State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES
Northern Branch

WATERMASTER SERVICE IN NORTHERN CALIFORNIA
1964 SEASON

Office Report

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State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

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PART I - GENERAL INFORMATION

Introduction

Distribution of water in watermaster service areas is a continuing statutory function of the Department of Water Resources as provided in Part 4, Division 2, of the Water Code. The primary purpose of watermaster service is to prevent expensive and unnecessary litigation by equitably distributing water where water rights have been defined, either by court decree or by voluntary agreement.

Watermaster Service Areas

The first watermaster service areas were created in September 1929, while the most recent addition was made in June 1964. Prior to 1929, watermaster service was provided in accordance with the Water Commission Act of 1914.

You will notice that Table 1 lists the watermaster service areas with the corresponding decrees and agreements under which they are operated.

There are 17 watermaster service areas in Northern California. Fifteen of these service areas, located within the Northern Branch boundaries, are administered by eight watermasters; the other two service areas, located in the Delta Branch, are administered by three watermasters. Plate 1 shows the name and location of each of the service areas.

To assure the equitable distribution of water within his service area, the watermaster must determine the amount of water available and how this water will be distributed to best serve the water users and yet stay within the provisions of the court decrees or voluntary agreements. To accomplish this, the watermaster must design and supervise the construction of diversion dams, headgates, and measuring devices.

TABLE 1

SUPERIOR COURT DECREES REGULATING WATER DISTRIBUTION
AND DATES WATERMASTER SERVICE AREAS CREATED

Watermaster service area	Name of stream system	County	Decree number	Date watermaster service area created	Remarks
Ash Creek	Ash Creek	Modoc * and Lassen	3670	4-03-59	Included as part of Big Valley service area 1949 through 1958.
Big Valley	Pit River	Modoc * and Lassen	6395	11-13-34	Service provided in accordance with recorded agreement in 1934. Service area operated under recorded agreement 1935 through 1958, and under decree since 1959.
Burney Creek	Burney Creek	Shasta	5111	9-11-29	Service provided in accordance with decree since 1926.
Butte Creek	Butte Creek	Butte	18917	1-07-43	
Cow Creek	North Cow Creek	Shasta	5804	10-17-32	
	Oak Run Creek	Shasta	5701	10-17-32	Included in Cow Creek service area 1-21-38.
	Clover Creek	Shasta	6904	1-21-38	
Digger Creek	Digger Creek	Shasta and Tehama *	2213 3214 3327 4570	6-11-64	
Hat Creek	Hat Creek	Shasta	5724 7858	9-11-29	Service provided in accordance with decree since 1924.
Indian Creek	Indian Creek	Plumas	4185	2-19-51	
Middle Fork Feather River	Middle Fork Feather River	Plumas * and Sierra	3095	3-29-40	

TABLE 1 (Continued)

SUPERIOR COURT DECREES REGULATING WATER DISTRIBUTION
AND DATES WATERMASTER SERVICE AREAS CREATED

Watermaster service area	Name of stream system	County	Decree number	Date watermaster service area created	Remarks
North Fork Cottonwood Creek	North Fork Cottonwood Creek	Shasta	5479	9-11-29	Service provided intermittently in accordance with the decree since 1924.
North Fork Pit River	North Fork Pit River and all tributaries except Franklin Creek	Modoc	4074	12-18-39	These stream systems consolidated into North Fork Pit River service area 12-12-40.
	New Pine Creek	Modoc	2821	6-22-32	
	Cottonwood Creek	Modoc	2344	12-13-40	
	Davis Creek	Modoc	2783	7-13-32	
	Franklin Creek	Modoc	3118	12-14-33	
Seiad Creek	Seiad Creek	Siskiyou	13774	11-06-50	Service provided in accordance with decree by order of the court in 1950.
Shackleford Creek	Shackleford Creek	Siskiyou	13775	11-06-50	Service provided in accordance with decree by order of the court in 1950.
Shasta River	Shasta River	Siskiyou	7035	3-01-33	
South Fork Pit River	South Fork Pit River	Modoc * and Lassen	3273	12-31-34	
	Pine Creek	Modoc	Agreement	1-12-35	
Surprise Valley	Cedar Creek	Modoc	1206 2343	9-11-29	Service started in accordance with the decree in 1926.

TABLE 1 (Continued)

SUPERIOR COURT DECREES REGULATING WATER DISTRIBUTION
AND DATES WATERMASTER SERVICE AREAS CREATED

Watermaster service area	Name of stream system	County	Decree number	Date watermaster service area created	Remarks
Surprise Valley(Cont'd)	Soldier Creek	Modoc	2405	9-11-29	Service was provided on Soldier and Owl Creeks in accordance with the decrees by order of the court in 1929.
	Owl Creek	Modoc	2401	9-11-29	
	Emerson Creek	Modoc	2840	4-02-30	
	Mill Creek	Modoc	3024	12-30-31	
	Deep Creek	Modoc	3101	12-29-34	
	Pine Creek	Modoc	3391	1-13-37	All stream systems in Surprise Valley except Bidwell Creek were consolidated into the Surprise Valley service area on 1-10-39.
	Rader Creek	Modoc	3626	6-12-37	
	Eagle Creek	Modoc	2304 3284	1-10-39	
	Bidwell Creek	Modoc	6420	3-16-60	
Susan River	Susan River	Lassen	4573	11-10-41	
	Baxter Creek	Lassen	8174	2-16-56	
	Parker Creek	Lassen	8175	2-16-56	

* Decree entered by the superior court of this county.

General Location of Service Areas

The service areas discussed in this report are located primarily in the mountainous northeastern part of the State. The growing season here is about 100 to 140 days with meadow hay and pasture being the principal crops. Most of the irrigation is by gravity systems, with individual water users diverting directly from the streams at one or more diversion points. Each watermaster supervises approximately 200 to 300 diversions in one or more service areas and is therefore able to visit a diversion only when a specific need arises.

The need for visiting points of diversion is increased substantially in years of short water supply. In some service areas it is necessary to predict the water supply in advance to determine the date watermastering will start and, to some extent, the manpower needed. The Department's water conditions reports are used to assist in estimating these requirements.

Schematic drawings of the major stream systems within each service area are presented in Appendix B. These drawings show the relative location of major roads, stream gaging stations, and diversion points as well as total water right allotments.

Water Supply

Water supply in the watermaster service areas is derived primarily from unregulated runoff of small streams. This runoff, mostly snowmelt, occurs in the spring with only relatively small streamflow available in the summer and early fall. Supplemental supplies from stored water or ground water are used in some areas, but these in most instrances are not regulated by the watermaster.

Precipitation

The streamflow available for distribution is affected by total precipitation, snowpack, temperature, and the amount of precipitation which occurs during the irrigation season. Precipitation during the irrigation season is particularly important in the upper Pit River-Surprise Valley area, where about 25 to 30 percent of the seasonal total occurs in April, May, and June. The spring storms are normally accompanied by cooler temperatures and affect not only the supply, but also the demand for water.

Temperatures in the spring affect the demand for water and the manner in which snowmelt runoff occurs. A hot, dry spring depletes the water supply very early, even in cases where there is a normal snowpack. On the other hand, a cold, wet spring can extend the supply well into the irrigation season. Cold spring temperatures, however, retard the growth of crops and are not particularly desirable.

Data collected at representative snow courses showing the snowpack as of April 1 and May 1, 1964, are presented in Table 2. This information was obtained from the Department's Bulletin No. 120-64.

Table 3 presents data on precipitation at selected stations in the service areas. The seasonal precipitation is an indication of the total water supply and forms a basis for comparison with the average supply.

Streamflow

The watermaster determines the amount of water available for distribution within his area, primarily by the use of stream gaging stations and measuring devices in the diversion ditches. The watermaster has four sources from which he obtains this information:

TABLE 2

SNOWPACK AS OF APRIL 1 AND MAY 1, 1964, AT REPRESENTATIVE SNOW COURSES

Watermaster service area	Snow course *	Elevation, in feet	Water content of snow, in inches				
			April 1 Average (1931-1960)	April 1 1964	In percent of April 1 Average	May 1 1964 **	In percent of April 1 Average **
Shasta River	Mount Shasta	7,900	49.4	27.2	55	23.8	48
Shackleford Creek	Parks Creek	6,700	34.1	23.9	70		
Seiad Creek	Middle Boulder No. 1	6,600	32.9	17.3	53	5.4	16
	Little Shasta	6,200	21.4	23.5	110		
Surprise Valley	Blue Lake Ranch	7,300	10.3	10.9	106		
North Fork Pit River	Eagle Peak	7,200	16.2	13.4	83		
South Fork Pit River	Cedar Pass	7,100	17.0	15.4	92	8.7	51
Ash Creek	Adin Mountain	6,350	14.0	9.7	69	3.6	26
Big Valley							
Hat Creek	Thousand Lakes	6,500	36.8	22.2	62	15.6	42
Burney Creek	New Manzanita Lake	5,900	7.2	8.2	111	0.4	6
Cow Creek	Burney Springs	4,710	2.5	2.4	96		
Digger Creek							
North Fork Cottonwood Creek							
Butte Creek	Humbug Summit	4,840	12.4	7.5	60		
Susan River	Silver Lake Meadows	6,440	27.7	18.1	65	6.0	22
	Fredonyer Pass No. 1	5,750	9.3	7.9	85		
Middle Fork Feather River	Independence Lake	8,450	41.1	32.7	79		
	Mount Deyer No. 1	7,080	24.6	18.2	74		
Indian Creek	Rowland Creek	6,700	17.3	12.2	71	6.8	39
	Yuba Pass	6,700	31.8	18.7	59	5.0	16

* Snow courses are listed according to elevation within each major grouping of watermaster service areas. They do not necessarily correspond to any specific river or creek.

** May 1 data collected for selected courses.

TABLE 3

PRECIPITATION AT SELECTED STATIONS - 1963-64 SEASON

Station Name	County	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total	Percent of mean
Happy Camp Ranger Station	Siskiyou	5.66	14.32	3.46	15.13	1.59	4.47	0.24	0.62	0.60	0.34	0.00	0.13	46.56 *	92
		3.46	7.46	9.22	9.63	7.27	5.30	3.48	2.09	1.05	0.23	0.17	1.08	50.44	
Yreka	Siskiyou	1.31	3.25	1.13	5.23	0.42	0.93	0.15	0.50	0.96	0.84	0.02	0.13	14.87	86
		1.29	2.38	2.89	2.95	2.15	1.45	1.01	0.98	0.84	0.46	0.35	0.57	17.32	
Fort Jones Ranger Station	Siskiyou	1.37	4.60	1.28	6.21	0.38	1.46	0.11	0.27	0.62	0.44	0.02	0.19	16.95	81
		1.78	2.88	3.66	3.09	2.83	2.41	1.12	1.24	0.74	0.39	0.29	0.43	20.86	
Redding Fire Station No. 2	Shasta	2.36	8.88	0.56	5.15	0.17	1.67	0.01	1.05	1.68	0.00	0.00	0.30	21.83	58
		1.96	4.07	6.73	7.41	6.30	4.79	2.76	1.63	1.01	0.11	0.10	0.58	37.45	
Chico Experiment Station	Butte	3.12	6.08	0.82	3.23	0.22	1.67	0.44	1.08	0.91	0.02	0.00	0.74	18.33	72
		1.20	2.62	4.96	5.02	4.38	3.29	1.91	1.03	0.44	0.02	0.05	0.40	25.32	
Hat Creek Pump House No. 1	Shasta	1.06	2.89	0.79	2.65	0.16	1.38	0.14	2.04	1.32	0.00	0.03	0.18	12.64	70
		1.07	1.94	2.76	3.21	2.96	2.18	1.34	1.11	0.68	0.16	0.15	0.43	17.99	
Bieber	Lassen	1.86	2.80	1.14	3.20	0.58	1.33	0.80	2.97	2.19	0.08	0.03	0.03	17.01	101
		1.31	1.90	2.33	2.52	2.21	1.92	1.38	1.37	0.90	0.22	0.15	0.58	16.79	
Lakeview, Oregon	Lake	1.23	2.67	0.94	3.97	0.11	0.82	0.76	1.35	4.23	0.24	0.41	0.39	17.12	120
		1.14	1.43	1.99	1.73	1.61	1.49	1.17	1.45	1.38	0.18	0.16	0.52	14.25	
Cedarville	Modoc	0.51	1.25	0.40	1.80	0.23	0.83	1.05	1.24	2.41	0.45	0.05	0.18	10.40	86
		0.99	1.36	1.56	1.84	1.43	1.32	0.97	0.99	0.83	0.22	0.14	0.47	12.12	
Alturas Ranger Station	Modoc	1.24	1.30	0.63	1.89	0.21	0.59	0.42	2.39	3.10	0.22	0.14	0.24	12.37	102
		0.96	1.28	1.49	1.62	1.37	1.32	1.02	1.11	0.89	0.34	0.25	0.51	12.16	
Jess Valley	Modoc	1.16	1.61	1.29	2.86	0.58	1.25	2.20	2.44	4.24	0.26	0.18	0.57	18.64	113
		1.20	1.77	1.96	2.21	1.94	1.80	1.45	1.63	1.29	0.29	0.23	0.72	16.49	
Susanville Airport	Lassen	0.35	3.26	0.44	2.19	0.06	0.72	0.20	1.06	0.65	0.18	0.00	0.02	9.13	83
		0.60	1.24	1.81	2.12	1.67	1.33	0.69	0.57	0.40	0.13	0.08	0.32	10.96	
Vinton	Plumas	0.57	3.71	0.43	1.83	0.18	0.82	0.60	1.69	1.09	0.03	T	T	10.95	103
		0.52	1.02	1.88	1.99	1.31	1.14	0.89	0.64	0.83	0.06	0.10	0.25	10.63	
Sierraville Ranger Station	Sierra	1.59	9.02	0.41	3.47	0.54	1.69	1.06	1.89	0.65	0.40	0.12	0.05	20.89	86
		1.36	2.65	3.99	5.00	4.03	3.13	1.57	1.02	0.57	0.29	0.18	0.43	24.22	
Greenville Ranger Station	Plumas	2.50	9.13	0.85	7.44	0.50	2.96	0.65	2.56	1.48	0.04	T	0.27	28.38	79
		1.82	3.88	5.97	7.05	6.10	5.02	2.56	1.65	0.75	0.15	0.18	0.62	35.75	

* Figures above line are for current season; below line are long-term averages.

(1) U. S. Geological Survey stream gaging stations.

(2) Department of Water Resources stream gaging stations.

(3) Stream gaging stations maintained by the watermaster and used primarily for aid in distributing the water.

(4) Measuring devices installed in individual diversion ditches by the water right owner under supervision of the watermaster.

The 1964 water year had unusual characteristics, typical of the many seasonal variations which occur regularly in the mountain valley watermaster service areas.

Generally streams in the Lahontan basin and Pit River drainage area had a runoff typical of a good water year. This was a result of the heavy June rains which occurred at the exact time of need and augmented the somewhat below-average snowmelt runoff. However, the Susan River service area suffered some irrigation shortages in May and early June, prior to these rains.

Streams in the Klamath River drainage basin had adequate water supplies with the exception of a portion of the lower Shasta River area.

During 1964 the most severe irrigation shortages occurred in the upper Sacramento Valley service areas - Cow Creek near Redding and Butte Creek near Chico. Runoff from most of the streams in these areas was the lowest since 1959. Several streams were at, or near, the recorded lows experienced during the drought years of the late 1920's and early 1930's.

Even though areas benefitted to some degree from the June rains, close regulation was required to insure optimum irrigation efficiency and to effect equitable distribution. Despite many variable conditions throughout the growing season, crop yield was generally average or better than average.

Table 4 presents stream runoff data at selected stream gaging stations in or near the several service areas. Appendix A presents stream runoff data at the stream gaging stations used by the watermasters. These data show the distribution of runoff during the season and indicate the adequacy or shortage of water supply during that time.

TABLE 4

RUNOFF AT SELECTED STATIONS
1963-64 SEASON
(In acre-feet)

Station	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	TOTAL	AVERAGE *	PERCENT AVERAGE
Shasta River near Yreka	11,820	13,590	13,590	25,070	14,690	13,740	7,050	6,270	7,550	1,930	1,210	3,240	119,800	127,400	94
Hat Creek near Hat Creek	8,370	8,630	8,180	7,940	7,440	7,930	7,900	9,840	9,090	7,010	6,520	6,500	95,350	94,840	101
Pit River near Canby	3,650	6,520	5,390	6,990	6,570	16,130	15,640	20,230	53,470	5,930	3,710	5,500	149,700	164,300	91
North Fork Pit River near Alturas	263	921	812	884	976	5,840	5,210	4,810	17,990	970	96	80	38,850	32,650	119
South Fork Pit River near Likely	1,600	1,780	1,650	1,890	1,650	2,730	4,820	13,660	16,950	7,070	9,250	3,010	66,060	51,910	127
Susan River at Susanville	576	1,600	1,120	1,290	1,220	2,300	6,840	4,890	7,360	2,250	203	204	29,850	69,070	43
Indian Creek near Crescent Mills	4,670	15,700	9,290	14,200	13,500	22,800	54,200	35,000	11,400	1,640	642	762	183,800	385,900	48
Middle Fork Feather River near Clio	2,750	15,790	7,940	7,250	7,690	22,510	25,760	15,560	6,900	1,180	711	869	114,900	196,900	58
Butte Creek near Chico	9,360	18,600	10,810	24,860	17,620	17,650	24,490	21,690	14,310	9,000	7,250	6,890	182,500	282,300	65

* Average annual flow of record through 1963.

