	9.00	452.
Min.							
Sec. Feet:	*278.	52.0	16.5	7.50	5.70	4.50	4.50
Total							
Acre Feet:	*7250.	11,700	1560.	706.	397.	366.	22,000

\* 10 day period

Table 3

Daily Discharge in Cubic Feet Per Second  
 SUSAN RIVER ABOVE RAMSEY DITCH  
 INCLUDING WATER RELEASED FROM STORAGE  
 April 21 to September 30, 1940

Day	Apr.	May	June	July	Aug.	Sept.	
1		273.	49.5	109.	94.3	4.50	
2		273.	44.5	106.	96.3	4.50	
3		282.	42.5	108.	98.3	4.50	
4		292.	41.5	109.	94.0	4.50	
5		300.	37.5	108.	90.0	5.00	
6		300.	33.5	106.	74.0	5.00	
7		280.	39.5	106.	53.0	5.50	
8		269.	38.5	107.	(c) 37.0	5.50	
9		262.	37.5	109.	58.0	5.00	
10		266.	33.5	109.	66.0	5.00	
11		238.	30.0	104.	60.0	5.00	
12		232.	26.0	105.	59.0	5.00	
13		226.	21.8	112.	59.0	5.50	
14		218.	18.0	109.	59.0	6.20	
15		211.	19.5	108.	(d) 58.0	6.20	
16		209.	(a) 18.5	(b) 48.3	57.0	6.20	
17		209.	49.0	19.5	48.0	6.70	
18		196.	104.	11.5	38.0	7.70	
19		181.	112.	10.0	31.7	9.00	
20		172.	109.	10.0	(b) 25.5	8.00	
21	288.	136.	109.	9.00	16.5	7.00	
22	370.	119.	110.	8.00	8.00	7.00	
23	452.	114.	114.	(a) 8.00	7.00	7.00	
24	447.	104.	117.	30.3	5.70	7.00	
25	420.	98.0	116.	94.3	5.70	7.00	
26	412.	96.0	112.	98.3	5.70	7.00	
27	365.	91.0	102.	98.3	5.70	7.00	
28	325.	72.0	101.	98.3	5.70	7.00	
29	300.	71.0	109.	98.3	5.70	7.00	
30	278.	50.0	114.	95.3	5.70	7.00	
31	--	52.0	--	94.3	5.70	--	
Tot. Sec.:						163 Day	
Feet Days:	*3657.	5892.0	2009.8	2446.70	1333.20	184.50	Period
Mean Sec.:	*						
Feet	*366.	190.	67.0	78.9	43.0	6.15	95.2
Max.							
Sec. Feet:	*452.	300.	114.	112.	98.0	9.00	452.
Min.							
Sec. Feet:	*278.	52.0	18.0	8.00	5.70	4.50	4.50
Total							
Acre Feet:	*7250.	11,700	3990.	4850.	2650.	366.	30,800

(a) Release started from McCoy Flat Reservoir.

(b) McCoy Flat Reservoir closed.

(c) Release started from Hog Flat Reservoir.

(d) Hog Flat Reservoir closed.

\*10 day period.

TABLE 4

DAILY DISCHARGE IN CUBIC FEET PER SECOND  
SUSAN RIVER BELOW RAMSEY DITCH  
INCLUDING WATER RELEASED FROM STORAGE  
April 21 to September 30, 1940

Day	April	May	June	July	August	September	Remarks
1		273.	46.0	107.	92.0	4.00	
2		273.	41.0	104.	94.0	4.00	
3		282.	39.0	106.	96.0	4.00	
4		292.	38.0	107.	92.0	4.00	
5		300.	34.0	106.	88.0	4.50	
6		300.	32.0	100.	72.0	4.50	
7		280.	36.0	100.	51.0	5.00	
8		269.	35.0	102.	(c) 35.0	5.00	
9		258.	34.0	104.	56.0	4.50	
10		262.	30.0	104.	64.0	4.50	
11		235.	27.0	99.0	58.0	4.50	
12		228.	23.0	100.	57.0	4.50	
13		222.	19.0	107.	57.0	5.00	
14		214.	16.0	107.	57.0	5.50	
15		207.	17.0	106.	(b) 56.0	5.50	
16		205.	(a) 16.0	(b) 46.0	55.0	5.50	
17		205.	47.0	17.0	46.0	6.00	
18		192.	102.	10.0	36.0	7.00	
19		177.	110.	9.00	30.0	8.00	
20		168.	107.	9.00	(d) 24.0	7.00	
21	288.	132.	107.	8.00	15.0	6.00	
22	370.	115.	108.	7.00	7.00	6.00	
23	452.	111.	112.	(a) 7.00	6.00	6.00	
24	447.	101.	115.	28.0	5.00	6.00	
25	420.	94.0	114.	92.0	5.00	6.00	
26	412.	93.0	110.	96.0	5.00	6.00	
27	365.	87.0	100.	96.0	5.00	6.00	
28	325.	68.0	99.0	96.0	5.00	6.00	
29	300.	67.0	107.	96.0	5.00	6.00	
30	278.	46.0	112.0	93.0	5.00	6.00	
31	---	49.0	---	92.0	5.00	---	
Total Sec.	*3657.	5805.0	1933.0	2361.00	1284.00	162.50	163 day
Feet Days							Period
Mean Sec. Feet	* 366.	187.	64.4	76.2	41.4	5.41	93.3
Maximum Sec. Feet	* 452.	300.	115.	107.	96.0	8.00	452.0
Minimum Sec. Feet	* 278.	46.0	16.0	7.00	5.00	4.00	4.00
Total Acre Feet	*7250.	11,500.	3830.	4680.	2550.	322.	30,100

