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

A. D. EDMONSTON, State Engineer

REPORT ON WATERMASTER SERVICE IN SUSAN RIVER WATERMASTER SERVICE AREA

Lassen County, California

1950 SEASON

Sacramento, California

March 1951

SUBMISSION TO, AND ADOPTION BY
DEPARTMENT OF PUBLIC WORKS

I, L. C. Jopson, Supervising Hydraulic Engineer, Division of Water Resources, Department of Public Works of the State of California, hereby submit the within contained report entitled "Report on Watermaster Service in Susan River Watermaster Service Area, Lassen County, California, 1950 Season".

/s/ L. C. JOPSON
Supervising Hydraulic Engineer

I, Gordon Zander, Principal Hydraulic Engineer, Division of Water Resources, Department of Public Works of the State of California, hereby approve the within contained report entitled "Report on Watermaster Service in Susan River Watermaster Service Area, Lassen County, California, 1950 Season."

/s/ GORDON ZANDER
Principal Hydraulic Engineer

I, A. D. Edmonston, State Engineer and Chief of the Division of Water Resources, Department of Public Works of the State of California, hereby approve and adopt the within contained report entitled "Report on Watermaster Service in Susan River Watermaster Service Area, Lassen County, California, 1950 Season", as a report of the Department of Public Works.

WITNESS my hand and the seal of the Department of Public Works of the State of California, this 10th day of August, 1951

DEPARTMENT OF PUBLIC WORKS

By /s/ A. D. EDMONSTON
A. D. Edmonston
State Engineer

SEAL

ORGANIZATION

C. H. Purcell . . . . . Director of Public Works

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This report was prepared under the direction of

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INTRODUCTION

The Susan River Watermaster Service Area was created by order of the State Engineer on November 10, 1941, to include with certain exceptions all of the water rights set forth in the decree in the case of J. J. Fleming, et al., vs. J. R. Bennett, et al., No. 4573, Superior Court, Lassen County, entered April 18, 1940.

Watermaster service, as provided in Part 4 of Division 2 of the Water Code, was commenced for the 1950 season on April 1 and terminated on September 30. A. J. Vandenberg, Deputy Watermaster, was in charge of the distribution of water from the stream system during the season under the supervision of P. E. Stephenson, Senior Hydraulic Engineer.

WATER SUPPLY

Precipitation

The monthly precipitation record for the U. S. Weather Bureau station at Susanville Airport for the period October 1, 1943 to September 30, 1950, is shown in Table 1. This station was moved from Susanville seven years ago so the average precipitation at the new station is given for comparison with the fifty year combined average.

The total precipitation for the 1949-50 season was 11.85 inches or about 109 per cent of the seven-year mean and about 62 per cent of the fifty-year mean. A comparison of the two means indicates that the precipitation at the airport station is probably not over sixty per cent of that occurring at the old station in Susanville.

According to the April, 1950 snow survey bulletin of the California Cooperative Snow Surveys, the water content of the snow as measured at three stations in the Susan River watershed area on April 1, 1950 averaged about 50 per cent of the long time mean. Subsequent snowfall at the higher elevations of the watershed during April and early May increased the water crop to near normal conditions.

Stream Flow

Stream flow measuring stations, equipped with automatic water stage recorders, were maintained during the period of watermaster service on Susan River at Haws (below Ramsey Ditch), Old Channel of Susan River below Woodstock Dam, Susan River at Johnstonville Bridge, Willow Creek below Mapes Big Spring, and Gold Run Creek above Diversions. Records of discharge at these stations are set forth in Tables 2 to 6, inclusive. Tables 2 and 5 are in two sheets with the first sheet of each showing the discharge from October 1, 1949 to March 31, 1950 and the second sheets showing the discharge from April through September 1950.

The discharge through the Ramsey Ditch, as shown in Table 7, was determined from intermittent measurements and staff-gage observations and by estimating the discharge for days when data was not available.

The discharge of Susan River above the Ramsey Ditch including water released from storage is shown in Table 8. The daily discharges shown in this tables were obtained by combining Tables 2 and 7.

The natural flow of Susan River above the Ramsey Ditch, exclusive of stored water released from McCoy and Hog Flat reservoirs, is shown in Table 9. The natural flow during periods of reservoir release was estimated by measurements and observations before and during the release of stored water.

The released storage water available for rediversion below Susanville is shown in Table 10.

A hydrograph of the Susan River at Haws is included as Plate 1.

The following tabulation shows a comparison of the average daily flows of the Susan River above Ramsey Ditch during the months of April, May, June, July and August.

AVERAGE DAILY FLOW OF SUSAN RIVER ABOVE RAMSEY DITCH
CUBIC FEET PER SECOND

(Excluding Released Storage Water)

Year	April *	May	June	July	August
1936	185	100	47	10	4.4
1937	220	125	27	6.8	4.5
1938	1560	1350	360	48	7.9
1939	39	15	6.7	2.8	2.3
1940	370	190	26	11.5	6.5
1941	220	420	88	20	14.5
1942	400	300	154	25	19.5
1943	266	145	68	21	17.7
1944	155	150	58	20	13.5
1945	160	98	48	16	10.0
1946	215	100	29	15	8.9
1947	73	49	15	3.8	3.1
1948	189	157	122	13.5	6.0
1949	188	80	16	5.9	2.9
1950	205	134	50	8.4	4.9
1936-50	296	228	74	15.1	8.4

* Average flows may be for partial month.

DISTRIBUTION OF WATER

The waters of Susan River and its tributaries were distributed during the 1950 season in accordance with the water rights defined in the judgment and decree in the case of J. J. Fleming, et al., vs. J. R. Bennett, et al., No. 4573, Superior Court, Lassen County, California.

The decree divides the waters of the stream system into three groups, depending upon the source or sources of supply. Schedule 3 of the decree defines the rights to the use of water from Willow Creek which includes Upper Willow Creek Valley, Lower Willow Creek, and a part of the requirements for the Susan River delta below the Colony Dam. Schedule 4 of the decree defines the rights to the use of water from Gold Run Creek, Piute Creek, Hills Creek, Holtzclaw Creek and Lassen Creek above their confluence with Susan River. Schedules 5 and 6 of the decree define the rights to Susan River exclusive of the tributaries.

A discussion of water distribution for the 1950 season in the three groups in accordance with the schedules follows:

Willow Creek (Schedule 3)

Upper Willow Creek

A shortage of irrigation water in Willow Creek Valley occurred after about April 20. After May 1 only first priority and thirty per cent of second priority allotments were available.