PART II - 1964 WATERMASTER SERVICE

Ash Creek Watermaster Service Area

General Description

The Ash Creek service area is located in Modoc and Lassen Counties near the town of Adin. There are 31 water right owners in this area with total allotments of 123.65 cubic feet per second.

The major sources of water for the service area are Ash Creek and its two tributaries, Willow Creek and Rush Creek. Ash Creek rises in the eastern part of the service area and flows westerly through the town of Adin into Ash Creek Swamp and then into the Pit River. Rush Creek heads in the northeast part of the service area and joins Ash Creek above the town of Adin. Willow Creek originates in the southeast part of the service area and joins Ash Creek near the head of Ash Creek Swamp. Each of these streams are independently considered.

The primary place of use of water from this stream system is in Big Valley, west of the town of Adin, with some use along the upstream tributaries. The portion of Big Valley served is approximately 10 miles long by 6 miles wide and extends from the town of Adin to Ash Creek's confluence with the Pit River. (The valley floor is at an elevation of approximately 4,200 feet.)

A schematic drawing of each major stream system within the Ash Creek service area is presented in Appendix B.

Water Supply

The water supply for Ash Creek and Rush Creek is primarily snowmelt, with most of the watershed being between the elevations of 5,000 and 6,000 feet. Willow Creek receives a substantial portion of its water from springs.

These three creeks normally have sufficient water to satisfy demands until about June 1, after which the supply decreases rapidly. By the latter part of June, Ash Creek normally has dropped to about 20 cubic feet per second, Rush Creek to about two cubic feet per second, and Willow Creek to about five cubic feet per second. The flow of these creeks then remains nearly constant for the remainder of the season.

Daily mean discharge records for two stream gaging stations in the Ash Creek service area are presented in Tables A-1 and A-2. The stream gaging station on Ash Creek is below a substantial number of the points of diversion and, consequently, the records do not show all of the available supply of this creek.

No records are presented for Rush Creek station in this report as the recorder was removed for highway construction.

Method of Distribution

Irrigation diversions from Ash Creek and its tributaries are accomplished by small dams placed in the stream channels. Most of the users have several ditches diverting at these dams. These ditches serve to convey the water to the fields where it is spread by means of small laterals. Some of the users employ a system of check and borders; however, most of the land is irrigated by wild flooding. Return flow is captured by downstream ranches for re-use. In a few cases, pumps are used to divert the water into ditches or through sprinkler systems.

The Ash Creek decree* establishes the number of priority classes on the various stream systems within the Ash Creek service area as follows: Ash Creek - five; Willow Creek - four; Rush Creek - one; and Butte Creek - two.

* See Table 1

1964 Distribution

Watermaster service began May 1 and continued through the end of September in the Ash Creek service area. August C. Mueller, Assistant Civil Engineer, assumed the duties of field watermaster during this period.

Above normal precipitation during May and June provided the area with an above average water supply.

Ash Creek. The Available water supply in Ash Creek was sufficient to satisfy all priority allotments (five priorities) until approximately July 15. During the remainder of the season there was generally sufficient water available for the first priority allotments.

Willow Creek. A sufficient water supply existed in Willow Creek for all priority allotments (four priorities) until July 1. Then the supply steadily diminished until late August. For the remainder of the irrigation season there was water available for 60 percent of the second priority allotments.

Rush Creek. Rush Creek produced a sufficient water supply for priority allotments (one priority) until early July. By August 1, the supply had decreased but approximately 80 percent of all allotments were still being satisfied.

Big Valley Watermaster Service Area

General Description

Big Valley service area is located in Modoc and Lassen Counties in the vicinity of the towns of Lookout and Bieber. There are 51 water right owners in the area with total allotments of 231.03 cubic feet per second.

Pit River is the major source of supply for the service area. The river enters the valley north of the town of Lookout and flows southerly through the western part and out its southern end. The major place of use is about 13 miles of valley floor along the Pit River at an approximate elevation of 4,200 feet.

A schematic drawing of the Big Valley stream system is presented in Appendix B.

Water Supply

The Pit River provides the major source of water supply for the Big Valley service area. Extensive upstream use, most noticeably in Hot Springs Valley approximately 20 miles upstream, greatly influences this supply. In a normal year a substantial flow is available until about June 1, at which time there is a significant decrease in the amount of water available. The irrigation practices in Hot Springs Valley result in the stopping of most of the flow for a period of time and then in the releasing of relatively large heads of water from the lower diversion dams about every 15 to 20 days. Flow available for use in Big Valley during this part of the irrigation season is usually about 15 to 20 cubic feet per second except during the periodic upstream releases. At these times

the flow may reach a peak of from 200 to 300 cubic feet per second for short periods.

Roberts Reservoir, located at the upper end of the valley above the town of Lookout, serves as a supplemental source of water to those users of the area who are members of the Big Valley Mutual Water Company. This supply is released into Pit River and distributed to these members along with their natural flow rights.

Records of the several stream gaging stations in the Big Valley service area are presented in Tables A-3 through A-5. Hydrographs of Pit River near Canby and Roberts Reservoir releases are presented in Plate 2.

Method of Distribution

Most water users in the Big Valley service area irrigate by wild flooding, checks, and borders on a rotation schedule. Large flashboard dams placed in the channel make it possible to utilize the large heads of water characteristic of the supply in the area. Return flow is recaptured for use by subsequent downstream lands, resulting in a higher irrigating efficiency for the valley. There are some pumps used for diversion both into ditches and directly into sprinkler systems. During periods when the flow is inadequate for purposes of wild flooding (when Hot Springs Valley users are temporarily stopping the flow), the ranches employing pumps usually irrigate their lands and then allow the intermittent larger heads of water to pass undisturbed for use by those limited to irrigating by wild flooding.

The Big Valley decree* provides for the distribution of water from Pit River in four priority classes.

* See Table 1

1964 Distribution

Watermaster service began May 1 and continued through the end of September in the Big Valley service area. August C. Mueller, Assistant Civil Engineer, assumed the duties of field watermaster during this period.

Dry weather conditions prevailing throughout most of March and April caused concern about the adequacy of the water supply for the irrigation season. However, during early May considerable precipitation occurred and by the end of that month the seasonal total for the Big Valley area was nearly normal. During June heavy rains supplemented the available water supply, contributed greatly to crop growth, and provided the area with an above average irrigation season. The magnitude of these latter storms in the upstream watersheds necessitated the removal of most of the diversion dams in Big Valley on the Pit River for nearly two weeks to pass the excessive flows.

Sufficient water was generally available for second priority allotments until May 20. From this date until July 24 the water supply, augmented by the spring rains, was sufficient to satisfy all priority allotments (four priorities). From July 25 until late August approximately 50 percent of the second priority allotments were satisfied. During early September the water supply again increased sufficiently to satisfy all second priority demands. From September 10 and continuing throughout the month some water was available for the third priority users.

Commencing August 1 water was released from Roberts Reservoir for use by the shareholders of the Big Valley Mutual Water Company as follows:

Name	Shares	Water Used in Acre-Feet
Norris and Peter Gerig	5	65
Oral (Sam) Gerig	3	150
Lester Babcock	3	210
L. W. Kramer	2	135
Hunt Estate Company	2	115
Arad Babcock	1	70
Merlin Kennedy	1	60
Cyril Mamath	1	60
Ford Ranch	1	100
L. H. Monchamp	1	--
	20	965

Burney Creek Watermaster Service Area

General Description

The Burney Creek service area is located in Shasta County near the town of Burney. There are 10 water right owners in the area with total allotments of 33.09 cubic feet per second. The source of supply for this service area is Burney Creek, which enters the southern part of the service area and flows through the town of Burney in a northerly direction to the Pit River. The portion of the valley served by this stream is approximately 11 miles long by two miles in width and extends north and south of the town of Burney. The valley floor is at an elevation of approximately 3,200 feet.

A schematic drawing of the Burney Creek stream system is presented in Appendix B.

Water Supply

The water supply for Burney Creek comes from springs and snowmelt. Most of the watershed lies between the elevations of 4,000 and 7,500 feet on the northeast slopes of Clover Mountain and the west slopes of Burney Mountain. The creek normally has sufficient water to supply all demands until about the middle of June; the supply then gradually decreases until the end of July. During the remainder of the irrigation season stream flow remains nearly constant, at approximately 40 percent of allotments, because of runoff of perennial springs.

The daily mean discharge of Burney Creek is presented in Table A-6. The stream gaging station on Burney Creek is below four points of diversion; consequently, the records do not show all of the available water supply of the creek.

Method of Distribution

Burney Creek decree* sets forth a rotation schedule of distribution. The water users, however, in past years have found it more beneficial to irrigate on a continuous-flow basis (one priority class plus surplus allotments), which is now the normal practice. The water allotted to the Greer-Cornaz Ditch is distributed to the various users on that ditch by the watermaster in accordance with a supplemental court decree.

Water is diverted from Burney Creek, in most cases by means of low diversion dams, into ditches which convey it some distance to the place of use. Lateral ditches are then used to irrigate the land. Scott Lumber Company diverts their allotment for industrial use by means of a pump and pipeline.

1964 Distribution

Watermaster service began May 1 in the Burney Creek service area and continued until late October. Kenneth H. Lloyd, Water Resources Engineering Associate, assumed the duties of field watermaster during this period.

The waters of Burney Creek were again distributed on a continuous flow basis of first priority and surplus allotments. The water supply available for distribution, determined by the addition of all diversions from the creek, was slightly above average. Late spring storms contributed to this situation. Surplus flow to all users was available until June 24, when all diversions were regulated to 100 percent of first priority allotments. The flow then continued to gradually decrease until August 7 when the available supply satisfied 43 percent of first priority allotments. Thereafter the flow remained constant until the first rainstorm in late October.

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* See Table 1

Late in the summer of 1963 two bulldozers were employed in an attempt to route all Burney Creek water through a single channel. Within a one-mile section of Burney Creek the flow had, over a period of time, meandered to form three channels causing an excessive amount of water loss. The high flows which occurred in Burney Creek during the 1963-64 winter season completed the channel clearance by flushing the remaining debris from the improved channel. During the summer of 1964 the flow was contained within the single channel and a decrease was noted in evaporation, transpiration, and seepage loss compared to previous years.

Butte Creek Watermaster Service Area

General Description

The Butte Creek service area is located in Butte County near the City of Chico. There are 33 water right owners in the area with total allotments of 219.71 cubic feet per second. Butte Creek is the major source of supply. The area served by this stream is approximately 20,000 acres, at an elevation of about 150 feet, on the Sacramento Valley floor extending from a point east of Chico about 11 miles south to the diversion of the Great Western Canal.

A schematic drawing of the Butte Creek stream system is presented in Appendix B.

Water Supply

Butte Creek rises on the west slope of the Sierra Nevada mountains in the northeasterly portion of Butte County, between Humbug and Humboldt Passes, at elevations from 5,000 to 6,000 feet.

Snowmelt normally produces a fairly well substantiated flow until the end of June, after which the perennial springs at the headwaters produce a minimum summer flow of more than 40 cubic feet per second. Foreign water is transported from the West Branch Feather River by means of the Hendricks (Toad Town) Canal through the DeSabla Reservoir and Powerhouse into Butte Creek. This foreign water is rediverted at Parrott Dam through the Parrott Ditch.

Records of the daily mean discharge at several stream gaging stations in the Butte Creek service area are presented in Tables A-7 through A-12.

Method of Distribution

Water is diverted from Butte Creek by both the pump and the gravity flow methods. The Parrott Investment Company and the Durham Mutual Water Company Dams divert relatively large amounts of water into several ditches leading to their individual distribution systems. Various methods of irrigation are in general practice such as contour checks, strip or border checks, basin checks, furrows, wild flooding, and sprinklers. The use of sprinklers has increased in popularity within the past few years, especially in the application of water to orchards.

Foreign water diverted by the Pacific Gas and Electric Company (PG&E) from the West Branch Feather River through the Hendricks Canal and DeSabla Powerhouse into Butte Creek has, in the past, caused wide fluctuation in the Butte Creek flow. In accordance with "Memorandum and Order" entered May 10, 1949, by the Superior Court of Butte County, water users below Parrott Dam (which rediverts this foreign water) must be provided their natural flow allotments at all times without undue fluctuation caused by intermittent presence of foreign water. PG&E has now changed their operation to steady releases which has greatly simplified the rediversion problem.

The Butte Creek decree* establishes three priority classes for distribution purposes, and in addition, defines two surplus flow allotments.

1964 Distribution

Watermaster service began May 1 and continued through the end of September in the Butte Creek service area. Kenneth H. Lloyd, Water Resources

* See Table 1

Engineering Associate, assumed the duties of field watermaster from May 1 until late June at which time Ross P. Rogers, Assistant Civil Engineer, was assigned as field watermaster for the remainder of the season.

Although stream runoff data show that the 1964 season was one of the driest in recent years, most ranches, through careful employment of sound conservation practices combined with the fortunate occurrence of June rainstorms, experienced excellent crop yield.

Sufficient flow existed in Butte Creek to supply all allotments (three priorities) until July 6. On this date it was necessary to shut off the Hansen pump (a surplus allotment) as surplus water was no longer available. Thereafter, the available flow steadily decreased throughout most of the irrigation season.

The second and third priority users received limited amounts of water after the second week of July during periods when return flow to the creek existed above their points of diversion and during the relatively short periods when some of the pump diverters below Parrott Dam were not using their allotments. These circumstances resulted in the lower second and third priority users receiving some water, while the upper users, at the Parrott and Durham Dams, were being regulated below 100 percent of their first priority rights.

From mid-July and continuing throughout the irrigation season all first priority users were regulated to 100 percent or less of their allotments. During the latter part of July the natural flow of Butte Creek was sufficient to supply approximately 80-85 percent of the first priority allotments, generally decreasing thereafter as follows: early August, 75-80 percent; late August 60-70 percent; early September 70-90 percent; and late September 70-75 percent.

Close regulation of all diversions during the period of July through September was required to insure equitable distribution to all water users. The lower pump diverters under the watermaster's supervision practiced a policy of rotating their allotments during periods of low water.

The releases from DeSabla Powerhouse of water imported from the West Branch of the Feather River were again maintained by the PG&E at a reasonably constant level. This alleviated the former problem of preventing undue fluctuation of natural flow allotments to water users below the Parrott Dam.

Cow Creek Watermaster Service Area

General Description

The Cow Creek service area is located in Shasta County in the foothills east of Redding. There are 87 water right owners in the area with total allotments of 56.366 cubic feet per second. The major sources of supply are North Cow Creek (commonly called Little Cow Creek), Cedar Creek (which is tributary to North Cow), Oak Run Creek, and Clover Creek. These creeks are tributaries of Cow Creek and all flow in a westerly or southwesterly direction through narrow valleys to Cow Creek near the town of Palo Cedro. The place of use is in the narrow valleys along the creeks and consists of small parcels separated by brush-covered hills. The entire area is about 25 miles long by 10 miles wide and varies in elevation from about 500 to 2,000 feet.

A schematic drawing of each major stream system in the Cow Creek service area is presented in Appendix B.

Water Supply

Water supply for this service area is derived mostly from springs and seepage with some early snowmelt runoff. The watershed consists primarily of low brushy hills which do not accumulate a heavy snowpack. Relatively large amounts of precipitation during the winter normally produce substantial spring flow and seepage throughout the irrigation season.

Cedar Creek flow is usually sufficient to supply all allotments until about July 15 after which time it steadily decreases throughout the remainder of the season.

The flow of North Cow Creek is, in most years, sufficient to supply all allotments. In drier years it is necessary to reduce the allotments in the latter part of the summer.

Flow of Oak Run Creek is augmented by a first priority right of five cubic feet per second of foreign water diverted out of the North Cow Creek watershed. The flow of Oak Run Creek is normally enough to supply all allotments throughout the season.

Clover Creek flow is, in most years, sufficient to supply all priority allotments throughout the season.

Records of the daily mean discharge at several stream gaging stations in the Cow Creek service area are presented in Tables A-13 through A-16.

Methods of Distribution

Water in the Cow Creek service area is used for domestic and stockwatering purposes and for the irrigation of meadow hay, alfalfa, small orchards, and vegetable gardens. The alfalfa and hay lands are irrigated primarily by the wild flooding method augmented by a few sprinkler systems. The furrow method is used for the irrigation of gardens, and the basin or check method is used for orchards. Much of the water applied is lost by percolation and returns to the creeks as seepage water, thereby augmenting the flow for points of diversion further downstream.

The Cow Creek service areas decrees* establish the following number of priority classes: Cedar Creek - one; North Cow Creek - one; Oak Run Creek - one plus a surplus allotment; and Clover Creek - one.