- (a) Release from McCoy Reservoir \* 10 day period.  
 (b) McCoy Reservoir Closed.  
 (c) Release from Hog Flat Reservoir  
 (d) Hog Flat Reservoir Closed

TABLE 5

DAILY DISCHARGE IN CUBIC FEET PER SECOND  
 OLD CHANNEL OF SUSAN RIVER BELOW WOODSTOCK DAM  
 June 12 to September 30, 1940.

Day	June	July	August	September	Remarks
1		10.5	4.50	2.50	
2		10.3	4.50	2.40	
3		10.5	4.30	2.50	
4		10.5	4.50	3.00	
5		10.5	4.00	2.50	
6		10.0	3.50	2.50	
7		10.0	3.30	2.50	
8		10.0	2.00	2.50	
9		10.3	2.50	3.50	
10		9.50	3.30	3.40	
11		8.50	3.80	2.50	
12	12.5	8.80	3.80	2.50	
13	11.5	9.30	3.80	4.00	
14	10.5	9.30	3.80	5.00	
15	9.50	9.30	3.30	6.00	
16	10.0	9.30	3.00	6.00	
17	10.3	7.50	2.50	5.00	
18	10.3	7.30	2.50	6.50	
19	10.0	7.00	2.00	7.00	
20	10.0	7.00	3.30	6.50	
21	10.5	7.30	3.50	6.30	
22	10.5	6.50	3.00	6.00	
23	10.5	6.30	3.50	6.00	
24	10.5	6.50	3.00	5.80	
25	10.5	7.30	3.50	5.80	
26	10.5	6.50	3.00	6.00	
27	9.50	6.30	2.50	6.00	
28	9.50	5.50	2.50	6.00	
29	10.3	4.80	2.30	6.00	
30	10.5	4.50	2.00	6.00	
31	---	4.30	2.30	---	
Total Sec.	*197.40	251.20	99.30	138.20	111 Day
Feet Days					Period
Mean	* 10.4	8.10	3.20	4.61	6.18
Sec. Feet					
Maximum	* 12.5	10.5	4.50	6.00	12.5
Sec. Feet					
Minimum	* 9.50	4.30	2.00	2.40	2.00
Sec. Feet					
Total	*391.	498.	197.	274.	1360.
Acres Feet					

\*19 day period.

TABLE 6

DAILY DISCHARGE IN CUBIC FEET PER SECOND  
 SUSAN RIVER AT JOHNSTONVILLE  
 June 1 to September 30, 1940

Day	June	July	August	September	Remarks
1	25.5	12.3	4.50	1.50	
2	31.0	12.0	4.50	1.60	
3	30.5	10.5	4.00	1.80	
4	31.0	9.60	4.00	1.80	
5	31.5	9.50	3.80	2.00	
6	26.8	9.30	3.80	2.00	
7	27.0	8.80	3.80	1.80	
8	25.8	8.60	3.50	1.80	
9	26.8	8.60	3.50	1.80	
10	25.0	8.30	3.50	1.90	
11	20.0	8.00	3.30	2.00	
12	17.5	8.00	3.30	2.00	
13	15.5	8.50	3.30	2.00	
14	14.0	8.50	3.30	2.00	
15	13.0	8.50	3.30	2.10	
16	12.3	8.50	3.00	2.20	
17	12.0	7.80	3.00	2.50	
18	12.0	7.50	3.00	2.60	
19	10.5	7.40	2.80	2.70	
20	11.0	7.00	2.50	2.60	
21	9.3	6.50	2.00	2.70	
22	11.0	6.00	1.80	3.00	
23	10.5	6.00	1.70	4.00	
24	10.5	6.00	1.70	4.00	
25	11.5	6.00	1.60	4.00	
26	11.5	5.50	1.50	4.40	
27	11.3	5.00	1.30	4.70	
28	11.3	5.00	1.50	5.50	
29	11.0	5.00	1.40	5.50	
30	12.5	4.80	1.50	5.50	
31	---	4.60	1.50	---	
Total Sec.:	528.9	237.60	87.40	84.00	122 Day
Foot Days:					Period
Mean	17.6	7.66	2.82	2.80	7.68
Sec. Feet					
Maximum	31.5	12.3	4.50	5.50	31.5
Sec. Feet					
Minimum	9.3	4.60	1.40	1.50	1.40
Sec. Feet					
Total	1050.	471.	173.	167.	1860.
Acres Feet					