Water in the Walsh Reservoir lasted until about June 10. Thereafter heavy moss growth in the channel of Willow Creek and the normal shortage of water resulted in little more than stockwater being delivered to the lower ranches during the remainder of the season.

Lower Willow Creek

Except for a small amount of return flow from Susan River above the Colony Dam, the Susan River delta area was almost entirely dependent upon the flow from lower Willow Creek after the first of July. This supply was sufficient to satisfy all first priority allotments and about forty per cent of the second priority allotments under the schedule of distribution. The second priority amount was sufficient to supply stockwater to all ranches in the delta area.

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

Lassen Creek

The flow of Lassen Creek was adequate to meet all irrigation needs until haying time about July 1. Subsequently the flow decreased steadily until the end of July when only ten per cent of the first priority requirements were available at the Hulsman ranch. Stockwater was available in the creek at the Hulsman meadow until August 30 and then again after September 15.

The flow of Holtzclaw Creek, tributary to Lassen Creek, was insufficient to supply any diversion to the Emerson meadow after June 1. Subsequent to this date the entire flow was used on the Hulsman ranch. Flow in the creek ceased by the first of July.

Gold Run Creek

The flow of Gold Run Creek was sufficient to meet all requirements until about the 20th of June. Subsequently the flow steadily decreased until by the 10th of July only stockwater and about one-half of the first priority requirements could be satisfied. After the end of July only domestic and stockwater was available at the uppermost ranches for the remainder of the season.

Hills Creek

The flow of Hills Creek was adequate to supply all irrigation requirements until about June 1. The flow as measured at the head of the Emerson Ditch dropped from seventy per cent of total allotments about the middle of June to only minimum stockwater requirements by the first of August.

Water diverted through the Emerson Ditch failed to reach the Emerson ranch after the middle of July. There was sufficient flow in the creek to reach the Brugger (Clark) ranch throughout the season.

Piute Creek

There was sufficient water in Piute Creek to satisfy all requirements until June 15th. Thereafter the flow dropped rapidly until by July 1 water was available for only fifty per cent of allotments. After the 15th of July the California Pacific Utilities Company diverted the entire flow of the creek for municipal purposes except the portion needed to supply the pro rata allotments of the users below the Utilities Company Ranch. A flow of 0.27 cubic foot per second was maintained below the Utilities Company Ranch to supply these allotments.

Susan River (Schedules 5 and 6)

Schedule 5

The natural flow of Susan River as tabulated in Table 9 was adequate in general to meet irrigation requirements until about May 15. Subsequent to this time the 3rd priority was limited to 20 cubic feet per second as a result of diversion by the Lassen Irrigation Company. After June 15 the flow of the

Susan River dropped rapidly until July 25, after which time first priority water and stockwater only was available.

The Woodstock, Bantley, Johnstonville, Ripley, Barham, Shanks, Johnston and Chappius, Dill, and Tanner dams were used during the 1950 season.

The average flow of Susan River above the Ramsey Ditch and the per cent of allotments delivered to the first, second and third priority rights under Schedule 5 are given by months in the following tabulation:

Month	Average daily flow Susan River above Ramsey Ditch c.f.s.	1st Priority * 4.90 c.f.s	2nd Priority 67.55	3rd Priority 51.17
April	205	100	100	100
May	134	100	100	70
June	50	100	50	20
July	8.4	100	15	5
August	4.9	95	5	0
September	5.3	100	5	0

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

The water allocated to the Senteney Ranch was not used thereon in 1950 but was transferred for use on the Beckett Ranch.

Schedule 6

Water under this schedule is subject to all rights set forth in Schedules 3, 4 and 5.

Water was distributed under this schedule to the delta area as late as May 10. Although these rights suffered particularly through the lack of satisfactory diversion structures and ditches, it was possible to rotate the use of the available water to such ranches that had satisfactory means of diversion and good crops were produced thereon.

A continued lack of agreement between the Galeppi and Tanner ranches on the operation of the Hartson Upper Ditch made a coordinated schedule of rotation necessary during April and the first week of May. Some repairs were made at the head of the Hartson Slough but considerably more repairs are yet necessary before any permanent rotation schedule may be established. Some of these repairs were in progress at the end of the season and were to be continued during the winter months.

Susan River Reservoirs 1950

The Lassen Irrigation Company owns and operates three reservoirs in the Susan River stream system. Lake Leavitt was filled to capacity early in April with releases for irrigation beginning about April 25. McCoy Reservoir was filled to capacity on May 25. Hog Flat Reservoir was only partially filled by the end of the spring runoff. Releases from McCoy and Hog Flat Reservoirs into Lake Leavitt were begun on July 5 and terminated on August 30 when the supply was exhausted.

The replenished supply in Lake Leavitt supplied the needs of the irrigation company for the remainder of the season with Lake Leavitt being left approximately one-fourth full. The amount of stored water released from McCoy and Hog Flat Reservoirs, available for rediversion below Susanville, was 10,180 acre-feet.

EAGLE LAKE

Beginning in the 1947 season, measurements were taken from a bench mark to the water surface of Eagle Lake in order to determine the changes in the water surface elevation. These observations were continued during the 1950 season. The elevation of the bench mark from which the measurements were taken, was determined by W. E. Buell as 98.06 feet above an earlier established datum. The elevation of the water surface at the various times of observation are included in the following tabulation for comparison:

WATER SURFACE ELEVATIONS OF EAGLE LAKE

Date	Distance B.M. to Water Surface	Water Surface Elevation
4-27-47	13.85	84.21
5-16-47	14.08	83.98
8-16-47	15.17	82.89
9-11-47	15.75	82.31
6- 3-48	15.17	82.89
7- 7-48	15.32	82.74
7-28-48	15.73	82.33
8-26-48	16.12	81.94
9-24-48	16.62	81.44
5-17-49	15.55	82.51
6-19-49	15.90	82.16
7-18-49	16.50	81.56
8-22-49	17.25	80.81
9-19-49	17.55	80.51
4-19-50	16.71	81.35
5-20-50	16.60	81.46
6-20-50	16.90	81.16
7-21-50	17.40	80.66
8-25-50	18.1	80.0
9-23-50	18.4	79.7

ALL YEAR STREAM FLOW MEASUREMENTS

Prior to the beginning of the 1949 irrigation season the Lassen County Chamber of Commerce requested the Department to collect year around water supply records on Pine Creek, Baxter Creek and Long Valley Creek outside

of the Susan River Watermaster Service Area and on Willow Creek and Susan River within the service area. Records have been kept on the latter two streams from about April 1 to September 30 since 1935 in connection with the determination of water rights on Susan River and subsequent watermaster service.