* See Table 1

1964 Distribution

Watermaster service began in the Cow Creek service area on May 1 and continued until late October. Kenneth H. Lloyd, Water Resources Engineering Associate, assumed the duties of field watermaster during this period.

Cedar Creek. Because of below normal spring rainfall, the Cedar Creek water users were confronted with the driest irrigation season since 1959.

A serious problem developed involving seepage from a newly constructed county dump. The seepage flowed into the Truman Ranch diversion ditches, compelling Mr. Truman to close one of his ditches for the entire season and to use his other ditch only during April, May, and June. The Shasta County Department of Public Works, upon completion of an investigation of this problem, proposed installation of a closed conduit through the dump area in the near future.

With the Truman allotment of water remaining in Cedar Creek, full allotments (one priority) were available to all other users until the second week of July. The flow in Cedar Creek gradually decreased through July and August. On August 27 the flow above all diversions was 1.0 cubic foot per second, an insufficient amount to reach the lowest decreed user, Mr. Greenwald. The Cedar Creek channel was actually dry at the Greenwald pump.

On August 31 a thundershower in the Round Mountain area deposited approximately 0.5 inch of precipitation, restoring moisture to Cedar Creek channel. For the remainder of the season Mr. Greenwald was able to pump intermittently from the creek.

North Cow Creek. North Cow Creek's summer flows depend upon winter and spring rains to saturate the drainage area and replenish the underground reservoirs which maintain flow in the headwater springs. Precipitation during the period October 1963 to September 1964 in the North Cow Creek drainage area averaged 30.0 inches, or 65 percent of normal.

Prolonged high summer temperatures in the canyon that North Cow Creek traverses between Round Mountain and Bella Vista created an excessive amount of channel loss. This condition combined with the below normal precipitation caused one of the driest irrigation seasons ever experienced by North Cow Creek users.

Surplus water was available until July 13 when all diversions were regulated to 100 percent of their allotments (one priority). The water supply available for distribution decreased rapidly thereafter until August 20, when a low of 45 percent of allotments was reached, a level which is probably the lowest in the past 30 years. This critical drought condition was alleviated for a 10-day period by an intense rainstorm on August 31. Following the rain, the water supply in North Cow Creek increased for two days, then gradually decreased until September 10 at which time it was again down to 45 percent of allotments. The water supply remained at this level until October 1 when a definite decrease in channel loss was noted, permitting each user to increase diverted flows.

Oak Run Creek. The water supply in Oak Run Creek was sufficient to satisfy all priority allotments (one priority) and a surplus allotment until July 28. After this date, the surplus allotment was supplied intermittently, depending upon the upstream use of first priority water.

Regulation of upper diversions was necessary, beginning the first week in July, to assure delivery of this surplus water which is diverted at the last decreed point of diversion on Oak Run Creek. One hundred percent of first priority allotments were supplied for the remainder of the season. The general water supply, while of below normal proportions, was adequate for normal irrigation due to continued close regulation through August and September.

A water user, claiming a riparian water right outside the watermaster's jurisdiction, continued to pump water from the Murphy-Estep Slough for the entire summer.

Clover Creek. The Clover Creek water users experienced the driest irrigation season since the drought years of the early 1930's.

Surplus water was available until July 8 when all diversions were regulated to 100 percent of allotments (one priority). Constant regulating of diversions was required as the flow in Clover Creek gradually decreased. On August 18 the water supply was sufficient to satisfy 50 percent of allotments. From August 18 the flow stabilized at this level until the rainstorm of August 31. Following the rain the water supply in Clover Creek increased for two days then gradually decreased until September 10 at which time it was again at the 50 percent level. Shortly thereafter the previously excessive channel losses began subsiding, thereby permitting gradual increases in diverted flows.

Digger Creek Watermaster Service Area

General Description

A request for watermaster service on Digger Creek in Shasta and Tehama Counties was submitted to the Department of Water Resources by Forward Brothers Properties in July 1963. The necessity for watermaster service on Digger Creek was investigated, and as a result it was concluded that the service was necessary and justified, and would begin not later than July 1, 1964.

There are four court decrees* on Digger Creek, dating back to 1899. These decrees define water rights amounting to 23.225 cubic feet per second of consumptive use by 32 water right owners, having 11 points of diversion for irrigation of approximately 1,955 acres.

Digger Creek forms a portion of the boundary line between Shasta County on the north and Tehama County on the south. It drains an area of approximately 45 square miles on the west slopes of the mountains west of Lassen National Park, and flows in a westerly direction through the town of Manton to its confluence with the North Fork of Battle Creek. Manton is the only community in the area and is located about 40 miles northeast of Red Bluff.

A schematic drawing of the Digger Creek stream system is presented in Appendix B.

Water Supply

Precipitation, occurring principally in the winter months, is typical of Northern California. Snowmelt contributed to the early runoff but the summer streamflow is primarily from springs and rising water.

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* See Table 1

In a normal year there is sufficient flow in Digger Creek, if properly regulated, to satisfy present water allotments through the entire irrigation season. However, serious deficiencies do occur in dry years.

A record of the daily mean discharge of Digger Creek below South Fork Branch is presented in Table A-17.

Method of Distribution

The Digger Creek decrees have, in effect, divided the water rights on that creek into two groups, the upper users and the lower users. The three upper users irrigate lands adjoining the stream and all return water flows back into Digger Creek. The lower users are located within a continuous three-mile length of stream and within a five-square-mile area. Very little runoff from the lower users returns to the creek.

The three upper users' water rights are absolute and not correlative to the lower users; therefore, allotments are not cut proportionally as Digger Creek flow decreases. The lower users, whose total water rights are based on 600 inches, or 12 cubic feet per second, have their allotments cut proportionally as the flow decreases. In effect the upper users have first priority class allotments and the lower users have second priority allotments.

Primarily irrigation is by wild flooding, with sprinklers used on only a few fields. Small diversion dams are placed in the stream channel to divert water into ditches for conveyance to the fields. There has been a limited amount of land leveling and border check construction.

1964 Distribution

Watermaster service began on July 1 in the Digger Creek service area and continued until late October. Kenneth H. Lloyd, Water Resources

Engineering Associate, assumed the duties of field watermaster during this period.

To provide an efficient watermaster service on Digger Creek, installation of headgates and measuring devices was planned for each diversion ditch. During the months of May and June, six metal screw-type headgates, four concrete parshall flumes, and three rectangular weirs were installed in the upper users' diversion ditches. One of the weirs was temporary, used for trial distribution, and will be replaced with a permanent structure. These structures provided the necessary control of diverted flows in all diversion ditches operated by the upper users. Installation of headgates and flow measurement devices will continue during the 1965 watermaster season on the four lower users' diversion ditches.

Because watermaster service was initiated during the 1964 season, there is little data available for a water supply comparison with past year However, it may be stated that generally the Digger Creek service area suffered from a dry water year.

During the 1964 watermaster season the flow of Digger Creek was sufficient to supply all allotments (effectively two priorities) until the first week in August. It was then necessary to regulate all diversions, allowing the lower users (second priority) 85 percent of their total allotment. The upper users (first priority) however did not divert their full allotments during most of the season.

The natural flow of Digger Creek decreased gradually through August until September 1st, when the lower users were regulated to 75 percent of their allotments. From September 1st to October 27 the natural flow remained constant. The fluctuations in total flows which occurred

were caused by the varying amount of runoff available from the upper users' irrigated fields. Because of these conditions the lower users continued to receive 75 to 85 percent of their allotments through September and October.

Hat Creek Watermaster Service Area

General Description

The Hat Creek service area is located in the eastern part of Shasta County north of Lassen Volcanic National Park. There are 42 water right owners in the area with total allotments of 134.905 cubic feet per second. Hat Creek, which flows in a northerly direction through the area, is the only source of supply in the Hat Creek service area. The place of use is Hat Creek Valley, which is approximately 20 miles long and two miles wide, commencing from a point about three miles south of the town of Old Station north to the confluence of Rising River and Hat Creek. The irrigable lands, which are made up of volcanic ash, are interlaced with large outcroppings of volcanic rock.

Schematic drawings for both the upper and lower users diversion systems from Hat Creek are presented in Appendix B.

Water Supply

Water supply of Hat Creek is derived from snowmelt from Mount Lassen and from large springs. Snowmelt normally maintains a high flow during May and June while a substantial portion of supply throughout the season is from the large springs which decrease only a small percentage in output. The flow reflects not only the precipitation of the preceding winter but also the precipitation for several previous years. Only after a series of dry years does the flow of these springs fall below approximately 75 percent of the total allotments.

A record of the daily mean discharge of Hat Creek near the town of Hat Creek is presented in Table A-18.

Method of Distribution

The Hat Creek decree* divides the water rights on Hat Creek into two groups (upper users and lower users) who use the water on a ten-day rotation schedule with equal priority (one priority) as the basis for distribution. This requires a complete reregulation of all diversions every ten days providing an irrigation supply to one group and a minimum flow (stockwater) to the other group.

Most irrigating in the area is accomplished by wild flooding with large heads of water to cover the land rapidly and prevent excessive loss from percolation in the extremely porous soil. Diversion dams constructed across the creek serve to divert water into large ditches. The fields, many of which have checks and borders, are then flooded from the main diversion ditch or from laterals. A few domestic rights are diverted by pumping from Hat Creek channel.

1964 Distribution

Watermaster service began May 1 in the Hat Creek service area and continued until late October. Kenneth H. Lloyd, Water Resources Engineering Associate, assumed the duties of field watermaster during this period.

The available water supply in the Hat Creek service area during the 1964 season was generally of average proportions with some usual shortages experienced in July and August.

The distribution of Hat Creek water was continued on a ten-day rotation schedule (one priority) between the upper and lower users beginning May 1. A surplus water supply was available until July 2 when the first

* See Table 1

regulation of diversions became necessary. The flow decreased gradually through July and by the end of that month the upper users were receiving 80 percent and the lower users 75 percent of their respective allotments. The creek maintained this flow throughout the month of August. During early September, and continuing throughout the month, the water supply in Hat Creek gradually increased, reaching the level of 100 percent of allotments at the end of September.

Minimum flows were delivered to the lower users during their off-irrigation period with few of the problems normally encountered in years of short water supply.

Problems were again encountered in several areas due to choking of the channel by willow and alder growth. This condition caused flooding in some areas and excessive channel loss. Corrective measures were employed in two reaches of Hat Creek during the winter of 1963 by the removal of growth from the banks and channel. Necessary applications have been filed, with the State Reclamation Board, State Department of Fish and Game, U. S. Soil Conservation Service, and the Agricultural Stabilization and Conservation Committee, by two water users to continue channel clearance. This work is planned to be accomplished during the winter of 1964-65.

During the 1964 watermaster season concrete headwalls with metal slides and/or screw-type gates were installed in the Bone upper and lower ditches and in the Zachary ditch. A 3-foot concrete parshall measuring flume was constructed in the Duncan lower ditch. A 2-foot concrete parshall measuring flume was also constructed in the Patton-Ryan ditch. These additions will greatly assist the watermaster in providing accurate distribution service to the users concerned. With the completion of the aforementioned structures, adequate control and measuring facilities in the Hat Creek service area exist in nearly all diversion ditches.

Indian Creek Watermaster Service Area

General Description

The Indian Creek service area is located in the north central part of Plumas County in the vicinity of the town of Greenville. There are 44 water right owners in the service area with total allotments of 97.015 cubic feet per second. The major sources of supply in the service area are Indian Creek and two major tributaries, Wolf Creek and Lights Creek. Indian Creek, and its minor tributaries, rises in the mountains east of the service area. This creek flows through Gennessee Valley and through Indian Valley past the towns of Taylorsville and Crescent Mills to its confluence with the North Fork Feather River. Indian Creek is joined from the north by Lights Creek and Wolf Creek in the northwest part of the valley. The major place of use is in Indian Valley, which is about four miles long and $2\frac{1}{2}$ miles wide at an elevation of about 3,500 feet.

A schematic drawing of each major stream system within the Indian Creek service area is presented in Appendix B.

Water Supply

The water supply in the Indian Creek service area is derived primarily from snowmelt runoff with springs and seepage maintaining some late summer flow. Flow of Wolf Creek is normally sufficient to supply all allotments until June 1, while Indian and Lights Creeks, with the exception of some tributaries, have sufficient flow to supply all allotments until July 1. After these dates, the flow steadily decreases throughout the season until by the end of August only a small proportion of allotments are available.

A record of the daily mean discharge of Indian Creek near Taylorsville is presented in Table A-19.

Method of Distribution

The basic method of irrigation in Indian Valley is wild flooding. Small diversion dams are placed in the stream channels to divert the water into distribution ditches for conveyance to the fields. Small check dams, located throughout the fields in swales, help to spread the water over the ground. There is a limited amount of check and border irrigation in the valley with sprinklers used to irrigate a few fields.

The Indian Creek decree* establishes the number of priority classes for each of the major stream systems within the Indian Creek service area as follows: Wolf Creek - three; Lights Creek and tributaries - three; and Indian Creek - three.

1964 Distribution

Watermaster service began in the Indian Creek service area on April 15 and continued until September 30. Harvey A. Jorgenson, Water Resources Engineering Associate, assumed the duties of field watermaster during this period.

A generally average water supply existed in the service area during the 1964 season.

Wolf Creek. The available water supply of Wolf Creek was sufficient to satisfy all priority allotments (three priorities) until July 15. Regulation of diversions was necessary after this date for equitable distribution of available streamflow. The flow in Wolf Creek gradually decreased until only eight percent of the second priority allotments were being served during August.

* See Table 1

Lights Creek and Tributaries. Water supply of Lights Creek was sufficient to satisfy all priority allotments (three priorities) until late July. The streamflow decreased quite rapidly thereafter causing the water users to begin use of their deep well pumps for a supplemental irrigation supply.

The available water supply of Cooks Creek satisfied all priority allotments (three priorities) until June 1. A rapid decrease in streamflow occurred after this date until the creek became dry at diversion number 80 on July 15.

Indian Creek. The available water supply of Indian Creek was sufficient to satisfy all priority allotments (three priorities) until the end of July. Thereafter the streamflow steadily decreased until only 47 percent of the second priority allotment was available to diversion number 54 on August 12. Although the new dam for this diversion was sealed efficiently, enough rising water below the structure was available to meet the allotments of the downstream users.

Special Occurrences. The heavy rains and resulting flood waters of the December storm produced only negligible damages to diversion structures in the Indian Creek service area.

Middle Fork Feather River Watermaster Service Area

General Description

The Middle Fork Feather River service area is located in the plateau area on the west slope of the main divide of the Sierra Nevada mountains in the east portion of Sierra and Plumas Counties. There are 84 water right owners with total allotments of 370.865 cubic feet per second.

Major sources of supply for this service area are the tributaries of the Middle Fork Feather River in Sierra Valley and are divided into five major stream groups. These groups, starting in the north and east corner of the valley and proceeding in a southerly and westerly direction, are Little Last Chance Creek, Smithneck Creek, Webber Creek and tributaries, West Side Canal, and Fletcher Creek. The Middle Fork Feather River channel flows in a general northerly direction for approximately 20 miles through Sierra Valley and then turns and flows in a westerly direction. The major place of use is in Sierra Valley, which is about 15 miles long and 10 miles wide. The average elevation of the valley floor is 4,900 feet.

A schematic drawing of each major stream system within the Middle Fork Feather River service area is presented in Appendix B.

Water Supply

The major water supply in the Middle Fork Feather River service area is derived from snowmelt runoff, with minor flow from springs and from supplemental stored and foreign water.

Flow of Little Last Chance Creek is reregulated and supplemented by stored water through use of Frenchman Dam which was constructed on the stream by the Department of Water Resources in 1961. This water is now released and used as needed.

Smithneck Creek flow is normally sufficient to supply allotments until about the middle of May and then decreases rapidly until June 1 when only first and second priority allotments are available for the remainder of the season.

Natural flow of Webber Creek is normally sufficient to supply allotments until the middle of May. At that time foreign water, up to 60 cubic feet per second, is used to supplement the flow. This foreign water is diverted from Little Truckee River through the Little Truckee Ditch into Cold Stream and then into Webber Creek for the use of shareholders in the Sierra Valley Mutual Water Company. This supplemental supply decreases rapidly during July producing only small amounts of water for the latter part of the season.

The West Side Canal streams normally supply all allotments until the first part of June, with the flow gradually declining throughout the season.

The flow of Fletcher Creek and Spring Channels normally supplies all allotments until July 1 with the flow then gradually declining for the remainder of the season.

Records of the daily mean discharge of several stream gaging stations in the Middle Fork Feather River service area are presented in Tables A-20 through A-24.

Method of Distribution

Wild flooding is the method employed by the majority of the water users to irrigate their lands. Small diversion dams are placed in

the stream channels to divert the water into the individual distribution systems. Once the water reaches the fields, check dams are constructed in the swales to implement flooding.

The Middle Fork Feather River decree* establishes the number of priority classes for each of the major stream systems within the Middle Fork Feather River service area as follows: Little Last Chance Creek - five; Smithneck Creek and tributaries - five; West Side Canal and tributaries - five; Turner Creek - five; Fletcher Creek and Spring Channels - three; Sierra Valley Mutual Water Company - one; and Webber Creek and tributaries - six.