TABLE 7

DAILY DISCHARGE IN CUBIC FEET PER SECOND  
WILLOW CREEK AT CUMMINGS BRIDGE  
June 4 to September 30, 1940

Day	April	May	June	July	August	September	Remarks
1				16.0	10.0	10.5	
2				9.50	10.0	11.5	
3				9.50	10.0	11.5	
4			14.0	9.50	10.0	11.8	
5			12.8	9.50	10.0	13.0	
6			16.5	10.0	10.0	13.8	
7		**18.00	18.5	10.0	10.0	12.3	
8			19.5	10.0	10.0	12.3	
9			18.5	10.5	10.0	12.3	
10		**18.00	18.5	10.5	10.0	12.3	
11			22.0	10.5	10.0	12.3	
12			20.0	10.5	10.0	12.3	
13			18.5	11.0	10.0	13.8	
14			16.5	11.0	10.0	13.5	
15			16.5	11.0	10.0	13.5	
16		**16.00	16.0	11.0	10.0	13.5	
17			15.3	11.0	10.0	13.5	
18			12.3	11.0	10.0	13.5	
19	**20.00		10.0	10.5	10.0	13.5	
20			12.0	10.0	10.0	13.5	
21			12.0	10.0	8.30	13.5	
22			12.0	10.0	9.50	13.5	
23		**13.80	12.0	10.0	10.0	13.5	
24			11.5	10.0	10.0	13.5	
25			11.5	10.0	10.0	13.5	
26			11.5	10.0	10.0	13.5	
27			11.5	10.0	10.0	13.5	
28			8.50	10.0	10.5	13.5	
29	**20.00		9.00	10.0	10.5	13.5	
30			10.0	10.0	10.5	13.5	
31			---	10.0	10.5	---	
Total Sec.:			*386.90	316.50	309.80	389.2	:119 Day
:Feet Days							:Period
: Mean			* 14.3	10.5	9.93	13.0	11.8
:Sec. Feet							
: Maximum			* 22.0	11.0	10.5	13.8	22.0
:Sec. Feet							
: Minimum			* 8.50	9.50	8.30	10.5	8.30
:Sec. Feet							
: Total			*767.	628.	614.	772.	2780.
:Acre Feet							

\*27 day period.  
\*\*Intermittent observations.

TABLE 8

DAILY DISCHARGE IN CUBIC FEET PER SECOND  
GOLD RUN CREEK ABOVE DIVERSIONS  
June 1 to September 30, 1940

Day	May	June	July	August	September	Remarks
1		12.0	2.60	.60	.40	
2		11.8	2.30	.60	.40	
3		10.8	1.90	.60	.40	
4		10.4	1.80	.60	.40	
5		9.50	1.70	.60	.50	
6		9.10	1.70	.50	.50	
7		8.40	1.70	.50	.50	
8		7.80	1.40	.50	.50	
9	*52.8	7.20	1.40	.50	.50	
10		7.20	1.30	.50	.50	
11		7.20	1.20	.50	.50	
12		7.20	1.10	.50	.50	
13	*32.8	6.60	1.10	.50	.60	
14		6.40	1.10	.50	.70	
15		6.10	1.10	.50	.60	
16		5.80	1.10	.50	.80	
17		5.80	1.10	.50	.80	
18		5.80	1.00	.40	2.00	
19		4.80	1.00	.40	1.10	
20		4.60	1.00	.40	1.10	
21		4.10	1.00	.40	1.00	
22		3.90	.90	.40	.90	
23		3.70	.90	.40	.80	
24		3.20	.90	.40	.70	
25		2.90	.90	.40	.70	
26		2.90	.90	.50	.70	
27		2.60	.90	.50	.80	
28		2.40	.90	.50	.80	
29	*23.8	2.30	.90	.50	.80	
30		2.60	.70	.40	.80	
31		---	.60	.40	---	
Total Sec:		185.10	38.10	15.00	21.40	122 Day
Foot Days:						Period
Mean		6.17	1.23	.48	.71	2.13
Sec. Feet:						
Maximum		12.0	2.60	.60	2.00	12.0
Sec. Feet:						
Minimum		2.30	.60	.40	.40	.40
Sec. Feet:						
Total		367.	75.6	29.7	42.4	515.
Acre Feet:						

\*Intermittent observations.