As the records desired are important in planning any future development in the Honey Lake area and particularly in the area subject to watermaster service, arrangements were made for the construction of gaging stations suitable for all year use and for the assistance of winter observers during the season of no watermaster service.

Operation of the gaging stations were taken over by volunteer observers at the end of the 1949 irrigation season and returned to the watermaster in April, 1950. Late in the 1950 season the U.S.G.S. completed new stations of standard design on Susan River at Haws, Willow Creek at Mapes Camp and Pine Creek at Bogard Campground and will hereafter operate these stations. The Susan River watermaster will continue to operate the Baxter Creek station in connection with the Baxter Creek Adjudication and local residents will operate the Long Valley Creek station.

Records of discharge for the Susan River and the Willow Creek stations are given in Tables 2 and 5, records for the Baxter Creek and Pine Creek stations are given in the Appendix to the report.

Long Valley Creek had insufficient flow for accurate measurement but was estimated to have had a runoff of 500 acre-feet during the same period.

SUMMARY

Although precipitation was below normal on April 1, subsequent storms produced a near normal stream flow on all streams except Upper Willow Creek where a deficiency existed throughout almost the entire season.

The available water was distributed in the amounts, for the purposes and according to the priorities set forth in the Susan River decree.

Distribution was accomplished without serious controversy, with poor diversion facilities being the greatest handicap to efficient control of the water. Some progress is being made toward construction of the various control structures needed in the area.

CHANGES IN OWNERSHIP OF LANDS AND WATER RIGHTS

The changes in ownership of lands and water rights which have occurred subsequent to filing "Statement for Susan River Watermaster Service Area, County of Lassen, State of California, for 1950" and which have been included in the 1950 statement for said service area, are listed in the following tabulation:

CHANGES IN OWNERSHIP OF LANDS AND WATER RIGHTS

Tract No.	Name of Water Right Owner Appearing in 1950 Statement	Name of Water Right Owner To Appear in 1951 Statement	Water c.f.s.
12-9	Actis, Steve	Bates, Wesley & Bates, Ethel	0.06
12-43	Adams, Irvin L, & Adams, Gladys M.	Menth, John F. & Menth, Leah C.	0.14
12-99	Andrews, J.D. & Andrews, Ida	McClelland, Estate of James H.B. & McClelland, Esther A.	1.25
12-21	Bauer, Wilford	Bauer, Wilford & Bauer Gwenna A.	0.09
12-31	Bradford, Harold E.	Randrup, George	0.65
12-85	Buffum, Frank B. & Buffum, Sara E.	Buffum, Estate of Frank B. & Buffum, Sara E.	1.00
12-47A	Carter, George W. & Carter, Margaret Louise	Carter, Margaret Louise	0.135
12-80	Case, Seymour & Case, Sadie	Beckett, Charles W. & Beckett, Vada H.	1.35
12-8	Church, J. O.	Church, Minnie M.	0.02
12-34	Clabots, Estate of Frank	Walters, Carol & McVicar, Percy I.	0.03
12-71	Ferrell, James O.	Mallery, Milton A.	2.70
12-51	Davis, Estate of Willis H. & Nuckolls, Neva Davis	Nuckolls, Neva Davis	0.80
12-38 Part	Payne, P. O.	Ulch, Millard & Ulch, Claire	1.05
12-68	Ridenour, S.D. & Ridenour Minnie	Ridenour, S.D.; Ridenour, Minnie; Sella, Harry; and Sella, Ancilla	5.20
12-74 Part	Senteney, D.L; Senteney, D.L; & Senteney, K.D.	Beckett, Charles W, and Beckett, Vada H.	0.49
12-54	Spotswood, Ernest C. & Spotswood, Edith M.	Gorbet, Ira D. & Gorbet, Winnifred E.	0.08
12-93	Hutton, J.C. & Stowe, V.A.	Stowe, Van A; Stowe, Marion; Hutton, Julian C. & Hutton Ruby A.	
12-119	Streshley, James	Streshley, Est. of James	3.50
12-43	Taylor, P.A.	Spurgeon, G.O. & Spurgeon Barbara Jo	0.27

TABLE 1

PRECIPITATION AT SUSANVILLE AIRPORT, 6 MILES EAST OF SUSANVILLE, CALIFORNIA

Monthly, Seasonal, and Average Amounts in Inches

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Season
1943-44	1.17	.89	.90	2.06	3.14	1.98	1.03	.14	1.82	.47	.04	.19	13.83
1944-45	.35	3.67	1.58	2.42	2.45	.70	.33	.70	.46	.27	.09	.47	13.49
1945-46	2.92	2.01	3.65	.40	.89	1.21	.25	.07	.01	.59	.00	.20	12.20
1946-47	.25	3.28	1.50	.25	1.28	1.37	.67	1.13	.47	.00	.18	T	10.38
1947-48	1.57	.07	.15	.91	.66	.85	1.85	1.39	1.43	.00	.00	.04	8.92
1948-49	.61	.48	1.55	.24	.60	.97	.01	1.89	.00	.04	.02	.00	6.41
1949-50	.01	1.11	.17	*2.96	*2.27	1.36	*1.09	.36	.98	.00	.21	1.33	11.85
7-Year Mean	0.99	1.65	1.36	1.32	1.59	1.21	.75	.75	.74	.20	.07	.32	10.85
50-Year Mean **	1.02	2.09	3.09	3.81	2.90	2.50	1.12	1.07	.58	.19	.16	.54	19.07

* Record shown was observed at Susanville Ranger Station. Airport record missing.
** Records prior to December, 1943 were recorded within the City of Susanville.