1964 Distribution

Watermaster service began on April 1 and continued until September 30 in the Middle Fork Feather River service area. Joe Nessler, Water Resources Engineering Associate, assumed the duties of field watermaster during this period. He was assisted by Conrad Lahr, Water Resources Technician II.

A generally average water supply existed in the service area during the 1964 season.

Little Last Chance Creek. Frenchman Dam and Reservoir began its third season of operation in 1964. Agreements concerning storage and distribution were again negotiated with the users in this stream system. The resulting changes in procedures and specific details of distribution and project operation are covered in a separate report prepared by the Operations Section of the Delta Branch.

Smithneck Creek. The available water supply on Smithneck Creek was sufficient to satisfy all priority allotments (five priorities) until

* See Table 1

May 15. By June 1 the stream runoff had decreased so that water was available for only the first and second priority allotments. By July 1 the entire flow was diverted by users with first priority allotments.

A rotation program among the second priority allotment users below Loyalton was practiced from May 15 until approximately July 1.

Webber Creek and Tributaries. The natural flow of Webber Creek was sufficient to supply all priority allotments (six priorities) until May 20. Combined with the diversion of foreign water from the Little Truckee River, beginning about May 23, this total supply was sufficient to satisfy the allotments of the Sierra Valley Mutual Water Company shareholders until July 1. The natural flow decreased gradually after June 1 and by July 15 was sufficient for only first priority allotments. From August 1 until the end of the season, an average of 75 percent of first priority allotments was available.

Little Truckee Ditch. The Sierra Valley Mutual Water Company imported 5,386 acre-feet of water through the Little Truckee ditch during the period May 23 through September 30. Water was distributed to shareholders in accordance with schedule 9 of the Middle Fork Feather River decree*.

West Side Canal Group. The West Side Canal Group, consisting of Hamlin, Miller, and Turner Creeks, received a sufficient water supply to satisfy all priority allotments (five priorities) until about June 15, after which regulation was required. By August 1 approximately 20 percent of second priority allotments were being served and from that date until the end of the season the supply remained fairly constant. Stockwater was available throughout the season for the entire stream system.

* See Table 1

Fletcher Creek and Spring Channels. The available water supply was sufficient to satisfy all priority allotments (three priorities) until about July 1. Stream runoff then gradually decreased thereafter and by August 1 approximately 40 percent of second priority allotments were being served.

Special Occurrences. The extremely heavy rains and resulting high stream runoff during December 1964 caused some damage to individual diversion structures throughout Sierra Valley with the exception of those structures on Little Last Chance Creek which were protected by the upstream storage facilities of Frenchman Reservoir.

Features of special significance sustaining extensive damage were the Sierra County Waterworks District No. 1 diversion dam on Fletcher Creek, and the Little Truckee ditch diversion dam on the Little Truckee River.

North Fork Cottonwood Creek Watermaster Service Area

General Description

The North Fork Cottonwood Creek service area is located in the southwestern part of Shasta County near the towns of Ono and Gas Point. There are nine water right owners in the area with total allotments of 30.30 cubic feet per second.

North Fork Cottonwood Creek and its tributaries, Moon Creek and Jerusalem Creek, are the major sources of supply in the area. These creeks rise on the east slopes of the foothills of the Coast Range mountains. North Fork Cottonwood Creek flows in a southeasterly direction to its confluence with Cottonwood Creek near the town of Gas Point. The area is characterized by high summer temperatures and moderate rainfall. The irrigable land consists of sparsely scattered acreages separated by steep, brushy hills and lies at the 1,000-foot elevation.

A schematic drawing of the North Fork Cottonwood Creek stream system is presented in Appendix B.

Water Supply

Snowmelt from the east slope of the Coast Range foothills is available in the North Fork Cottonwood Creek area only during the early weeks of the irrigation season and is usually insignificant as irrigation demands approach the maximum. Perennial springs provide a gradually decreasing flow throughout the season. The flow is normally sufficient to supply all demands.

A record of the daily mean discharge of North Fork Cottonwood Creek near Igo is presented in Table A-25. This stream gaging station

is located downstream from most points of diversion on the creek but gives a general indication of the water supply.

Method of Distribution

The general practice throughout the area is to irrigate by the wild flooding method. One water user, however, pumps directly from the creek using a sprinkler system to irrigate his crops. Pumping was necessitated at this diversion point because of the greater elevation of the irrigated land in relation to the creek channel.

The North Fork Cottonwood Creek decree* provides for distribution of water on an equal and correlative basis for all users - one priority class.

1964 Distribution

Watermaster service began May 1 in the North Fork Cottonwood Creek service area and continued until September 30. Kenneth H. Lloyd, Water Resources Engineering Associate, assumed the duties of field watermaster during this period.

The available water supply for the North Fork Cottonwood Creek Service area was below average for the 1964 irrigation season. However, direct irrigation by spring rainfall implemented this supply and greatly contributed to a reasonable successful season.

As there are no stream gaging stations maintained in the upper portion of the service area, an exact stream flow comparison with previous years cannot be made. The Gas Point Road bridge stream gaging station, however, recorded a total of 5,340 acre-feet of runoff between April 1 and

* See Table 1

September 30. This is the lowest amount of runoff for comparable periods since the station was established in November 1956, and is approximately 17 percent of the mean based upon this very short eight-year period of record.

North Fork Pit River Watermaster Service Area

General Description

The North Fork Pit River service area lies along the westerly slopes of the Warner Mountains in the northerly portion of Modoc County. There are 98 water right owners in the area with total allotments of 215.065 cubic feet per second. Water supply for the area consists of a number of small streams rising on the west slope of the Warner Mountains. Three of these streams, New Pine Creek, Cottonwood Creek, and Davis Creek, are tributary to Goose Lake. Each flows in a general westerly direction from the slopes of the Warner Mountains to the eastern shore of Goose Lake. Five other streams, tributary to North Fork Pit River, are as follows: Linville Creek, Franklin Creek, Joseph Creek, Thoms Creek, and Parker Creek. Shields Creek and Gleason Creek are tributaries to Parker Creek. All of the tributaries headwater on the west slope of the Warner Mountains and flow in a general westerly direction to their confluence with the North Fork Pit River. The North Fork Pit River flows in a general southerly course from the south rim of Goose Lake to its confluence with the South Fork Pit River immediately below the town of Alturas.

The place of use in the North Fork Pit River service area extends from south of the town of Alturas northward to the Oregon border. It is about 45 miles long and 10 miles wide. Streams tributary to Goose Lake are not considered part of the North Fork Pit River watershed since the lake has not spilled into the river for nearly 100 years. The place of water use near Goose Lake is along the streams between the mountains and the lake. Use of water on the North Fork Pit River and its tributaries is primarily in the narrow valleys near the streams.

A schematic drawing of each major stream system within the North Fork Pit River service area is presented in Appendix B.

Water Supply

The streams which serve the area are fed by snowmelt runoff and springs on the Warner Mountains. A large portion of the runoff occurs early in the spring, decreasing rapidly in May and June. The watershed of New Pine Creek, however, is at a higher elevation and maintains a good supply well into the summer. After the snowpack is depleted, perennial springs at the headwaters of the tributaries are the main source of water supply. Linville Creek has a small drainage basin and its flow depends almost entirely on the springs at its head. Gleason Creek, Thoms Creek, and Cottonwood Creek normally dry up in August, except during years of above average water supply.

Some supplemental water is stored in small reservoirs throughout the area, none of which are operated by the watermaster. However, the inflows to some of these reservoirs are under the jurisdiction of the watermaster.

Records of the daily mean discharge at several stream gaging stations in the North Fork Pit River service area are presented in Tables A-26 through A-37.

Methods of Distribution

Irrigation is accomplished primarily by the wild flooding method from random field ditches along high spots in the meadows. Water is diverted from the natural stream by various type structures into small earth ditches which convey water to the meadows. At present there is a limited amount of sprinkler irrigation, some by naturally developed pressure

and some by direct pumping from small sumps in the ditches. Subirrigation by the use of large flashboard dams to raise the water level in the stream channel is being practiced on the North Fork Pit River between Parker Creek and the town of Alturas.

The several decrees* which apply to the North Frrk Pit River service area establish the following number of priority classes for the various stream systems within the service area: New Pine Creek - four; Cottonwood Creek - six; Davis Creek - four; Linville Creek - two; Franklin Creek - four; Joseph Creek - four; Thoms Creek - three; Parker Creek - four; Shields Creek - four; Gleason Creek - five; and North Fork River - five.

1964 Distribution

Watermaster service began on April 17 and continued until September 30, 1964. George H. Pape, Assistant Civil Engineer, assumed the duties of field watermaster during this period.

Throughout the service area the available water supply during the 1964 irrigation season was generally above normal. The heavy June rains which were of record proportions supplemented the snowmelt runoff and occurred at almost the exact time needed. Although at times during the early season the total available water supply was less than the total allotments in some of the stream systems, the overall supply was generally sufficient to satisfy demands until late in June.

New Pine Creek. Surplus water was available to New Pine Creek users throughout the period that the proration or correlative system of distribution was in effect. Commencing July 1, in accordance with the provisions of the New Pine Creek decree, distribution was based upon the

* See Table 1

priority system (four priorities). Some surplus water existed for a short period after July 1; however, only negligible amounts were utilized as the heavy rains in June had provided ample soil moisture conditions. Third priority water was avilable until the end of July after which the flow gradually decreased to the seasonal low of approximately 30 percent of the second priority allotments near the end of the season.

Cottonwood Creek. A sufficient water supply existed in Cottonwood Creek to satisfy all allotments (six priorities) until shortly after the heavy rainstorm in mid-June. Thereafter the flow decreased rapidly, reaching first priority level by the end of June. Near the end of the season the flow had further receded so that approximately 10 percent of the first priority allotments were served. Water continued to reach the place of use along the Robnett ditch throughout the season.

Davis Creek. The available water supply in Davis Creek was sufficient to satisfy approximately 75 percent of third priority allotments (four priorities) until the June rainstorm. The resulting increase in flow provided fourth priority water until the latter part of June. The flow then steadily decreased until late September at which time a very small percentage of the third priority allotments were served.

Linville Creek. The available water supply in Linville Creek was sufficient to satisfy all priority allotments (two priorities) until shortly after the June rainstorm, at which time second priority allotments were terminated. The flow further receded to 50 percent of the first priority allotments by the end of June. A fairly constant flow continued throughout the remainder of the season sustained primarily by springs.

Franklin Creek. A surplus water supply existed in Franklin Creek until early June (four priorities) after which the flow decreased

steadily. A small amount of third priority water was available until the winter schedule of priorities became effective on September 15.

Joseph Creek. A surplus water supply existed in Joseph Creek throughout June. The flow receded rapidly, reaching the level of 85 percent of the first priority allotments (four priorities) in mid-July. Thereafter the flow gradually receded to 25 percent of the first priority allotments in early September and remained fairly constant for the remainder of the season.

Thoms Creek. A surplus water supply existed in Thoms Creek throughout July (three priorities). The flow then receded steadily through August with only first priority allotments and a small portion of the second priority allotments available for the remainder of the season.

Gleason Creek. A surplus water supply existed in Gleason Creek during June. The flow receded through the third priority allotment (five priorities) range in July and varied between 20 and 50 percent of the second priority allotments during August and September.

Shields Creek. A surplus water supply existed in Shields Creek until early July. The flow decreased steadily until late August at that time only first priority allotments (four priorities) were served.

Plum Canyon Dam, rebuilt in 1964, provided an adequate water supply for the Plum Creek user until late in the season.

Parker Creek. A surplus water supply existed in Parker Creek until early July. The flow then decreased steadily until late August at that time 15 percent of the third priority allotments (four priorities) were served.

The new diversion dam at Dorris Reservoir feeder ditch provided optimum utilization of excess water not needed by downstream users. The

reservoir remained full until after the heavy June rainstorm. During this storm the reservoir spilled. This is normally avoided by the reservoir owners through regulation of the feeder ditches as the spilled water crosses the county road.

North Fork Pit River. A surplus water supply existed in North Fork Pit River during most of June. During the latter part of the month a rapid decrease in flow occurred, cutting into the second priority (five priorities) allotments. At the end of July the flow had further receded to 80 percent of the first priority allotments. A steady decrease thereafter was noted until the seasonal low of 15 percent of the first priority allotments was reached near the end of the season.

Seiad Creek Watermaster Service Area

General Description

The Seiad Creek service area is located in northwestern Siskiyou County near the town of Seiad Valley. There are 10 water right owners in the area with total allotments of 6.82 cubic feet per second. Seiad Creek, a major source of supply for the area, has two tributaries (Canyon Creek and Darky Creek) which join the main stream from the north near the head of Seiad Valley. Seiad Creek traverses the northerly portion of the valley while the main body of agricultural land lies to the south.

The Seiad Creek service area comprises Seiad Valley and a narrow strip of land in a canyon extending upstream from the head of the valley for a distance of about two miles. Seiad Valley extends from the Klamath River, which forms the western boundary, for a distance of about one mile to the mouth of the canyon. The elevation of the valley is about 1,400 feet.

Gold dredging operations destroyed about 40 percent of the agricultural area within Seiad Valley and at this time no effort has been made to reclaim any of the dredged lands.

A schematic drawing of the Seiad Creek stream system is presented in Appendix B.

Water Supply

Snowmelt from the higher elevations provides the main source of water supply to Seiad Valley with flows from springs and seepage providing some water in the summer and fall. The watershed of the Seiad Creek stream system includes the heavily forested, steep, mountainous area on the

southern slopes of the Siskiyou range in Siskiyou County. It varies in elevation from 6,700 feet along the crest of the Siskiyou Mountains bordering the basin on the north, to about 1,400 feet at the Klamath River on the south. The stream system drains an area of about 29 square miles; 17 square miles which are tributary to the main stream, nine square miles are tributary to Canyon Creek, and three square miles are tributary to Darky Creek.

Method of Distribution

Irrigation of the agricultural land is accomplished by the wild flooding method. Diverted water is used primarily for domestic gardens and lawns. Two of the diversions in use, 8 and 8A, are pump diversions for domestic water and are located on Canyon Creek. The distribution of the remaining water is by small ditches and laterals to the place of use.

The Seiad Creek decree* provides for two separate areas of distribution within the service area. The main stream system is operated under a four priority class method, whereas, Canyon Creek, the major tributary to the Seiad Creek system is operated under a two priority class method.

1964 Distribution

Watermaster service began in the Seiad Creek service area on June 1 and continued until September 30. James M. Mathison, Assistant Civil Engineer, assumed the duties of field watermaster during this period.

There are no stream gaging stations in the Seiad Creek area, therefore, long-term averages are not available. However, the available water supply during 1964 could be considered as at least normal or better.

* See Table 1

Only diversions 2, 3, 7, 8, 8A, 10 and 12 were used during the 1964 season. Full allotments of water were not in demand and excess water flowed into the Klamath River all season.

A re-evaluation of the work load and distribution problems in the area provided the basis for a decision to suspend watermaster activities in the Seiad Creek service area upon completion of the present season. Continued reviews of the area will be conducted to determine if watermaster service should be reinstated in the future.

Shackleford Creek Watermaster Service Area

General Description

The Shackleford Creek service area is located in the westerly portion of Siskiyou County near the town of Fort Jones in Scott Valley. There are 21 water right owners in the service area with total allotments of 63.98 cubic feet per second. The source of supply for this service area is Shackleford Creek which flows through the central part of Quartz Valley, 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 service area encompasses the Quartz Valley region of Scott Valley and includes the entire agricultural area within the Shackleford Creek basin. It is about two miles wide by six miles long with the main axis and drainage running from south to north. Elevations on the agricultural area range from about 3,100 feet at the south to about 2,650 feet at the point of confluence with Scott River.

A schematic drawing of the Shackleford Creek stream system is presented in Appendix B.

Water Supply

The water supply for Shackleford Creek is derived from snowmelt runoff, springs and seepage, and supplemental stored water released from Cliff Lake and Campbell Lake. These two lakes are located near the headwaters of Shackleford Creek.

The watershed of the Shackleford Creek stream system is about 31 square miles, in the heavily forested, steep, mountainous terrain on the northeasterly slopes of the Salmon Mountains. It ranges in elevation from

about 7,000 feet along its west rim to about 3,000 feet at the foot of the slopes bordering Quartz Valley.

The snowmelt is normally sufficient to supply all demands until the middle of July. The supply then decreases until the first part of August when water is released from Cliff Lake and Campbell Lake to maintain sufficient flow for the second priority allotments in the Shackleford Ditch.

Records of the daily mean discharge at several stream gaging stations in the Shackleford Creek service area are presented in Tables A-38 through A-41.

Method of Distribution

The primary method of irrigation is by wild flooding of permanent pasture and alfalfa fields. Water is distributed by ditches and laterals to the places of use. The largest of these ditches is Shackleford Ditch which has a length of about six miles and a capacity of about 12 cubic feet per second.

The Shackleford Creek decree* provides for four separate areas of distribution within the service area and establishes the following number of priority classes for these areas: Upper Shackleford Creek - seven; Lower Shackleford Creek - seven; Upper Mill Creek - three; and Lower Mill Creek - two.