TABLE 9

DAILY DISCHARGE IN CUBIC FEET PER SECOND  
RAMSEY DITCH AT HEAD  
May 9, to September 30, 1940

Day	May	June	July	August	September	Remarks
1		3.50	2.50	2.30	0.50	
2		3.50	2.50	2.30	.50	
3		3.50	2.50	2.30	.50	
4		3.50	2.50	2.00	.50	
5		3.50	2.50	2.00	.50	
6		1.50	6.00	2.00	.50	
7		3.50	6.00	2.00	.50	
8		3.50	5.50	2.00	.50	
9	4.00	3.50	5.00	2.00	.50	
10	4.00	3.50	5.00	2.00	.50	
11	3.00	3.00	5.50	2.00	.50	
12	4.00	3.00	5.30	2.00	.50	
13	4.00	2.80	5.00	2.00	.50	
14	4.00	2.00	2.50	2.00	.70	
15	4.00	2.50	2.30	2.00	.70	
16	4.00	2.50	2.50	2.00	.70	
17	4.00	1.50	2.50	2.00	.70	
18	4.00	2.00	1.50	2.00	.70	
19	4.00	2.00	1.00	1.70	1.00	
20	4.00	1.00	1.00	1.50	1.00	
21	4.00	2.00	1.00	1.50	1.00	
22	4.00	2.00	1.00	1.00	1.00	
23	3.00	2.00	1.00	.70	1.00	
24	3.00	2.00	2.30	.70	1.00	
25	4.00	2.00	2.30	.70	1.00	
26	3.00	2.00	2.30	.70	1.00	
27	4.00	2.00	2.30	.70	1.00	
28	4.00	2.00	2.30	.70	1.00	
29	4.00	2.00	2.30	.70	1.00	
30	4.00	2.00	2.30	.70	1.00	
31	3.00	---	2.30	.70	---	
Total Sec. Feet Days	*87.00	75.30	90.10	48.90	22.00	:145 Day :Period
Mean Sec. Feet	3.78	2.51	2.91	1.58	0.73	: 2.25
Maximum Sec. Feet	4.00	3.50	6.00	2.30	1.00	: 6.00
Minimum Sec. Feet	3.00	1.00	1.00	.70	.50	: .50
Total Acre Feet	173.	149.	179.	97.	43.6	: 642.

\*23 day period.

TABLE 10

DAILY DISCHARGE IN CUBIC FEET PER SECOND  
WATER RELEASED FROM McCOY FLAT AND HOG FLAT RESERVOIRS AND AVAILABLE  
FOR REDIVERSION AT SUSANVILLE, June 17, to September 20, 1940.

Day	June	July	August	Remarks
1		92.5	87.0	
2		89.5	89.0	
3		92.0	91.3	
4		93.0	87.0	
5		92.0	83.0	
6		90.5	67.0	
7		91.0	46.0	
8		92.0	(c) 30.0	
9		94.5	51.0	
10		94.7	59.0	
11		89.7	53.0	
12		91.0	52.0	
13		98.5	52.0	
14		96.0	51.5	
15		95.7	(b) 50.5	
16	(a)	(b) 36.3	41.5	
17	30.5	8.50	31.5	
18	85.5	0	25.2	
19	93.5	0	19.5	
20	90.5	0	(d) 10.5	
21	90.5	0		
22	91.5	0		
23	95.5	(a) 0		
24	98.5	22.8		
25	97.5	86.8		
26	93.5	90.8		
27	83.5	90.8		
28	84.5	90.8		
29	92.5	90.8		
30	97.5	87.8		
31		86.8		
Total Sec. Feet Days	1225.0	2084.80	1077.5	59 Day Period
Mean	87.5	83.4	53.9	74.4
Sec. Feet				
Maximum	98.5	98.5	91.3	98.5
Minimum	30.5	22.8	10.5	10.5
Total	2430.0	4130.	2140.	8700.
Acre Feet				

- (a) McCoy Flat Reservoir opened. June 14 day period.  
 (b) McCoy Flat Reservoir closed. July 25 day period.  
 (c) Hog Flat Reservoir opened. August 20 day period.  
 (d) Hog Flat Reservoir closed.

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