TABLE 2

Daily Discharge in Cubic Feet per Second
SUSAN RIVER AT HAWS BELOW RAMSEY DITCH
INCLUDING WATER RELEASED FROM STORAGE
October 1, 1949 to September 30, 1950

1949
(October 1 to March 31, 1950)

Day	October	November	December	January	February	March
1	3	5	7	8	12	80
2	3	5	7	8	10	90
3	3	5	7	8	50	95
4	3	5	7	8	110	110
5	3	5	7	8	170	100
6	3	5	7	10	220	100
7	3	5	7	12	105	105
8	3	5	7	12	80	100
9	4	10	7	10	60	90
10	4	20	7	10	60	85
11	4	15	7	10	60	85
12	4	10	7	10	50	46
13	4	8	7	20	40	60
14	4	7	7	30	50	50
15	4	5	7	50	70	45
16	4	5	7	70	60	50
17	4	5	7	90	65	100
18	4	5	7	115	65	170
19	4	5	7	100	65	220
20	4	5	7	100	70	200
21	4	5	7	90	75	170
22	4	5	7	90	75	220
23	4	5	7	90	75	210
24	4	5	7	80	75	180
25	4	5	7	70	75	170
26	4	5	7	70	80	150
27	5	5	7	50	80	170
28	5	7	7	45	80	150
29	5	7	7	40		150
30	5	7	7	30		140
31	5		7	20		140
Tot. Sec. Ft. Days	116	196	217	1364	2087	3831
Mean Sec. Ft.	3.7	6.5	7.0	44	74	125
Total Ac. Ft.	230	390	430	2710	4150	7690

Total acre-feet from October 1, 1949 to March 31, 1950 - 15,600

TABLE 2 (Con't)

(April 1 to September 30, 1950)

Day	April	May	June	July	August	September
1	170	155	96	11	128	3.3
2	180	155	90	10	122	3.3
3	180	150	83	10	117	3.3
4	190	140	80	9	116	3.5
5	200	150	74	8	114	4.0
6	200	145	70	51	113	3.5
7	190	110	70	101	112	4.0
8	185	100	65	108	111	3.5
9	175	108	62	108	109	3.5
10	175	112	53	111	105	3.5
11	170	120	54	125	105	3.5
12	170	130	54	130	102	3.5
13	215	140	51	122	101	3.5
14	185	155	54	122	99	3.5
15	175	160	56	122	97	3.5
16	190	160	46	118	96	4.5
17	210	160	40	117	92	5.5
18	230	150	33	113	88	6.0
19	235	140	26	118	83	4.0
20	250	130	20	113	75	3.5
21	280	130	20	109	67	3.5
22	290	130	26	104	34	3.5
23	260	130	17	101	10	3.5
24	230	130	20	135	8.0	3.5
25	205	125	19	145	7.0	3.5
26	210	110	16	135	6.0	3.5
27	200	110	14	140	5.5	3.5
28	195	109	12	138	5.0	4.0
29	170	108	12	135	4.5	4.0
30	155	108	11	135	4.0	4.0
31		100		135	4.0	
Total Sec. Ft. Days	6,070	4,060	1,344	3,139	22.40	112.9
Mean Sec. Ft.	202	131	44.8	101	72.3	3.8
Total Ac. Ft.	12,000	8,050	2,670	6,220	4,440.	220.

Total acre-feet from April 1 to September 30, 1950 - 33,600
Total acre-feet for year - 49,200

Sheet II

TABLE 3

Daily Discharge in Cubic Feet per Second
OLD CHANNEL OF SUSAN RIVER BELOW WOODSTOCK DAM
April 1 to September 30, 1950

Day	April	May	June	July	August	September
1	2	14	17	6.0	2.5	2.7
2	2	14	17	6.0	2.4	2.7
3	8	14	17	6.5	2.6	2.7
4	14	17	17	7.0	2.6	3.0
5	14	14	17	7.5	2.9	3.5
6	14	14	18	7.0	2.9	4.0
7	14	14	18	6.0	2.9	3.5
8	14	15	18	6.0	2.5	3.5
9	14	15	18	5.5	2.5	3.0
10	14	15	18	5.5	2.5	3.0
11	14	15	18	5.0	2.5	3.0
12	14	15	18	5.0	2.5	3.0
13	14	15	15	5.0	2.5	3.0
14	14	15	12	4.0	2.5	3.5
15	14	15	13	4.0	2.5	3.5
16	14	15	12	4.0	2.5	3.5
17	14	15	11	3.5	2.5	4.5
18	14	15	10	3.5	2.5	4.0
19	14	15	9.5	3.5	2.5	3.5
20	14	15	9.0	2.5	2.0	3.0
21	14	15	8.5	2.5	2.0	3.0
22	14	15	9.0	2.5	1.5	3.0
23	14	15	9.0	2.5	1.0	3.0
24	14	15	8.0	2.5	3.0	3.5
25	10	15	7.3	2.5	3.0	3.5
26	10	15	7.0	2.5	3.5	3.5
27	18	16	6.0	2.5	3.5	3.5
28	17	16	6.0	2.5	2.5	3.5
29	16	17	5.0	2.5	2.5	3.5
30	15	17	5.0	2.5	2.8	3.5
31		17		2.5	3.5	
Total Sec. Ft. Days	392.	466.	373.3	130.5	79.6	99.6
Mean Sec.Ft	13.7	15.0	12.4	4.2	2.6	3.3
Total Ac.Ft.	780	925	740	259	158	198

Total acre-feet for period - 3,060

TABLE 4

Daily Discharge in Cubic Feet per Second
SUSAN RIVER AT JOHNSTONVILLE BRIDGE
April 1 to September 30, 1950

Day	April	May	June	July	August	September
1	140	30	29	12	1.5	0.7
2	140	30	26	12	1.5	0.7
3	150	33	32	12	1.5	0.7
4	150	29	33	3.0	1.5	0.7
5	140	33	33	2.5	1.5	1.0
6	165	35	35	2.5	1.5	1.0
7	175	27	36	2.5	1.5	1.0
8	195	22	34	2.5	1.5	1.0
9	165	30	31	2.5	1.5	1.5
10	155	32	29	2.5	1.5	1.5
11	145	33	30	2.0	1.5	1.5
12	135	36	29	2.0	1.5	1.5
13	200	40	29	2.0	1.5	2.0
14	160	46	28	2.0	1.5	2.0
15	130	41	27	2.0	1.5	4.0
16	100	35	21	2.0	1.5	8.0
17	115	33	20	2.0	1.5	5.0
18	130	31	18	2.0	1.5	4.0
19	118	26	15	2.0	1.5	3.0
20	130	23	12	2.0	1.5	2.0
21	160	22	10	2.0	1.5	2.0
22	175	27	13	2.0	1.5	2.0
23	155	32	11	2.0	1.5	3.0
24	100	30	12	2.0	1.5	4.0
25	63	13		2.0	1.4	3.0
26	57	23	10	2.0	1.3	3.0
27	44	25	9	2.0	1.2	2.5
28	38	24	8	2.0	1.1	2.5
29	30	25	7	2.0	1.0	2.5
30	24	30	7	2.0	1.0	2.5
31		31		2.0	1.0	
Total Sec. Ft. Days	3,784	941	647	96.0	44.0	69.8
Mean Sec.Ft.	123	30.3	21.6	3.1	1.4	2.2
Total Ac. Ft.	7,510	1,870	1,285	190	87	138