1964 Distribution

Watermaster service began in the Shackleford Creek service area on June 1 and continued until September 30. James M. Mathison, Assistant Civil Engineer, assumed the duties of field watermaster during this period.

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* See Table 1

The 1964 season produced a slightly above normal water supply for the entire service area. The available water supply in the Lower Shackleford Creek and Mill Creek areas was in excess of demands throughout the season. The Upper Shackleford Creek area had sufficient water to satisfy first and second priority allotments during the entire irrigation season. Supplemental water was released from Campbell Lake in August to insure the second priority user of receiving his full allotment.

Shasta River Watermaster Service Area

General Description

The Shasta River service area is located in the central part of Siskiyou County in the vicinity of the town of Yreka. There are 103 water right owners in the service area with total allotments of 594.362 cubic feet per second.

The source of supply for this service area is Shasta River and its tributaries. Shasta River enters the south end of Shasta Valley near the town of Weed where it is joined by several tributaries. Little Shasta River enters Shasta River from the east near the town of Montague. Shasta River flows out the north end of the valley, near the town of Yreka, to its confluence with the Klamath River.

The place of use is in Shasta Valley which is approximately 30 miles long and 30 miles wide. The valley has numerous small, cone-shaped, volcanic hillocks scattered throughout its central portion that produce the effect of dividing the area into a number of distinctively separate parts. Because of this formation only about 141,000 acres of the approximately 507,000 acres within Shasta Valley are irrigable. The valley floor is at an elevation of approximately 3,000 feet.

A schematic drawing of each major stream system within the Shasta River service area is presented in Appendix B.

Water Supply

The water supply for Shasta Valley is derived from snowmelt runoff and from spring and underground flow. In several portions of the stream system the spring and underground flow is sufficient to supply nearly all allotments throughout the season. Much of the underground

flow apparently has its source on Mount Shasta, which rises to an elevation of 14,162 feet at the south end of Shasta Valley. Although a normally heavy snowpack exists on Mount Shasta, only negligible surface runoff occurs.

Parks Creek, Upper Shasta River, and Little Shasta River derive a major portion of their water supply from snowmelt runoff. This flow is normally sufficient to supply all allotments until the middle of May.

Beaughan Creek, Carrick Creek, Shasta River from Boles Creek to Dwinnell Reservoir, Big Springs, and Lower Shasta River normally have sufficient spring flow to supply a large percentage of the allotments throughout the season.

Records of the daily mean discharge at several stream gaging stations in the Shasta River service area are presented in Tables A-42 through A-53.

Methods of Distribution

Irrigation of permanent pasture and alfalfa lands is accomplished by the wild flooding method. Much of the return water is recaptured and used on lower pasture lands. The use of sprinkling systems is employed in the irrigation of some alfalfa and grain lands.

In the area water is primarily diverted by diversion dams and then conveyed by ditch or canal to the place of use. The largest and longest canal in the area is the Edson-Foulke Yreka Ditch, which has a capacity of about 60 cubic feet per second and a length of about 15 miles. Water is also supplied into ditch systems by pumped diversions. Generally these belong to the several irrigation districts', although many riparian water right users employ pump diversions.

Many privately owned storage reservoirs are found in the area. This stored water is mainly used during the irrigation season to supplement continuous flow allotments. Several of these reservoirs are also used for regulatory storage of natural flow allotments.

The Shasta River decree* provides for eight separate areas of distribution within the service area and establishes the following number of priority classes for these areas: Shasta River above confluence with Big Springs Creek - 43; Boles Creek - 20; Beaughan Creek - 5; Carrick Creek - 13; Jackson Creek - 7; Parks Creek - 25; Shasta River below confluence with Big Springs Creek - 29; and Little Shasta River - 7.

There are four privately operated water districts within the service area whose main diversions are directly under the supervision of the watermaster. These water districts are: Montague Water Conservation District; Shasta River Water Users Association; Grenada Irrigation District; and Big Springs Irrigation District.

There are also a number of water users with undefined riparian rights along the Lower Shasta River who are not included in the Shasta River decree. These users are therefore not subject to watermaster supervision and in seasons of short supply these undefined rights can be the cause of considerable distribution problems.

1964 Distribution

Watermaster service began on April 1 in the Shasta River service area and continued through September 30. James M. Mathison, Assistant Civil Engineer, assumed the duties of field watermaster for this period. He was assisted by Ross P. Rogers, Assistant Civil Engineer, during the latter part of the season as the workload increased.

* See table 1

The available water supply in the service area was generally below normal during the 1964 season. During the latter months of the season careful regulation was required to insure equitable distribution of the water.

Parks Creek. Early regulation was required of diversions from Parks Creek because of the limited water supply available. Close supervision of these diversions continued throughout the irrigation season to insure equitable distribution.

The Edson-Foulke Yreka Ditch received its full allotment for limited periods during April and May only. The first priority users, entitled to a total of 6.0 cubic feet per second, generally received their full allotments all season. The downstream users received their allotments from return flow and from water which reappeared in the gravel streambed. The Montague Water Conservation District's Parks Creek Feeder Canal to Shasta River was shut off in early April.

Beaughan Creek. Beaughan Creek was measured below Beaughan Springs on August 27, at that time the rate of flow was 7.7 cubic feet per second. This amount was sufficient to supply about 93 percent of second priority allotments. The creek is routed through a mill pond owned by the International Paper Company, which is allowed use of approximately 35 percent of the flow for industrial purposes. Intermittent observations made at the Parshall Flume below the mill pond during 1964 are as follows:

Date	Discharge in second-feet	Date	Discharge in second-feet
April 13	8.2	August 20	6.8
July 7	5.8	September 4	8.6
July 22	6.4	September 14	8.6
August 5	6.8		

Carrick Creek. The water supply in Carrick Creek was sufficient to satisfy main stream allotments all season. The flow of Carrick Springs is determined by adding diversions 116 and 117, and the flow of the creek as measured at the Highway 97 bridge.

Shasta River from Boles Creek to Dwinnell Reservoir. Boles Creek and Shasta River from Boles Creek to Dwinnell Reservoir were operated as one stream with water being distributed on an equal and correlative basis. There was sufficient water available until August 1 to satisfy all the allotments of the diversions in use. During August the allotments were regulated to 75 percent, were increased to 100 percent on September 1 and remained at or above this level for the remainder of the watermaster season.

Upper Shasta River. The Edson-Foulke Yreka Ditch diverted the entire flow of the Upper Shasta River throughout the watermaster season.

Dwinnell Reservoir. Reservoir releases from Dwinnell Reservoir to the Montague Water Conservation District commenced on April 8 and continued through October 7, 1964. Reservoir operation data for the 1964 season are shown in Table A-46 and Table A-47.

By agreements with the Montague Water Conservation District, natural flow water rights below Dwinnell Reservoir are met upon demand by the release of stored water in place of natural flow rights. The agreement allotment totals and seasonal amounts delivered to each user are as follows:

DELIVERIES TO NATURAL FLOW WATER RIGHT OWNERS
BELOW DWINNELL RESERVOIR - 1964

Name of water right owner	Allotment per Agreement, in acre-feet	Amount delivered from Dwinnell Reservoir	
		Acre-feet	Percent of Allotment
E. Love	198	162	82
K. K. Waters and Emily S. Waters	464	464	100
J. N. Taylor	1,200	1,200	100
W. W. Valintine, Jr.			
Hole-in-the Ground Ranch	596	596	100
Seldom Seen Ranch	924	912	99
Totals	3,382	3,334	98

Big Springs. The Big Springs water supply was more than adequate to meet all priority allotments during the 1964 season.

Little Shasta River. Stream flow characteristics of Little Shasta River required regulation to commence early in the season. Water was available to satisfy 100 percent of the fifth priority allotments until July 11, after that close regulation became necessary to satisfy the higher priority allotments. The flow steadily receded to approximately 15 percent of fifth priority allotments at the end of the season.

The daily mean discharge of Little Shasta River near Montague is presented in Table A-51. This runoff is augmented by substantial inflow from Cleland Springs, a tributary approximately two miles downstream from the stream gaging station, and from rising water along the river channel. Hence, normally there is considerably more water available for distribution at downstream diversion points than is indicated in Table A-51.

Lower Shasta River. The available water supply on the Lower Shasta River was sufficient to satisfy all allotments until the latter part of July. At that time it became necessary to regulate and limit the amount of water pumped by the Grenada Irrigation District which has the lowest priority in this reach of the river system. The Flock East and West ditches suffered some shortages for several limited periods, at this time, due to the considerable fluctuations of the flow in Shasta River. Regulation of the district's pumping plant was necessary to alleviate this situation from the latter part of July and throughout August. Their diversion allotment was reduced about 30 percent during a substantial part of this period. The shortage was not as severe, however, as in some recent years. At that time serious thought was given to the initiation of court action to define the riparian rights for this section of the river.

South Fork Pit River Watermaster Service Area

General Description

The South Fork Pit River service area is located primarily in Modoc County with a small portion extending into the northern part of Lassen County. There are 39 water right owners in the area with total allotments of 336.00 cubic feet per second.

Water supply for this service area is obtained from the South Fork Pit River and its tributaries which rise on the western slopes of the Warner Mountains. The river enters South Fork Valley near Likely and then turns north to its confluence with North Fork Pit River at Alturas. South Fork Pit River is joined by Fitzhugh Creek near the middle of the valley and by Pine Creek just south of Alturas.

The major area of water use is in South Fork Valley between the towns of Likely and Alturas. South Fork Valley is about 16 miles long and three miles wide with the valley floor lying at an elevation of about 4,500 feet. The valley is bounded on both sides by a rocky plateau that separates it from the surrounding mountains.

A schematic drawing of each major stream system within the South Fork Pit River service area is presented in Appendix B.

Water Supply

Primarily, the water supply for Pine Creek is derived from snowmelt runoff from relatively high mountains. The runoff, generally small in the early spring, increases to a peak in May as temperatures rise. During June and continuing throughout the season, streamflow in Pine Creek decreases. This requires the water users to supplement their irrigation supplies from other sources, where available.

The water supply for Fitzhugh Creek consists of snowmelt runoff early in the season and supplemental water diverted from Mill Creek above Jess Valley later in the season. Surplus water from Fitzhugh Creek is normally diverted into the Payne and French Reservoirs through Payne-French Ditch (Diversion 136) until June, when the diversion is closed to supply downstream allotments. By July the creek has normally receded until only first priority allotments are available.

Payne Ditch (Diversion 1) is opened to import water from Mill Creek to Fitzhugh Creek when the snow has melted enough to allow access. This foreign water is rediverted from North Fork Fitzhugh Creek through the Bowman Ditch to the Bowman Ranch. Return flow from the Bowman Ranch to the creek is rediverted through Diversion 136 for stockwatering purposes in the Payne-French Ditch.

The water supply for South Fork Pit River is derived primarily from snowmelt runoff supplemented by stored water released from West Valley Reservoir. A number of streams, which rise at high elevations, collect at the mouth of Jess Valley to form the South Fork proper. West Valley Reservoir is located on West Valley Creek which enters the river below Jess Valley.

Most of the water users on South Fork Pit River, except those in Jess Valley, are in the South Fork Irrigation District. The district stores water in West Valley Reservoir, which has a capacity of 22,240 acre-feet, and releases it to the South Fork Pit River as a supplemental supply when the natural flow becomes insufficient to meet demands. This normally occurs during the middle of June. Reservoir releases together with the natural flow is distributed by the watermaster in cooperation

with the Board of Directors of the irrigation district. Normally, natural flow combined with stored water is sufficient to supply all demands for water on the South Fork Pit River throughout the irrigation season.

Records of the daily mean discharge of the several stream gaging stations throughout the area are presented in Tables A-54 through A-60. The releases from West Valley Reservoir and the flows of South Fork Pit River near Likely are presented graphically on Plate 3.

Methods of Distribution

Irrigation of the fields along tributary streams is by flooding through small lateral ditches. The water is distributed on a continuous flow basis through each users individual ditch.

The users on the South Fork Pit River generally use the check and border method of irrigation. They normally receive water on a demand basis supplemented by water released from West Valley Reservoir. This must be modified to eliminate large peak demands from the reservoir and to utilize return flow as much as possible. The actual distribution of this water varies each year as there is no specific irrigation schedule in use.

The South Fork Pit River decree* and the Pine Creek agreement* establish a two priority class system of distribution for the Fitzhugh Creek and Pine Creek stream systems. Distribution to the South Fork Pit River users (the decree provides for a two priority class system) is carried out on an equal and correlative basis in accordance with the normal water requirements for each ranch. This method of operation had been made possible through the construction of West Valley Reservoir in 1937.

* See Table 1

1964 Distribution

Watermaster service began in the South Fork Pit River service area on April 13 and continued through September 30. Kenneth E. Morgan, Water Resources Engineering Associate, assumed the duties of field watermaster for this period.

The water supply for the 1964 irrigation season was generally above average throughout the service area. Excellent crop yields were experienced in nearly all areas. Much credit for this must be given to the heavy rainfall occurring during the second and third weeks of June. Between June 6th and 12th, 2.29 inches of rain fell at Alturas - the heaviest on record for June. This storm deposited snow above the 5,000 foot elevations and caused flooding of agricultural lands.

Pine Creek. Close regulation of all diversions from Pine Creek was required from April 13 through April 30 due to cold night temperatures slowing the snowmelt process.

From May 1 until after haying (July 20) an abundant water supply existed, providing the basis for an exceptionally good irrigation season. All priority allotments (two priorities) were satisfied during most of this period. Many users frequently did not divert all of their entitled allotments when rainfall and excellent soil moisture conditions combined to provide an adequate means of irrigation.

The heavy June rains produced unusually high flows in Pine Creek for several days. The stream crested at 240 cubic feet per second on June 10.

After July 20 the flow decreased sharply and in general was below normal for the remainder of the season. Pine Creek reached a low of 12 cubic feet per second in late September.

Pine Creek surplus flow was diverted into Dorris Reservoir during May and June because the capacity of the main channel below Diversion 5, about 20 cubic feet per second, was insufficient to contain the prevailing high flows. Dorris Reservoir reached near capacity levels during May. The heavy June rains caused this reservoir to spill for the first time since the dam was raised in 1948. The owners normally regulate the feeder ditches to the reservoir to prevent spill since it flows across the county road.

Pine Creek Reservoir, formerly owned by the California-Oregon Power Company and presently owned by the State Wildlife Conservation Board, is maintained and operated by Modoc County. This season the reservoir was operated by the watermaster on an informal basis (it is not in the watermaster service area). The inlet works, in poor operating condition, made proper regulation difficult if not impossible at times.

Fitzhugh Creek. Water supply on Fitzhugh Creek would probably have been below normal except for two conditions; the heavy June rains, and because Pit River Ranch, the lowest user on the creek, had its land fallow during the season. This latter fact provided a sufficient water supply in the lower reaches of the stream system.

Herb Bell, the only lower user diverting water this season, leased the Massae Ranch. After July 10 Mr. Bell rotated Fitzhugh Creek water between the Massae Ranch and his own lands.

Payne Reservoir filled during June through use of surplus Fitzhugh Creek water which existed between May 3 and July 10. French Reservoir was not filled because its main inflow ditch is in poor condition and little effort was made to repair it.

The Payne ditch, importing water from Mill Creek, was opened on July 1, a few weeks later than usual due to the heavy June precipitation.

Only a portion of the first priority allotments (total of two priroities) were available from North Fork Fitzhugh Creek during the latter part of the season while second priority allotments were available in other portions of the stream system.

The new concrete diversion dam at the Yankee Jim point of diversion, begun in late 1962, was completed and a 2-foot concrete parshall measuring flume was installed at the head of the diversion ditch.

South Fork Pit River. The problems in this area were of distribution rather than of supply since a generally above average irrigation season occurred. West Valley Reservoir provided a supplemental source of water supply for the South Fork Irrigation District which includes the entire service area below Jess Valley. A sufficient water supply existed throughout the season for ample irrigation of all lands in the district. The reservoir reached its capacity on May 8 and discharged water over the spillway from that date until July 10. On September 30, the end of the watermaster season, water was still being released for irrigation purposes. The reservoir storage was 8,000 acre-feet of water at this time. The total out flow of the reservoir from April 14 through September 30 was 19,920 acre-feet of which approximately 4,400 acre-feet was discharged over the spillway.

Surprise Valley Watermaster Service Area

General Description

The Surprise Valley service area is located in the extreme eastern part of Modoc County. There are 174 water right owners in the service area with total allotments of 313.75 cubic feet per second. The source of supply is comprised of 10 individual stream systems rising on the eastern slope of the Warner Mountains. These streams are fed by snowmelt runoff and traverse a fast precipitous course down the Warner's eastern slope to the valley floor, at that point numerous and scattered diversion ditches convey water to the irrigated lands. Nearly all of the place of use is the irrigable lands situated in a long, narrow area between the foot of the Warners and the Alkali Lakes which lie in the center of Surprise Valley.

Surprise Valley extends in a north-south direction approximately 50 miles with an average width of eight to 10 miles. It is bordered on the north, south, and west by the rugged Warner Range and on the east by the typical mountainous desert terrain of Nevada. The valley floor is at an elevation of approximately 4,700 feet.