Total acre-feet for period - 11,080

TABLE 5

Daily Discharge in Cubic Feet per Second
WILLOW CREEK BELOW MAPES BIG SPRING
October 1, 1949 to September 30, 1950

1949
(October 1 to March 31, 1950)

Day	October	November	December	January	February	March
1	8	11	12	12	14	NO
2	8	11	12	12	16	RECORD
3	8	11	12	12	20	
4	8	11	12	11	22	
5	8	11	12	12	37	16
6	8	11	12	12	44	17
7	8	11	13	12	33	16
8	8	11	13	12	26	16
9	8	11	13	12	19	16
10	9	12	13	12	20	16
11	10	11	13	12	19	16
12	10	11	13	12	18	16
13	10	11	13	12	19	16
14	10	11	13	12	19	17
15	10	11	11	12		17
16	10	11	11	12		17
17	10	11	11	14		18
18	10	11	11	24		19
19	10	11	11	24	NO	21
20	10	11	11	20	RECORD	21
21	10	11	11	22		19
22	10	11	11	19		21
23	10	11	11	26		20
24	10	11	11	21		25
25	11	11	11	12		23
26	11	11	11	12		22
27	11	11	11	13		27
28	11	12	11	12		21
29	11	12	11	12		18
30	11	12	11	12		17
31	11		11	12		16
Total Sec. Ft. Days	298	334	363	446	* 326	**504
Mean Sec. Ft.	9.6	11.1	11.7	14.4	* 23.3	** 18.6
Total Ac. Feet	590	660	720	890	* 650	**1000

* 14-day period during February
** 27-day period during March
Total acre-feet from October 1, 1949 to March 31, 1950 - 4,510

TABLE 5 (Cont'd)

(April 1 to September 30, 1950)

Day	April	May	June	July	August	September
1	16	8	8	8	8	8
2	15	8	8	8	8	8
3	13	8	8	8	8	8
4	16	8	8	8	8	8
5	15	8	8	8	8	8
6	17	8	8	8	8	8
7	17	8	8	8	8	8
8	17	8	8	8	8	8
9	19	8	8	8	8	8
10	18	8	8	8	8	8
11	17	8	8	8	8	8
12	17	8	8	8	8	8
13	15	8	8	8	8	8
14	16	8	8	8	8	8
15	15	8	8	8	8	8
16	15	8	8	8	8	8
17	13	8	8	8	8	8
18	12	8	8	8	8	8
19	12	8	8	8	8	8
20	11	8	8	8	8	8
21	11	8	8	8	8	8
22	10	8	8	8	8	8
23	10	8	8	8	8	9
24	10	8	8	8	8	9
25	10	8	8	8	8	9
26	10	8	8	8	8	9
27	9	8	8	8	8	9
28	9	8	8	8	8	9
29	8	8	8	8	8	9
30	8	8	8	8	8	9
31		8		8	8	
Total Sec. Ft. Days	401	248	240	248	248	248
Mean Sec. Ft.	13.3	8.0	8.0	8.0	8.0	8.3
Total Ac. Ft.	800	490	480	490	490	490

Total acre-feet from April 1 to September 30, 1950 - 3,240
Total acre-feet for year - 7,750

TABLE 6

Daily Discharge in Cubic Feet per Second
GOLD RUN CREEK ABOVE DIVERSIONS
April 1 to September 30, 1950

Day	April	May	June	July	August	September
1	11	11	12	4.0	0.3	0.1
2	11	11	12	4.0	0.3	0.1
3	11	11	11	4.0	0.3	0.1
4	11	10	11	3.0	0.3	0.1
5	11	10	10	3.0	0.3	0.1
6	12	10	10	3.0	0.3	0.1
7	11	10	10	3.0	0.3	0.1
8	11	10	9	3.0	0.3	011
9	11	11	9	2.5	0.3	0.2
10	11	11	9	2.5	0.3	0.2
11	11	12	8	2.5	0.2	0.2
12	12	13	8	2.5	0.2	0.2
13	13	14	8	2.0	0.2	0.2
14	12	16	8	2.0	0.2	0.3
15	12	18	8	2.0	0.2	0.4
16	12	20	8	2.0	0.2	0.5
17	13	22	7	1.5	0.2	1.0
18	14	20	7	1.5	0.2	1.5
19	16	18	7	1.5	0.2	1.0
20	17	16	7	1.0	0.2	1.0
21	18	18	7	1.0	0.1	1.0
22	14	19	6	1.0	0.1	0.8
23	12	16	6	0.8	0.1	0.8
24	12	18	6	0.8	0.1	0.6
25	14	16	6	0.6	0.1	0.6
26	14	15	6	0.4	0.1	0.4
27	13	16	5	0.4	0.1	0.4
28	13	16	5	0.4	0.1	0.5
29	13	16	4	0.4	0.1	0.5
30	11	15	4	0.3	0.1	0.5
31		15		0.3	0.1	
Total Sec. Ft. Days	377	454	234	56.9	6.1	13.6
Mean Sec. Ft.	12.6	14.6	7.8	1.8	0.2	0.4
Total Acre-feet	750	900	460	110	12	27

Total acre-feet for period - 2,260

TABLE 7

Daily Discharge in Cubic Feet per Second
RAMSEY DITCH AT HEAD
April 1 to September 30, 1950

Day	April	May	June	July	August	September
1	2.0	4.0	4.0	4.5	3.0	2.0
2	2.0	4.0	4.0	4.5	3.0	1.5
3	2.0	3.0	5.0	4.0	3.0	1.5
4	2.0	3.0	5.0	4.0	2.5	1.0
5	2.0	0	5.0	4.0	2.5	1.0
6	2.0	0	5.0	3.5	2.2	1.0
7	2.0	0	5.0	3.5	2.5	1.0
8	2.0	0	5.0	3.5	2.9	1.0
9	2.0	0	5.0	3.5	2.2	1.1
10	2.0	4.0	5.0	3.5	2.2	1.1
11	2.0	4.0	5.0	3.5	2.2	1.1
12	3.0	4.0	5.5	3.5	2.2	1.4
13	3.0	4.0	6.0	3.5	2.2	1.8
14	3.0	4.0	5.5	3.5	2.2	1.8
15	3.0	4.0	5.5	3.5	2.2	1.8
16	3.0	4.0	5.5	3.0	2.2	2.0
17	3.0	4.0	5.5	2.0	2.2	2.0
18	3.0	4.0	5.5	0	2.2	2.0
19	3.0	4.0	5.5	2.0	2.2	3.5
20	3.0	4.0	5.5	3.0	2.2	3.0
21	3.0	4.0	5.5	3.5	2.2	2.5
22	3.0	4.0	5.5	3.5	2.2	2.0
23	3.0	4.0	5.5	3.5	2.0	2.0
24	3.0	4.0	5.5	3.0	1.0	2.0
25	3.0	4.0	5.5	3.0	0	2.0
26	3.0	4.0	5.5	2.5	1.0	2.0
27	3.0	4.0	5.5	2.4	1.0	1.5
28	3.0	4.0	5.5	2.4	1.0	1.5
29	3.0	4.0	5.0	2.4	1.0	1.5
30	3.0	4.0	5.0	2.4	1.0	1.5
31		4.0		2.4	1.3	
Total Sec. Ft. Days	79.0	102.2	157.0	97.0	60.7	51.1
Mean Sec.Ft.	2.6	3.3	5.2	3.1	2.0	1.7
Total Ac.Ft.	157	166	260	190	120	101

Total acre-feet for period - 990

TABLE 8

Daily Discharge in Cubic Feet per Second
SUSAN RIVER ABOVE RAMSEY DITCH INCLUDING WATER
RELEASED FROM STORAGE
April 1 to September 30, 1950

Day	April	May	June	July	August	September
1	172	159	100	16	131	5.3
2	182	159	94	14	125	4.8
3	182	153	88	14	120	4.8
4	192	143	85	13	118	3.5
5	202	150	79	12	117	5.0
6	202	145	75	55	115	4.5
7	192	110	75	104	115	5.0
8	187	100	70	112	114	4.5
9	177	108	67	111	111	4.6
10	177	116	58	115	117	4.6
11	172	124	59	128	107	4.6
12	173	134	60	134	104	4.9
13	218	144	57	125	103	5.3
14	188	159	59	126	101	5.3
15	178	164	62	125	100	5.3
16	193	164	51	121	98	6.5
17	213	164	46	119	94	7.5
18	233	154	38	113	90	8.0
19	238	144	32	120	85	7.5
20	253	134	25	116	78	6.5
21	283	134	26	113	70	6.0
22	293	134	31	107	36	5.5
23	263	134	23	105	12	5.5
24	233	134	25	138	9.0	5.5
25	208	129	25	148	7.0	5.5
26	213	114	21	137	7.0	5.5
27	203	114	20	142	6.5	5.0
28	198	113	17	140	6.0	5.5
29	173	112	17	138	5.5	5.5
30	158	112	16	137	5.0	5.5
31		104		137	5.3	
Total Sec. Ft. Days	6,149	4,162	1,501	3,235	2,303.3	163.0
Mean Sec.Ft	205	134	50	104	75	5.4
Total Ac. feet	12,200	8,250	2,980	6,420	4,570	323

Total acre-feet for period - 34,750

TABLE 9

Daily Discharge in Cubic Feet per Second
NATURAL FLOW OF SUSAN RIVER ABOVE RAMSEY DITCH
April 1 to September 30, 1950

(Excluding Released Storage Water)

Day	April	May	June	July	August	September
1	172	159	100	16	5.5	5.3
2	182	159	94	14	5.5	4.8
3	182	153	88	14	6.0	4.8
4	192	143	85	13	5.5	3.5
5	202	150	79	12	5.5	5.0
6	202	145	75	12	5.5	4.5
7	192	110	75	11	5.5	5.0
8	187	100	70	11	5.5	4.5
9	177	108	67	10	5.0	4.6
10	177	116	58	10	5.0	4.6
11	172	124	59	10	5.0	4.6
12	173	134	60	9.0	5.0	4.9
13	218	144	57	9.0	5.0	5.3
14	188	159	59	8.0	5.0	5.3
15	178	164	62	8.0	5.0	5.3
16	193	164	51	7.0	5.0	6.5
17	213	164	46	6.5	5.0	7.5
18	233	154	38	6.5	5.0	8.0
19	238	144	32	6.0	5.0	7.5
20	253	134	25	6.0	4.5	6.5
21	283	134	26	6.0	4.5	6.0
22	293	134	31	6.0	4.0	5.5
23	263	134	23	6.0	4.0	5.5
24	233	134	25	6.0	4.0	5.5
25	208	129	25	5.5	4.0	5.5
26	213	114	21	5.5	4.5	5.5
27	203	114	20	5.5	4.5	5.0
28	198	113	17	5.5	4.5	5.5
29	173	112	17	5.5	4.5	5.5
30	158	112	16	5.5	4.5	5.5
31		104		5.5	5.3	
Total Sec. Ft. Days	6,149	4,162	1,501	261.5	152.3	163.0
Mean Sec Ft	205	134	50	8.4	4.9	5.3
Total Acre-feet	12,200	8,250	2.980	520	302	32

Total acre-feet for period - 24,280

TABLE 10

Daily Discharge in Cubic Feet per Second
WATER RELEASED FROM MCCOY AND HOG FLAT RESERVOIRS
AND AVAILABLE FOR RE-DIVERSION AT SUSANVILLE
July 5 to August 30, 1950

Day	April	May	June	July	August	September
1	NO	RELEASE			125	RESER-
2					120	VOIRS
3					114	
4					112	EMPTY
5					112	
6				43	110	
7				93	110	
8				101	109	
9				101	106	
10				105	106	
11				118	102	
12				125	99	
13				116	98	NO
14				118	96	
15				117	95	RELEASE
16				114	93	
17				112	89	
18				107	85	
19				114	80	
20				110	74	
21				107	65	
22				101	32	
23				99	8.0	
24				132	5.0	
25				142	3.0	
26				137	2.5	
27				136	2.0	
28				135	1.5	
29				132	1.0	
30				132	0.5	
31				132	0	
Total Sec. Ft. Days				2,979	2,155.5	
Mean Sec. Ft.				96	69.5	
Total Acre-feet				5,900	4,280	