A schematic drawing of each major stream system within the Surprise Valley service area is presented in Appendix B.

Water Supply

The water supply is derived almost entirely from snowmelt runoff, with only minor spring fed flows occurring in the latter part of the season. There are no economically feasible storage sites on the service area creeks. Because of this lack of regulation, the available water supply at any specific diversion point may vary considerably within a few hours. Rising or falling temperatures from day to night combine with

the relatively short and steep drainage areas to promote these fluctuations of flow.

Additionally occasional summer thunder showers may cause a creek to discharge a flow of mammoth proportions for several hours. These flashes are apt to cause considerable damage in washouts and debris deposition, and are of such short duration that no beneficial use can be made of the water.

Records of the daily mean discharge at several stream gaging stations within the service area are presented in Tables A-61 through A-71.

Method of Distribution

The continuous flow method of distribution is employed on most creeks; however, in a few instances the available water supply is rotated among the users in accordance with either decree schedules or a program mutually acceptable to them.

Alfalfa and meadow hay, the major crops grown in the valley, are irrigated in most instances by wild flooding. There are also considerable lands dependent upon subsurface irrigation. In addition, recent development of numerous deep wells has popularized the sprinkler method of irrigation. This method is limited because of available ground water supply and costs of installation and maintenance.

To facilitate distribution of irrigation waters a program of constructing permanent diversion dams, headgates, and measuring devices has been initiated in recent years. Although the basic problems of discharge variation and debris deposition cannot be economically solved, these control devices provide assistance to the watermaster in coping with the normal distribution problems.

The several decrees* which apply to the Surprise Valley service area establish the following number of priority classes for the various stream systems within the service area: Bidwell Creek - four until July 10, five thereafter; Mill Creek - four; Soldier Creek - from March 19 to June 19 the water is distributed on a rotation schedule (the upper users have eight priorities and the lower users have seven priorities), there are twelve priorities during the remainder of the year; Pine Creek - a rotation schedule based on accumulative flow in acre-feet is used; Cedar Creek - four priorities; Deep Creek - five priorities; Owl Creek - twenty-one priorities; Rader Creek - six priorities; Eagle Creek - four priorities, and Emerson Creek - four priorities.

1964 Distribution

Watermaster service began in the Surprise Valley service area on March 19, 1964 and continued until September 30. John A. Nolan, Water Resources Technician II, assumed the duties of field watermaster during this period.

The 1964 season proved excellent for irrigation purposes after a questionable beginning. Although the snowpack on the Warner Mountains was below normal, early in the irrigation season, snowfall during the latter part of March; a cold April; and exceptionally heavy rains during early and mid-June provided an adequate water supply in most creeks until the first hay cuttings in late June and early July.

Flows in most creeks receded quickly with the onset of warm weather in May, reflecting the below normal snowfall situation existing earlier. Streamflows dropped to near critical levels; however, the June rains sustained and in several instances greatly increased the available

* See Table 1

water supply for several weeks. This resulted in reasonable adequate irrigation for most ranches and contributed to the excellent crop yield experienced throughout the valley.

All creeks produced seasonal runoffs in the range of 81 to 124 percent of their long-term averages.

Bidwell Creek. Total stream runoff available to Bidwell Creek users during the period from March 1 through September 30 was 12,450 acre-feet, or approximately 100 percent of normal (records of seasonal runoff on Bidwell Creek are available only since 1955).

Due to the unusually cold weather in April and the first part of May, runoff was not sufficient to supply water to all priority allotments until late May. During this period close regulation was required as only third priority allotments were available (there are four priorities until July 10, five priorities thereafter). From late June and continuing on through the remainder of the season, the discharge of Bidwell Creek receded at a fairly constant rate reaching a low of approximately four cubic feet per second during the latter part of September. This amount was adequate for all first priority allotments.

Mill Creek. Total stream runoff available to Mill Creek users during the period April 1 through September 30 was 5,720 acre-feet or approximately 97 percent of normal.

An abundant water supply existed throughout April, May and most of June with much of the surplus flow in Mill Creek wasting into Upper Alkali Lake. On June 25 the flow became insufficient to supply all priority allotments (four priorities). From then until mid-August third priority water was available in steadily decreasing quantities.

Second priority allotments were shut off in mid-September. Throughout the remainder of the season the available water supply was generally sufficient to satisfy the first priority allotments.

Soldier Creek. Total stream runoff available to Soldier Creek users during the period March 19 through September 30 was 3,440 acre-feet or approximately 85 percent of normal.

Although runoff was below normal, all lands, except those with surplus rights, were adequately irrigated through the middle of June, primarily due to the heavy June rains.

All diversions were closely regulated during the rotation periods (March 19 to June 19) as the stream runoff was generally insufficient to satisfy all priority allotments (eight priorities during the upper users' cycle - seven priorities during the lower users' cycle). After the middle of June the flow of Soldier Creek decreased at a fairly constant rate (during the period June 19 to March 19 there are 12 priorities). First priority allotments were satisfied until the latter part of July after which the available water supply continued to recede until the seasonal low of about 50 percent of first priority allotments was reached in late September.

Pine Creek. Total stream runoff available to Pine Creek users during the period March 20 through September 30 was 1,770 acre-feet or approximately 124 percent of normal.

The stream system was operated according to the rotation schedule (an accumulative flow basis) as set forth in the court decree.

On June 2 the flow in Pine Creek dropped below 4.0 cubic feet per second thereby ending the rotation schedule. From this date through June 6 the flow was divided between the Andrae and Eastlick Ranches.

Heavy rains in early June temporarily increased stream runoff and allowed all Pine Creek users to divert with large irrigating heads, thus utilizing this unexpected surplus flow. When the flow again receded below 4.0 cubic feet per second it was again divided between the Andrae and Eastlick Ranches until June 21, at that time the 1.6 cubic foot per second level was reached. In accordance with the decree the entire flow was then diverted into the South Channel to the Bordwell Ranch. This diversion continued for about two weeks, or as long as water would reach the place of use. Throughout the remainder of the season Pine Creek was essentially dry.

Cedar Creek. Total stream runoff available to Cedar Creek users during the period April 1 through September 30 was 3,200 acre-feet or approximately 107 percent of normal.

No water was available for the fourth priority user (a total of four priorities on the creek) this season and the third priority allotments were only partially satisfied for a short period during early May. Second priority regulation began during the middle of May with the streamflow declining steadily thereafter.

The entire streamflow was diverted by the only first priority user during the last week in June and throughout the duration of the season.

Deep Creek. Total stream runoff available to Deep Creek users during the period April 1 through September 30 was 4,020 acre-feet or approximately 102 percent of normal.

An adequate water supply existed to fulfill all priority allotments (five priorities) until the third week in May, at that time the streamflow began receding. Beginning then and continuing throughout

the irrigation season the entire flow of North Deep Creek was diverted by the Company Ditch, since only first priority water was available (one priority on North Deep Creek).

Second priority regulation began on South Deep Creek on June 1 and continued through June 26. Throughout the remainder of the irrigation season, only first priority water was available in steadily declining amounts.

Owl Creek. Total stream runoff available to Owl Creek users during the period April 1 through September 30 was 5,990 acre-feet or approximately 91 percent of normal.

The flood control and distribution project is providing an excellent means of equitable distribution of irrigation waters. During the 1964 season the highest flow recorded in the system was 50 cubic feet per second, well below the project's design capacity. No distribution problems were encountered other than the usual one of gravel and debris accumulating at the intake and restricting flows into the system. Employment of a routine flushing schedule for the intake works minimized this.

A sufficient water supply existed to satisfy nearly all priority allotments (21 priorities) for most of May and June. During the last week of June the flow declined rapidly cutting off many of the priorities. Beginning the first part of July and throughout August the flow gradually receded, reaching a low of approximately two cubic feet per second in early September.

The "special" eight priority allotments were fulfilled during their respective periods.

Rader Creek. Total stream runoff available to Rader Creek users during the period April 1 through September 30 was 2,930 acre-feet or approximately 81 percent of normal.

All users (six priorities) received ample irrigation water until the first week in July. As the streamflow began receding, close regulation of all diversions was required to maintain equitable distribution. Diversion No. 1 was closed on July 20 because there was no longer sufficient water available to reach the place of use. After that the stream flow receded steadily throughout the remainder of the irrigation season. Second priority allotments terminated on August 31 and from then on only first priority water was available in varying amounts.

Eagle Creek. Total stream runoff available to Eagle Creek users during the period April 1 through September 30 was approximately 5,840 acre-feet or approximately 99 percent of normal.

An ample water supply was available to all users (four priorities) throughout June after that the flow steadily declined. During the last week in July all third priority water was diverted by the Grace Ranch, in accordance with the decree, since channel losses were excessive in the lower reaches of the creek. Second priority allotments were shut off in mid-August and thereafter only first priority water was available (stockwater and domestic garden water).

Four screw-type headgates were installed in the Gee Ditch and Grider Ditch main division boxes early in 1964. Also a concrete division box was constructed further down the Grider Ditch at the Grace ranch diversion.

Emerson Creek. Total stream runoff available to Emerson Creek users during the period April 1 through September 30 was 4,080 acre-feet or approximately 107 percent of normal.

A sufficient water supply existed to satisfy all priority allotments (four priorities) until approximately the middle of May when the streamflow began to recede. At that time the third and fourth priorities allotments were shut off. A rainstorm during the first part of June increased the streamflow sufficiently to allow most users to again divert water for several days.

Fourth priority allotments were terminated for the season on June 13 and the third priority allotments on June 15 as the creek continued to recede at a fairly constant rate. From the middle of July through the end of the season only stockwater was available.

Emerson Creek users again supplemented their second crop irrigation supply by the use of several deep wells.

Susan River Watermaster Service Area

General Description

The Susan River service area is located in the southern part of Lassen County in the vicinity of the town of Susanville. There are 164 water right owners in the service area with total allotments of 351.822 cubic feet per second. The source of supply is comprised of three stream systems; Susan River and tributaries, Baxter Creek and tributaries, and Parker Creek.

Susan River has its sources on the east slope of the Sierra Nevada Mountains in the southwesterly portion of Lassen County. These sources are immediately east of Lassen National Park and at an elevation of about 7,900 feet. Its channel runs easterly from Silver Lake through McCoy Flat Reservoir, the town of Susanville, and then to Honey Lake.

Susan River has four major tributaries; Piute Creek (entering from the north at Susanville), Gold Run and Lassen Creeks (entering from the south between Susanville and Johnstonville), and Willow Creek (entering from the north above Standish). Gold Run Creek and Lassen Creek head on the north slope of Diamond Mountain at an elevation of about 7,600 feet. The watersheds of Piute Creek and Willow Creek are lower and they rise on the south slopes of Round Valley Mountains.

A short distance below the confluence of Willow Creek and Susan River the river divides into three channels, Tanner Slough Channel on the north, Old Channel in the middle, and Dill Slough Channel on the south. Two channels, which leave Dill Slough on the south, are known as Hartson Slough and Whitehead Slough.

The Baxter Creek stream system is in Honey Lake Valley on the east slope of the Sierra Nevada and about 10 miles southeast of Susanville.

The principal streams in the Baxter Creek stream system are Baxter Creek (which rises in the extreme western portion of the basin and flows in an easterly direction), Elesian Creek, Sloss Creek, and Bankhead Creek (tributary to Baxter Creek from the south). Elesian Creek has three tributaries: North Fork Elesian Creek, South Fork Elesian Creek, and Kanavel Creek.

Parker Creek is situated in Honey Lake Valley on the east slope of the Sierra Nevada about 15 miles southeast of Susanville. It has its source on the east slope of Diamond Mountain and flows in an easterly direction for about five miles into Honey Lake.

The primary place of use in the Susan River service area is in Honey Lake Valley between Susanville and the northwest shore of Honey Lake, a distance of about 25 miles. The valley floor is at an elevation of about 4,000 feet.

A schematic drawing of each major stream system within the Susan River service area is presented in Appendix B.

Water Supply

The water supply in the Susan River service area comes from two major sources; snowmelt runoff and springs. Snowpack on the Willow Creek Valley and Piute Creek watersheds, which embrace more than one-half of the Susan River stream system, melts early in the spring and usually is entirely gone by May 1. After May 1 irrigation requirements from this portion of the stream system are almost entirely dependent upon the flow of springs that remain fairly constant throughout the year.

Under normal conditions the flows of Lassen Creek, Gold Run Creek, Baxter Creek, Parker Creek, and of Susan River above Susanville

are sustained by melting snows until early in June. The flow from perennial springs in this portion of the water system is comparatively small.

The Lassen Irrigation District stores supplemental water in Hog Flat Reservoir and McCoy Reservoir, located on the headwaters of the Susan River. This stored water is released into the Susan River channel and commingled with the natural flow usually during June and July. It is then rediverted into Lake Leavitt for further distribution by the irrigation district. Records of this flow are presented graphically on Plate 4.

Records of the daily mean discharge of the several stream gaging stations in the service area are presented in Tables A-72 through A-78.

Methods of Distribution

Irrigation in the Susan River service area is accomplished by placing dams in the main channels to raise the water level in order to divert it into canals and diversion ditches. These diversion dams are relatively large on the Susan River channel and much smaller on its tributaries. Wild flooding is the most common, of the various methods of irrigation in practice. In this method water is conveyed by a main ditch to the high point of the land to be irrigated. It is then distributed by laterals along the higher ridges of the tract, from there it is allowed to spread at random over the area served. Portions of the irrigated lands have been leveled, permitting a more efficient use of water by using border checks and furrows. Sub-irrigation occurs in some areas incidental to surface irrigation or as a result of seepage from ditches or creek channels.

During the time the Lassen Irrigation District is releasing water from their upstream storage reservoirs, no practical method exists to determine the natural flow in the Susan River. Experience indicates that a reduction of approximately 10 percent per week in the natural flow of the river can reasonably be expected. An agreement between the district and the watermaster provides that, during these periods of release, the watermaster will reduce by 10 percent each week the total flow available for distribution purposes. This reduction is controlled at the diversion points under his jurisdiction that are ordinarily served by the natural flow in the Susan River.

The several decrees* which apply to the Susan River service area establish the following number of priority classes for the major stream systems and distribution areas: Baxter Creek - five; Parker Creek - four; Gold Run Creek - three, Lassen Creek - two, Piute Creek - one, and Hills Creek - one; Willow Creek and Susan River below Willow Creek - two; Susan River and Lower Willow Creek - three; and Lower Susan River - three. The geographical features of the Susan River, Willow Creek and Lower Susan River areas are subject to interrelated priorities.

1964 Distribution

During 1964 watermaster service began in the Susan River service area on April 1 and continued until September 30. Robert A. Lounsbury, Assistant Civil Engineer, assumed the duties of field watermaster during this period.

* See Table 1

Generally the available water supply throughout the Susan River service area was below average. A shortage of irrigation water developed on several streams in May and this increased in severity until the moderately heavy rainstorm in mid-June eased the situation.

Parker Creek. The available water supply in Parker Creek was sufficient to satisfy all demands until late April (four priorities). On approximately May 1 the flow had decreased to the point that 50 percent of the second priority allotments were being served. Further decline in flow occurred until about May 10, at that time only the first priority allotments were being satisfied. This level was maintained throughout the remainder of the season with stockwater available to all of the users.

Baxter Creek. The available water supply in Baxter Creek was sufficient to supply all priority allotments (five priorities) until about May 1. Approximately 10 percent of the third priority allotments were supplied in early May and after that the flow slowly declined. On June 1, 50 percent of the first priority allotments were served. After June 29, only stockwater was available throughout the stream system.

Lassen-Holtzclaw Creek. The available water supply in Lassen-Holtzclaw Creek was sufficient to supply all priority allotments (two priorities) until May 15. Throughout the remainder of the season the Hulsman Ranch was entitled to all the water available in this stream system. However return flow to the creek was sufficient to supply stock water to downstream users during the remainder of the season.

Hills Creek. The available water supply in Hills Creek was sufficient to supply all priority allotments (one priority) until about May 15. On June 1, approximately 40 percent of the total allotments were

being served. From June 15 throughout the remainder of the season only stockwater was available. All the storage facilities on Hills Creek reached capacity levels during the spring runoff.

Gold Run Creek. The available water supply in Gold Run Creek was sufficient to supply all priority allotments (three priorities) until about June 1. The flow then receded and by July 10, only 10 percent of the second priority allotments were being served. A further decline in flow resulted and by July 15, only stockwater was available.

Willow Creek. The snowmelt runoff produced a reasonably good water supply in Willow Creek during the early spring, however, during the latter part of the season the spring-fed portion of the streamflow was below normal. During June, the available water supply was sufficient to satisfy approximately 50 percent of the second priority allotments (total of three priorities). By mid-July the flow had receded to a seasonal low of approximately 35 percent of the second priority allotments. Then an increase in flow occurred until approximately 45 percent of the second priority allotments were being served at the end of the watermaster season.

Cleaning of the Willow Creek channel below the lower boundary of the Barron Ranch in 1961 has resulted in the water draining freely from the Ranch during most of the summer. However, annual growth in the channel created a backwater problem at the lower end of the Barron Ranch during the early part of July. This problem was partially corrected by drying up the channel during the haying season and destroying much of the moss.