Total acre-feet for period - 10,180

PLATE 1

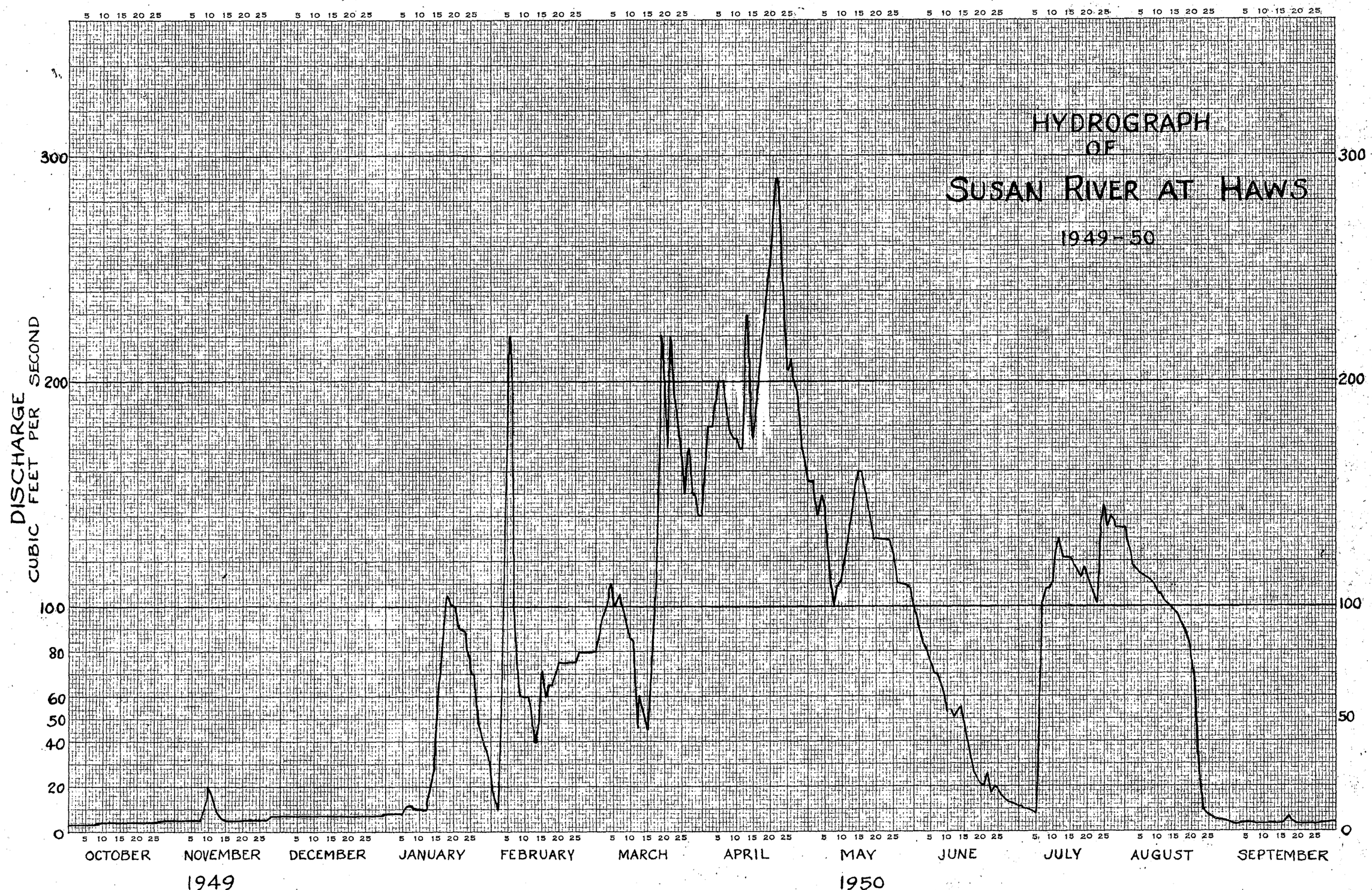
HYDROGRAPH
OF
SUSAN RIVER AT HAWS
1949-50
DISCHARGE
CUBIC FEET PER SECOND
300
200
100
80
60
50
40
20
0
OCTOBER
NOVEMBER
DECEMBER
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
1949
1950

TABLE 1

Daily Discharge in Cubic Feet per Second
BAXTER CREEK BELOW HIGHWAY 395
May 17, 1949 to September 30, 1950

(May 17 to December 31, 1949)

Day	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1		0.5						
2		0.5						
3		0.4						
4		0.4						
5		0.4						
6		0.3						
7	NO	0.3	NO	NO	NO	NO	NO	NO
8		0.3						
9	RECORD	0.3	FLOW	FLOW	FLOW	FLOW	FLOW	FLOW
10		0.2						
11		0.2						
12		0.2						
13		0.2						
14		0.1						
15		0.1						
16		0.1						
17	8.0	0.1						
18	6.0	0.1						
19	5.7	0.0						
20	5.0	0.0						
21	4.2	0.0						
22	3.5	0.0						
23	3.2	0.0						
24	2.0	0.0						
25	1.8	0.0						
26	1.4	0.0						
27	1.0	0.0						
28	1.0	0.0						
29	1.0	0.0						
30	0.8	0.0						
31	0.8							
Total Sec. Ft. Days	* 45.4	4.7	0	0	0	0	0	0
Mean Sec. Ft.	* 1.5	0.1	0	0	0	0	0	0
Total Ac. Feet	* 90	9	0	0	0	0	0	0

* 15-day period

TABLE 1 (Cont'd)

(January 1 to September 30, 1950)

Day	Jan.	Feb	Mar	Apr	May	June	July	Aug	Sept.
1		2.0	2.0	7.0	10	8.5	0.2		
2		2.0	2.0	7.0	11	7.5	0.2		
3		2.0	2.0	7.0	11	7.0	0.2		
4		4.2	2.0	7.0	9.0	6.5	0.2		
5		13.	2.0	7.0	7.5	6.0	0.2		
6		32	2.0	6.5	6.5	6.0	0.2		
7		12	2.0	7.0	6.5	5.5	0.2		
8		6.5	2.0	8.5	6.0	5.0	0.2		
9		4.5	2.0	8.0	6.0	5.0	0.1		
10		3.5	2.0	6.5	5.5	5.5	0.1		
11		3.5	2.0	6.0	6.0	6.0	0.1		
12		3.5	2.0	6.0	6.0	6.5	0.1		NO
13		3.5	2.0	7.5	7.5	6.0	0.1		
14		3.5	2.0	6.0	9.0	5.5	0.1		FLOW
15		3.5	2.0	5.0	10	4.0	0.1		
16		3.5	2.0	5.0	11	3.5	0.1		
17	7.5	3.0	2.0	5.0	11	3.0	0.1		
18	2.5	3.0	4.0	5.0	10	2.0	0.1		
19	0.5	3.0	3.0	5.0	9	1.5	0.1		
20	0.2	3.0	11.0	5.0	10	1.0	0.1		
21	0.7	3.0	7.0	6.5	11	0.8	0.1		
22	3.5	2.5	5.0	7.0	12	0.8	0.1		
23	8.5	2.5	6.0	8.5	13	0.5	0.0		
24	7.0	2.5	7.5	7.0	14	0.8	0.0		
25	4.0	2.5	9.0	6.5	14	0.5	0.0		
26	3.0	2.5	8.0	7.5	13	0.5	0.0		
27	3.0	2.0	7.5	7.0	13	0.5	0.0		
28	2.5	2.0	7.0	7.0	13	0.5	0.0		
29	2.0	2.0	7.0	6.5	9.5	0.3	0.0		
30	2.0	2.0	7.0	6.5	9.0	0.3	0.0		
31	2.0	2.0	6.0		9.0		0.0		
Total Sec.-Ft. Days	48.9	134.2	129.0	197.0	299.0	107.0	2.9	0	0
Mean Sec-feet	3.3	4.8	4.2	6.6	9.7	3.4	0.1	0	0
Total Acre-feet	97.	266.	256	390	590	212	6	0	0

* 15-day period

TABLE 2

Daily Discharge in Cubic Feet per Second
PINE CREEK AT BOGARD CAMPGROUND
May 23, 1949 to July 26, 1950

(May 23 to December 31, 1949)

Day	May	June	July	August	Sept.	Oct.	Nov.	Dec.
1		4.5	0.7	0.2	0.1	0.2	0.2	0.3
2		4.0	0.7	0.2	0.1	0.2	0.2	0.3
3		4.0	0.6	0.2	0.1	0.2	0.2	0.3
4		3.7	0.6	0.2	0.1	0.2	0.2	0.3
5		3.5	0.6	0.2	0.1	0.2	0.2	0.3
6		3.2	0.5	0.2	0.1	0.2	0.2	0.3
7		3.0	0.5	0.2	0.1	0.2	0.2	0.3
8		2.8	0.5	0.2	0.1	0.2	0.2	0.3
9		2.5	0.5	0.2	0.1	0.2	0.2	0.3
10		2.2	0.5	0.2	0.1	0.2	0.2	0.3
11		2.0	0.5	0.2	0.1	0.2	0.2	0.3
12		2.0	0.4	0.2	0.1	0.2	0.2	0.3
13		1.8	0.4	0.2	0.1	0.2	0.2	0.3
14		1.8	0.4	0.2	0.1	0.2	0.2	0.3
15		1.5	0.4	0.2	0.1	0.2	0.2	0.3
16		1.5	0.4	0.2	0.1	0.2	0.2	0.3
17		1.5	0.4	0.2	0.1	0.2	0.2	0.3
18		1.5	0.4	0.2	0.1	0.2	0.2	0.3
19		1.5	0.4	0.2	0.1	0.2	0.2	0.3
20		1.5	0.4	0.2	0.1	0.2	0.2	0.3
21		1.5	0.4	0.2	0.1	0.2	0.2	0.3
22		1.4	0.4	0.2	0.1	0.2	0.2	0.3
23	7.0	1.3	0.4	0.2	0.1	0.2	0.2	0.3
24	6.5	1.2	0.3	0.2	0.1	0.2	0.2	0.3
25	6.0	1.1	0.3	0.2	0.1	0.2	0.2	0.3
26	5.5	1.0	0.3	0.2	0.1	0.2	0.2	0.3
27	5.0	0.9	0.3	0.2	0.1	0.2	0.2	0.3
28	4.5	0.8	0.3	0.2	0.1	0.2	0.2	0.3
29	5.5	0.7	0.3	0.2	0.1	0.2	0.2	0.3
30	5.0	0.7	0.3	0.2	0.1	0.2	0.2	0.3
31	4.5		0.3	0.2		0.2	0.2	0.3
Total Sec. Ft. Days	*49.5	60.6	13.4	6.2	3.0	6.2	6.2	9.3
Mean Sec. Ft.	*6.2	2.0	0.4	0.2	0.1	0.2	0.2	0.3
Total Ac. Ft.	*98	120	26	12	6	12	12	18

* 8-day period.

TABLE 2 (Cont'd.)

(January 1 to July 26, 1950)

Day	Jan.	Feb.	Mar.	April	May	June	July	August
1	0.3	0.8	0.5	2.5	17.5	17.0	2.8	Station
2	0.3	0.8	0.5	4.5	14.5	14.5	2.6	taken
3	0.3	0.8	0.5	3.5	13.0	12.5	2.6	over
4	0.3	0.8	0.5	4.0	11.0	10.5	2.5	by
5	0.3	1.2	0.5	5.5	11.5	9.0	2.3	U.S.G.S.
6	0.3	1.0	0.5	4.0	11.5	9.0	2.0	
7	0.3	0.8	0.5	3.5	9.5	10.0	1.8	
8	0.3	0.8	0.5	3.0	9.5	8.5	1.2	
9	0.3	0.8	0.5	2.5	11.0	8.5	1.2	
10	0.3	0.8	0.5	2.2	13.5	7.0	1.2	
11	0.3	0.8	0.5	2.2	19.0	7.0	1.2	
12	0.3	0.8	0.5	3.0	21.5	7.0	1.2	
13	0.3	0.8	0.5	2.5	25.5	6.5	1.2	
14	0.3	0.8	0.5	2.5	29.5	7.0	1.2	
15	0.3	0.8	0.5	3.5	31.5	6.8	1.2	
16	0.3	0.8	0.5	5.5	33.5	6.5	1.0	
17	0.3	0.8	0.5	6.5	33.5	6.0	1.0	
18	0.3	0.8	0.5	7.5	32.5	5.5	1.0	
19	0.3	0.8	0.5	10.5	31.0	5.0	1.0	
20	0.3	0.8	0.5	12.5	31.0	4.8	1.0	
21	0.4	0.8	1.0	17.0	32.5	4.5	1.0	
22	0.4	0.8	1.0	18.0	38	3.8	1.0	
23	0.7	0.5	1.0	17.0	38	3.8	1.0	
24	1.0	0.4	1.0	17.5	35	5.8	1.0	
25	1.0	0.4	1.0	21	32	4.8	1.0	
26	1.0	0.4	1.0	21	27.5	3.5	1.0	
27	1.0	0.5	1.0	21.5	26.0	3.0		
28	1.0	0.5	1.0	19.0	25.5	3.0		
29	1.0	0.5	1.0	17.0	22.5	3.0		
30	1.0	0.5	1.0	17.5	20.5	2.8		
31	1.0		1.5		19.5			
Total Sec. Ft. Days	15.5	20.9	21.5	277.9	728.0	206.6	*37.2	
Mean Sec. Ft.	0.5	0.7	0.7	9.2	23.5	6.9	*1.4	
Total Ac. Ft.	30	41	42	550	1450	410	*74	

* 26-day period

Total acre-feet from May 23, 1949 to July 26, 1950 - 2,900

Sheet II