The downstream users enjoyed their best irrigation season since 1960 because of the Barron Ranch's continued cooperation in releasing its available drain waters.

1964 Susan River. The available water supply in the Susan River was sufficient to satisfy all demands (three priorities) until early May. The flow then decreased rapidly until June 1 when 75 percent of the second priority allotments in the upper Susan River area were being served. By August 1 and through the remainder of the irrigation season, water supply to the upstream users had dropped to five percent of the second priority allotments. In the lower Susan River area, 100 percent of the second priority allotments were served until about July 1. The water supply then decreased rapidly until late July after that only stockwater was available.

A concrete turnout structure with metal screw-type headgate was constructed in the DeWitt, Theodore, Wells diversion ditch late in the autumn. Several other similar type structures are being considered for future installation in the area.

Storage Reservoirs. Storage in reservoirs in the Lassen Irrigation District system was below normal for the 1964 season.

McCoy Reservoir did not fill to its capacity this season and on July 11 it was empty.

Hog Flat reservoir provided little storage during the spring of 1964. As is customary, it was drained early in the season to eliminate seepage and evaporation losses.

APPENDIX A

STREAMFLOW RECORDS

TABLE OF CONTENTS

DAILY MEAN DISCHARGE TABLES

TABLE A-1

DAILY MEAN DISCHARGE
ASH CREEK AT ADIN

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	73	295	65	31	16	30	25
2	66	254	69	27	18	31	24
3	55	168	82	19	18	27	23
4	94	165	86	17	13	27	26
5	119	157	96	24	6.8	27	29
6	74	144	78	27	5.4	27	26
7	60	132	71	45	3.0	27	16
8	57	134	70	60	6.5	26	15
9	72	137	73	X 249	6.4	26	14
10	68	138	73	X 485	6.0	26	14
11	71	133	65	X 224	6.6	26	13
12	67	116	62	X 156	7.2	34	15
13	72	107	61	118	8.4	46	14
14	93	99	58	104	6.3	35	14
15	122	95	54	97	7.9	35	14
16	119	92	53	99	8.0	37	13
17	145	86	52	98	7.5	36	4.2
18	169	86	48	X 190	7.4	37	9.7
19	164	83	46	X 127	17	38	14
20	166	78	35	89	17	38	14
21	156	78	32	74	2.1	36	15
22	139	77	32	61	4.3	34	15
23	134	67	27	53	6.9	23	16
24	134	61	24	46	9.5	19	16
25	110	58	16	40	22	27	16
26	114	53	16	34	39	29	17
27	150	55	37	29	36	29	17
28	203	60	63	24	27	23	18
29	259	66	59	21	29	20	17
30	273	62	45	18	29	25	19
31	276		36		30	28	
Mean	125	111	54.3	89.5	13.8	30.0	16.8
Runoff in acre-feet	7,680	6,620	3,340	5,330	847	1,840	998

TABLE A-2

DAILY MEAN DISCHARGE
WILLOW CREEK NEAR ADIN

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	19	42	23	6.7	6.8	5.6	5.3
2	19	34	24	6.5	6.8	5.2	4.9
3	18	30	24	6.0	6.8	5.1	4.9
4	21	32	24	6.0	6.7	5.0	4.8
5	20	34	26	6.1	6.6	4.9	4.8
6	19	29	24	6.4	6.6	5.1	5.0
7	18	30	22	8.8	6.4	5.1	5.0
8	19	37	22	9.0	6.3	5.0	5.0
9	19	40	20	23	6.2	5.0	5.1
10	19	38	19	29	6.0	5.0	4.9
11	19	38	19	16	6.0	4.9	4.9
12	20	34	18	13	6.0	5.0	4.9
13	20	32	18	11	5.9	5.0	5.0
14	20	32	17	10	5.8	5.0	4.9
15	22	31	17	10	5.8	4.9	4.7
16	23	28	17	10	5.7	4.8	4.8
17	27	25	17	11	5.5	4.9	5.1
18	26	25	16	13	5.5	5.0	5.1
19	24	24	16	11	5.4	4.8	5.0
20	24	24	15	9.8	5.3	4.9	5.0
21	25	23	15	9.1	5.3	4.7	5.0
22	24	23	15	8.1	5.2	4.7	5.1
23	24	24	14	6.3	5.2	4.6	4.7
24	23	24	14	6.9	5.7	4.6	4.7
25	22	22	14	7.0	6.0	4.6	4.9
26	24	21	15	6.8	5.8	4.7	4.9
27	26	20	18	6.8	5.5	4.7	5.1
28	30	20	18	6.8	5.9	4.9	5.1
29	33	20	16	7.0	5.8	4.7	4.9
30	38	20	15	6.8	5.7	4.7	5.0
31	36		14		5.7	5.1	
Mean	23.3	28.5	18.3	9.8	5.9	4.9	5.0
Runoff in acre-feet	1,430	1,700	1,120	583 -230 350	365	302	295

TABLE A-3

DAILY MEAN DISCHARGE
PIT RIVER NEAR CANBY

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	82	650	246	774	190	37	55
2	87	605	310	672	172	37	98
3	73	540	364	490	140	30	113
4	76	385	450	351	137	24	176
5	101	315	500	288	137	28	149
6	104	279	457	302	137	62	143
7	92	266	410	306	152	47	143
8	82	250	307	315	210	137	119
9	79	254	143	485	190	110	128
10	82	284	284	786	110	76	125
11	87	279	306	1,160	66	79	116
12	104	254	310	1,840	90	68	113
13	131	234	274	2,500	95	27	107
14	143	206	250	2,200	73	37	95
15	172	198	234	1,790	59	90	90
16	250	222	288	1,560	116	95	87
17	324	258	324	1,320	169	87	90
18	450	218	320	1,240	84	68	76
19	505	179	284	1,130	79	84	28
20	475	152	176	1,140	61	55	28
21	455	152	172	1,120	59	42	42
22	415	155	122	1,040	59	30	55
23	324	166	120	948	46	13	61
24	274	183	288	780	30	18	84
25	238	194	310	580	7.8	41	116
26	246	206	292	445	13	55	98
27	320	208	365	410	83	98	71
28	440	206	460	365	119	66	68
29	560	180	545	330	84	104	55
30	666	206	605	292	8.6	64	42
31	696		684		15	59	
Mean	262	263	329	899	96.5	60.3	92.4
Runoff in acre-feet	16,130	15,640	20,230	53,470	5,930	3,710	5,500

TABLE A-4

DAILY MEAN DISCHARGE
PIT RIVER NEAR BIEBER

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	228	1,440	228	515	346	7.7	3.2
2	254	1,540	343	588	282	6.2	3.2
3	254	1,370	392	593	165	4.4	2.9
4	262	1,160	467	576	165	4.1	2.6
5	309	973	486	555	133	3.8	3.5
6	288	825	555	530	135	3.5	7.4
7	306	682	576	453	122	3.2	6.5
8	276	651	525	422	122	2.9	7.1
9	254	682	462	496	177	2.6	7.7
10	242	651	309	645	160	2.3	10
11	231	627	288	740	62	2.6	21
12	237	582	329	949	62	3.2	16
13	259	510	319	1,560	54	3.8	18
14	313	448	137	1,800	35	2.6	17
15	369	401	62	2,040	99	2.3	15
16	392	354	37	2,150	54	2.0	12
17	453	346	56	2,160	45	1.8	54
18	545	361	75	2,080	70	1.4	69
19	639	343	60	1,920	37	1.1	64
20	747	313	64	1,590	30	1.3	208
21	768	262	114	1,550	23	1.2	110
22	775	259	71	1,370	15	1.3	50
23	754	256	135	1,310	20	1.6	52
24	682	262	227	1,230	175	2.0	54
25	582	254	234	1,040	81	2.9	44
26	505	228	153	862	33	2.9	32
27	476	242	234	510	7.7	2.3	24
28	525	251	303	481	7.7	2.3	27
29	708	245	313	435	11	3.5	43
30	997	192	336	384	10	2.3	57
31	1,260		417		6.8	2.6	
Mean	480	557	268	1,051	88.6	2.8	34.7
Runoff in acre-feet	29,530	33,140	16,480	62,550	5,450	174	2,060

331 x 28 x 2 = 9240
1920 ft²

331 x 60 = 5120
13,860

331 / 9240

TABLE A-5

DAILY MEAN RELEASES
ROBERTS RESERVOIR

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1						40	
2						40	
3						40	
4						35	
5						20	
6						20	
7						20	
8						20	
9						20	
10						**10	
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21						*15	
22						25	
23						25	
24						**10	
25							
26						*10	
27						40	
28						**30	
29							
30					*22		
31					40		
Mean					31.0	24.7	
Releases in acre-feet					124	833	

* Reservoir opened.
** Reservoir closed.

TABLE A-6

DAILY MEAN DISCHARGE
BURNEY CREEK NEAR BURNEY

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	34	63	117	37	18	13	12
2	33	59	97	33	19	13	10
3	33	51	95	29	18	13	9.4
4	32	51	85	29	18	13	10
5	31	57	80	31	18	13	11
6	31	53	79	32	17	12	11
7	30	55	80	37	17	13	11
8	30	63	82	52	17	12	10
9	31	70	82	92	18	12	10
10	30	73	82	85	18	12	10
11	36	74	79	59	17	12	10
12	43	77	77	47	17	12	10
13	40	80	75	40	17	12	9.4
14	37	87	65	33	16	12	9.5
15	36	93	62	31	16	12	9.2
16	35	92	63	30	16	11	8.9
17	35	82	61	29	16	11	8.8
18	36	77	60	26	15	11	8.9
19	38	68	58	22	15	11	8.9
20	39	63	56	20	15	11	9.0
21	39	70	56	20	14	10	8.5
22	39	74	53	18	14	9.5	8.4
23	38	73	51	16	14	9.6	9.8
24	37	64	47	18	13	9.4	9.9
25	35	59	45	20	13	9.0	8.5
26	35	59	46	19	13	9.0	9.2
27	36	65	55	18	13	8.7	8.5
28	38	72	65	17	14	8.9	8.2
29	43	78	55	17	14	8.8	9.2
30	50	85	48	17	14	8.8	9.0
31	55		43		14	10	
Mean	36.6	69.6	67.7	32.5	15.7	11.1	9.5
Runoff in acre-feet	2,250	4,140	4,160	1,930	968	680	568

TABLE A-7

DAILY MEAN DISCHARGE
BUTTE CREEK NEAR CHICO

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	256	480	415	276	168	132	150
2	276	474	390	272	164	132	150
3	256	430	395	268	160	132	132
4	252	400	385	264	164	132	126
5	256	395	375	260	164	132	120
6	248	385	370	264	157	129	120
7	244	385	365	288	157	129	120
8	240	375	365	300	157	129	112
9	236	390	365	335	157	126	107
10	232	390	365	320	154	126	104
11	240	395	375	284	150	129	107
12	320	410	380	276	147	129	112
13	284	415	390	264	147	120	115
14	264	415	385	256	150	120	115
15	260	456	375	248	147	115	112
16	264	474	370	244	144	115	112
17	272	468	380	236	144	112	115
18	292	450	365	236	141	112	117
19	284	425	355	232	138	112	115
20	280	415	350	228	141	112	112
21	288	420	335	216	135	110	112
22	310	415	330	210	141	104	112
23	315	410	325	195	138	102	110
24	340	390	315	192	135	99	110
25	320	375	305	185	135	99	107
26	305	365	315	174	135	104	107
27	315	370	315	174	132	112	110
28	350	380	310	174	132	112	110
29	355	390	296	171	132	112	110
30	365	405	288	171	135	112	112
31	380		284		135	115	
Mean	287	412	353	240	146	118	116
Runoff in acre-feet	17,650	24,490	21,690	14,310	9,000	7,250	6,890

TABLE A-8

DAILY MEAN DISCHARGE
BUTTE CREEK NEAR DURHAM

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	234	414	209	64	16	4.1	23
2	253	424	194	83	14	4.2	31
3	232	381	198	82	13	4.0	26
4	226	350	200	77	15	6.4	23
5	223	337	186	66	12	7.3	20
6	208	313	185	57	8.1	6.8	17
7	188	307	180	85	8.2	6.6	18
8	170	291	192	101	8.2	8.8	14
9	148	297	189	138	7.2	8.1	10
10	123	264	195	139	6.4	7.3	7.7
11	127	249	202	111	4.3	7.3	6.2
12	231	236	204	102	4.2	6.4	6.8
13	207	232	216	88	3.4	5.1	6.7
14	179	165	216	76	2.7	4.7	8.9
15	171	221	218	63	3.1	6.0	6.9
16	158	237	212	52	3.6	5.2	6.0
17	158	255	220	44	3.3	6.5	6.8
18	165	243	197	40	4.2	6.4	5.7
19	172	220	182	42	2.9	7.1	5.5
20	178	210	178	38	2.1	9.5	3.1
21	181	219	165	37	2.0	7.5	8.6
22	200	214	162	31	1.2	6.9	6.9
23	227	204	155	26	1.0	6.3	6.5
24	234	193	145	24	1.9	5.6	12
25	227	176	136	28	3.5	6.1	12
26	210	161	150	24	3.9	5.7	11
27	218	168	151	24	3.5	9.8	8.7
28	254	182	140	22	3.3	10	10
29	283	187	127	19	2.9	10	14
30	290	204	93	18	3.7	9.9	15
31	319		68		4.2	11	
Mean	206	252	176	60.0	5.6	7.0	11.9
Runoff in acre-feet	12,680	14,980	10,840	3,570	343	430	708

TABLE A-9

DAILY MEAN DISCHARGE
DURHAM COLONY DITCH

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1				62	47	49	41
2				61	44	47	23
3				61	42	44	23
4				61	43	42	26
5				60	45	42	41
6				59	47	42	41
7				61	50	42	40
8				61	50	44	42
9			58	55	49	45	42
10			61	47	45	45	40
11			64	51	48	45	44
12			65	53	48	44	45
13			67	53	47	40	45
14			66	56	46	40	44
15			67	58	45	43	44
16			67	59	42	42	44
17			67	58	43	40	44
18			66	58	44	42	44
19			68	58	47	40	45
20			64	59	46	39	44
21			63	58	42	38	42
22			61	56	46	37	42
23			60	53	44	36	43
24			60	50	45	36	47
25			61	45	46	38	48
26			62	49	47	42	49
27			62	49	45	44	49
28			63	48	45	47	50
29			63	47	48	50	
30			63	47	49	50	
31			62		49	49	
Mean			63.5	55.1	45.9	42.7	41.9
Runoff in acre-feet			2,900	3,280	2,820	2,630	2,320

TABLE A-10

DAILY MEAN DISCHARGE
DAYTON DITCH AT EDGAR SLOUGH

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1			23	21	23	16	12
2			23	17	21	16	12
3			22	17	18	16	12
4			19	23	16	17	12
5			15	23	16	17	12
6			15	22	17	16	9.1
7			15	22	17	15	8.8
8			15	13	16	14	9.0
9			23	13	16	14	9.0
10			22	14	16	15	9.0
11			22	15	16	15	*3.0
12			22	16	17	16	
13			22	24	17	15	
14			23	23	17	14	
15			22	20	17	14	
16			23	17	17	14	
17			22	22	17	14	
18			20	22	17	14	
19			18	22	16	14	
20			17	21	15	14	
21			16	21	15	14	
22			14	21	16	13	
23			15	21	15	13	
24			15	21	15	13	
25			14	21	15	12	
26			18	21	15	13	
27			22	20	15	13	
28			21	21	16	13	
29			21	22	16	13	
30			21	22	16	12	
31			21		16	12	
Mean			19.4	19.9	16.5	14.2	9.8
Runoff in acre-feet			1,190	1,190	1,020	870	214

* Ditch closed.

TABLE A-11

DAILY MEAN DISCHARGE
PARROTT DITCH

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1			141	113	103	70	65
2			138	113	103	70	66
3			136	113	101	70	63
4			131	113	102	69	62
5			120	126	103	69	60
6			114	133	98	69	60
7			111	135	91	69	60
8			99	105	90	69	58
9			99	105	91	68	58
10			99	104	93	68	56
11			100	95	91	69	56
12			99	87	87	68	59
13			96	89	87	66	60
14			87	94	90	65	61
15			66	100	90	62	62
16			71	107	87	61	62
17			75	104	84	59	62
18			84	107	83	62	64
19			91	100	82	62	62
20			91	96	81	62	59
21			90	96	79	61	56
22			90	95	82	58	54
23			96	92	79	58	49
24			101	108	77	55	36
25			98	112	76	53	36
26			90	104	74	54	42
27			94	102	72	56	49
28			97	102	72	56	
29			99	102	72	56	
30			107	102	71	56	
31			114		71	57	
Mean			101	105	85.9	62.8	56.9
Runoff in acre-feet			6,200	6,260	5,280	3,860	3,050

TABLE A-12

DAILY MEAN DISCHARGE
TOADTOWN CANAL ABOVE BUTTE CANAL

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	96	108	117	112	68	63	65
2	95	102	114	114	66	63	57
3	89	109	118	114	64	63	54
4	89	108	118	114	68	63	53
5	86	108	118	114	69	61	53
6	88	108	117	114	68	61	52
7	86	107	116	115	66	60	49
8	83	106	116	116	67	60	43
9	83	106	116	118	67	58	40
10	82	106	115	117	66	60	38
11	85	109	114	116	67	61	44
12	91	112	114	114	65	60	50
13	88	50	115	114	65	53	50
14	83	42	114	110	65	51	50
15	86	114	115	111	61	49	50
16	89	114	116	104	61	48	50
17	93	116	117	100	59	47	51
18	99	117	117	103	60	47	52
19	98	114	116	101	59	50	52
20	98	118	116	98	61	49	51
21	103	117	116	95	61	47	49
22	106	116	116	91	61	43	50
23	102	116	115	88	61	39	48
24	101	116	114	82	61	38	48
25	95	115	114	72	60	39	47
26	95	114	114	71	60	47	47
27	102	114	112	71	60	50	47
28	108	114	112	70	60	50	47
29	108	114	111	70	63	50	47
30	112	115	112	70	63	50	48
31	114		111		63	50	
Mean	94.6	108	115	100	63.4	52.6	49.4
Runoff in acre-feet	5,820	6,400	7,070	5,950	3,900	3,230	2,940

TABLE A-13

DAILY MEAN DISCHARGE
MILLVILLE DITCH-CLOVER CREEK

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1				6.6	3.6	3.8	3.6
2				6.4	3.2	4.1	3.4
3				6.4	3.2	3.8	2.7
4				6.4	2.2	3.8	2.3
5			6.1	6.4	2.6	3.6	2.3
6			6.1	6.4	2.7	3.4	1.4
7			6.1	6.4	3.2	3.4	1.6
8			6.1	6.8	2.7	3.9	1.9
9			5.9	8.4	2.7	3.6	2.3
10			5.9	8.4	2.9	3.6	1.9
11			5.7	8.1	3.4	3.2	1.8
12			6.4	8.0	3.4	4.1	1.6
13			7.4	8.0	3.3	3.4	1.4
14			7.4	7.9	3.2	3.4	1.6
15			7.4	7.8	3.2	3.2	1.6
16			7.4	7.4	3.8	3.0	1.6
17			7.4	7.4	3.6	3.0	1.8
18			7.4	7.4	3.3	3.2	1.9
19			7.3	7.4	3.4	3.2	1.6
20			7.3	7.4	3.2	2.2	1.6
21			7.3	7.3	3.4	2.3	1.6
22			7.3	7.2	3.3	2.7	1.6
23			7.3	6.2	3.4	2.9	1.6
24			7.2	5.0	3.2	3.2	1.4
25			7.0	5.1	3.2	3.1	1.4
26			7.0	4.6	3.4	3.0	1.4
27			6.8	4.1	3.4	3.0	1.2
28			7.6	4.1	3.6	3.0	1.6
29			6.9	3.8	4.1	2.9	1.6
30			6.8	3.9	4.1	2.9	1.5
31			6.7		3.6	3.6	
Mean			6.9	6.6	3.3	3.3	1.8
Runoff in acre-feet			367	390	201	201	109

TABLE A-14

DAILY MEAN DISCHARGE
COOK AND BUTCHER DITCH FROM LITTLE COW CREEK

April through October 1964
(In second-feet)

Day	April	May	June	July	August	September	October
1			* 7.0	*7.0	2.0	* 9.0	2.8
2			* 7.0	*7.0	1.6	*12	3.3
3			* 7.0	6.0	1.8	* 9.0	2.5
4			* 7.0	5.6	2.5	4.0	2.2
5		2.0	* 8.0	5.6	3.3	4.0	2.0
6		6.7	* 8.0	6.0	2.8	4.0	3.0
7		8.9	*15	4.7	2.5	3.4	3.4
8		8.3	*12	3.8	2.5	3.4	
9		8.9	* 8.0	3.8	2.4	3.8	
10		7.7	4.7	6.2	2.0	4.7	
11		6.7	6.7	6.2	1.6	3.6	
12		* 8.0	15	6.0	2.2	3.6	
13		* 8.0	8.0	6.0	2.5	2.7	
14		*10	7.5	5.1	2.5	2.7	
15		*11	6.7	5.1	2.4	2.8	
16		*12	6.5	5.6	3.0	3.0	
17		*11	6.7	4.7	2.5	2.7	
18		*11	6.7	3.6	2.5	2.8	
19		*11	*10	4.7	2.2	2.8	
20		*11	*10	5.6	1.6	2.5	
21		* 9.0	*10	4.7	1.7	2.5	
22		* 8.0	*10	4.7	1.9	3.4	
23		4.7	*10	4.1	**0.0	3.0	
24		6.7	* 9.0	3.3	**0.0	2.1	
25		6.7	* 8.0	2.7	2.2	2.2	
26		* 7.0	* 7.0	2.4	2.4	2.5	
27		* 8.0	* 7.0	2.2	2.7	3.3	
28		*10	* 7.0	2.5	2.7	3.1	
29		* 9.0	* 7.0	3.0	2.7	2.7	
30		* 8.0	* 7.0	3.0	2.4	2.8	
31		* 8.0		2.4	3.0		
Mean		8.4	8.3	4.6	2.2	3.8	2.7
Runoff in acre-feet		451	495	284	135	226	38

* Estimated flows, due to submerged condition of parshall flume.
** Zero flow due to repair work on Cook and Butcher diversion dam.

TABLE A-15

DAILY MEAN DISCHARGE
LITTLE COW CREEK NEAR INGOT

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	60	81	78	30	11	5.2	11
2	59	69	59	29	11	5.5	9.7
3	51	64	106	28	11	5.5	7.5
4	49	64	74	28	11	6.7	7.1
5	46	64	61	29	10	6.5	6.2
6	44	61	55	42	9.8	6.0	6.4
7	42	57	53	51	8.8	6.0	6.1
8	41	60	52	47	8.1	5.9	6.2
9	42	66	53	69	8.9	4.9	6.5
10	41	74	54	60	8.8	5.3	6.1
11	45	69	52	45	8.4	6.4	6.0
12	77	67	55	37	8.0	6.5	5.8
13	65	61	59	34	8.5	5.9	6.0
14	53	67	58	31	8.6	5.6	6.0
15	50	69	58	30	9.1	5.6	5.6
16	47	76	58	28	8.8	5.6	5.7
17	47	70	55	27	8.0	5.5	6.3
18	48	66	54	25	8.5	5.2	6.3
19	47	58	53	24	8.3	5.6	5.9
20	47	58	53	23	8.3	5.8	5.7
21	47	58	49	21	8.0	6.2	5.6
22	52	57	47	19	7.7	6.1	5.7
23	52	56	44	16	7.1	6.5	5.9
24	57	52	41	13	6.7	6.5	5.6
25	53	50	39	12	6.1	6.4	5.8
26	50	47	40	12	5.5	6.2	5.6
27	50	47	49	11	5.7	6.6	6.3
28	47	50	46	12	6.6	6.0	6.6
29	47	56	40	12	7.1	5.9	6.8
30	49	61	37	12	6.2	6.1	6.9
31	53		34		5.2	6.7	
Mean	50.3	61.8	53.7	28.6	8.2	5.9	6.4
Runoff in acre-feet	3,090	3,680	3,300	1,700	505	366	383

TABLE A-16

DAILY MEAN DISCHARGE
OAK RUN CREEK NEAR OAK RUN

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	8.6	8.2	5.2	2.7	0.6	1.0	2.8
2	6.4	5.8	4.5	2.6	1.0	1.0	2.3
3	5.2	5.3	9.1	2.2	0.9	1.0	2.2
4	4.8	4.8	5.8	2.6	0.8	0.6	1.9
5	4.5	3.4	5.4	2.2	1.2	0.8	1.6
6	4.5	4.2	5.3	3.6	1.0	1.2	1.3
7	4.3	4.5	4.8	5.2	1.5	1.1	1.7
8	4.3	4.5	4.3	5.2	1.7	0.9	1.4
9	5.2	4.2	3.2	9.3	1.7	1.0	1.1
10	5.0	3.5	3.0	6.7	1.3	0.8	1.4
11	5.6	3.9	2.7	4.8	1.2	0.6	1.3
12	7.5	3.9	3.0	4.3	1.2	0.9	1.6
13	6.4	3.7	2.7	4.0	0.8	1.1	1.4
14	5.8	2.7	2.9	4.2	0.7	1.1	1.0
15	5.4	2.5	2.8	4.3	0.6	1.2	0.8
16	5.0	2.3	3.2	4.0	1.0	1.0	1.2
17	5.0	1.6	2.7	4.0	1.0	0.8	1.3
18	4.7	1.5	2.6	3.8	0.4	0.8	1.1
19	4.7	1.4	2.9	3.0	1.1	0.7	1.2
20	4.7	1.5	3.4	3.0	1.0	1.0	1.2
21	5.0	1.4	3.4	2.4	1.1	0.9	1.3
22	6.4	1.8	2.9	1.8	1.0	0.6	1.3
23	6.0	2.1	3.0	2.3	1.0	0.6	1.2
24	6.7	2.8	2.8	2.0	0.8	0.1	0.8
25	5.9	3.0	2.9	2.0	0.8	0.2	1.2
26	5.6	2.5	2.3	2.0	0.8	0.3	1.2
27	5.4	1.6	2.1	1.9	0.5	0.6	1.2
28	5.2	1.7	2.8	1.5	0.4	0.3	1.3
29	4.8	2.2	3.0	1.6	0.5	0.5	1.0
30	4.8	2.4	3.0	1.4	0.5	0.7	1.1
31	5.3		2.2		0.6	1.1	
Mean	5.4	3.2	3.6	3.4	0.9	0.8	1.4
Runoff in acre-feet	335	188	218	200	57	49	82

TABLE A-17

DAILY MEAN DISCHARGE
DIGGER CREEK BELOW SOUTH FORK BRANCH

April through October 1964
(In second-feet)

Day	April	May	June	July	August	September	October
1			24	18	13	16	9.2
2			23	17	13	16	9.2
3			23	17	13	12	9.2
4			23	17	13	10	9.2
5			22	17	12	10	9.0
6			28	17	12	10	9.2
7			36	17	12	10	9.2
8			33	16	12	10	9.6
9			33	16	12	10	9.6
10			30	16	12	9.8	9.8
11			30	16	12	9.8	9.8
12			28	15	12	9.8	9.8
13			27	15	12	9.8	9.6
14			25	15	12	9.8	9.6
15			25	14	12	9.0	9.6
16			25	14	12	8.6	9.8
17			25	14	12	8.6	9.8
18			26	14	12	8.6	9.8
19			23	14	12	8.6	9.6
20			23	14	12	8.6	9.6
21		27	22	13	12	8.8	9.4
22		27	21	13	12	8.8	9.4
23		27	21	13	12	8.8	9.4
24		27	21	13	12	8.8	9.4
25		27	20	13	12	9.0	9.6
26		28	20	13	12	9.2	9.8
27		27	18	13	12	9.4	
28		25	18	13	12	9.6	
29		25	18	13	12	9.6	
30		25	18	13	13	9.6	
31		24		13	13		
Mean		26.3	24.3	14.7	12.2	9.9	9.5
Runoff in acre-feet		573	1,450	904	750	588	490

TABLE A-18

DAILY MEAN DISCHARGE
HAT CREEK NEAR HAT CREEK

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	130	133	148	165	120	118	108
2	126	130	146	160	118	118	108
3	128	130	146	162	116	118	108
4	128	130	141	165	118	116	113
5	128	130	139	170	118	116	116
6	128	128	139	174	114	114	116
7	128	130	139	182	112	114	114
8	126	133	139	177	112	114	112
9	128	133	141	177	112	102	114
10	128	135	150	167	118	97	114
11	128	135	158	165	122	97	114
12	124	135	167	167	122	99	114
13	128	135	174	162	122	102	112
14	130	137	172	160	120	102	112
15	130	139	172	162	120	102	112
16	130	144	177	158	120	101	112
17	130	141	167	148	120	101	114
18	130	133	170	148	118	104	110
19	130	128	177	139	118	102	106
20	130	128	174	137	110	104	104
21	130	128	167	137	108	104	106
22	130	130	167	137	106	104	102
23	130	128	170	135	108	104	99
24	128	124	170	135	108	104	101
25	126	124	172	137	106	102	102
26	128	126	177	135	106	102	104
27	128	130	172	135	104	104	108
28	130	135	160	133	104	104	108
29	130	144	155	130	104	105	106
30	133	148	155	124	112	108	110
31	135		160		118	106	
Mean	129	133	160	153	114	106	109
Runoff in acre-feet	7,930	7,900	9,840	9,090	7,010	6,520	6,500

135 x 60 135 x 60

8100

TABLE A-19

DAILY MEAN DISCHARGE
INDIAN CREEK NEAR TAYLORSVILLE

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	119	923	458	215	75	38	35
2	125	689	446	198	73	38	35
3	116	560	446	181	72	38	35
4	134	561	457	172	73	38	34
5	134	672	454	165	73	36	32
6	137	566	447	167	72	37	32
7	136	488	571	194	67	36	31
8	126	651	632	223	63	37	28
9	143	961	561	260	59	36	28
10	133	1,250	549	257	57	35	27
11	143	1,110	553	230	55	36	27
12	143	1,060	551	226	55	36	27
13	133	868	549	192	54	36	27
14	141	849	510	168	53	35	28
15	168	873	485	157	52	35	28
16	177	868	456	152	50	35	28
17	195	797	455	146	50	35	27
18	247	684	435	136	46	35	25
19	262	615	406	130	46	34	26
20	268	559	394	127	45	34	27
21	317	526	362	123	44	33	27
22	299	506	333	116	43	33	28
23	284	524	310	110	41	33	27
24	258	539	293	105	41	33	26
25	226	469	280	98	42	31	27
26	232	443	284	95	42	31	27
27	263	436	329	90	42	31	27
28	339	453	329	83	42	31	26
29	482	480	279	77	40	31	27
30	664	485	245	76	39	32	27
31	895		230		39	33	
Mean	240	682	422	156	53.1	34.6	28.5
Runoff in acre-feet	14,760	40,590	25,960	9,260	3,260	2,130	1,700

TABLE A-20

DAILY MEAN DISCHARGE
LITTLE LAST CHANCE CREEK NEAR CHILCOOT

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	3.0	4.6	2.9	2.1	23	82	7.5
2	2.8	3.8	2.7	1.8	23	107	7.0
3	3.1	3.6	2.7	2.1	14	109	6.9
4	3.1	3.9	2.7	2.2	2.0	118	7.0
5	3.0	4.0	2.7	2.1	1.8	162	7.0
6	2.8	3.4	3.0	2.1	1.8	162	6.9
7	2.8	3.7	3.2	2.5	1.7	162	6.8
8	3.0	4.1	3.5	2.9	1.7	162	11
9	2.8	4.4	3.1	2.6	1.7	162	14
10	2.7	4.6	3.2	2.6	1.7	140	18
11	2.8	4.5	3.3	2.5	2.9	117	22
12	2.9	4.1	83	2.7	4.6	117	22
13	2.9	4.4	161	2.5	4.5	80	21
14	3.0	4.6	156	47	4.5	59	21
15	3.1	5.1	155	87	4.5	52	19
16	3.1	4.3	156	87	5.4	2.6	16
17	3.5	4.2	160	87	10	1.9	10
18	3.6	4.0	148	87	20	3.4	4.2
19	3.4	3.7	120	87	20	4.8	4.0
20	3.5	3.6	120	87	29	4.8	4.0
21	3.6	3.2	118	87	39	4.6	4.0
22	3.5	3.3	79	86	39	4.6	4.0
23	3.4	3.4	66	88	39	4.2	3.7
24	3.1	3.4	68	109	39	4.2	3.7
25	3.0	3.2	35	109	47	5.4	3.7
26	3.3	3.2	9.1	107	54	9.2	3.7
27	3.4	2.8	3.1	81	56	9.2	3.2
28	3.6	2.7	2.8	54	63	9.2	1.6
29	3.9	2.7	2.4	54	67	8.4	1.6
30	4.1	2.5	2.3	38	67	7.0	1.5
31	4.2		2.3		67	7.4	
Mean	3.2	3.8	54.2	47.1	24.3	60.7	8.9
Runoff in acre-feet	198	224	3,330	2,800	1,500	3,730	528

TABLE A-21

DAILY MEAN DISCHARGE
LITTLE TRUCKEE DITCH AT HEAD

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1				54	42	2.8	3.4
2				59	41	2.6	3.2
3				59	40	2.3	3.0
4				59	38	2.0	2.6
5				60	37	3.4	2.6
6				60	36	4.1	2.3
7				60	34	3.6	2.3
8				60	30	3.6	2.3
9				60	28	3.4	2.3
10				56	25	3.4	2.3
11				54	23	3.6	2.0
12				58	34	3.2	2.0
13				59	26	3.2	2.0
14				60	20	3.0	1.8
15				60	16.8	3.0	1.8
16				60	14.8	3.0	1.8
17				60	13.0	2.8	1.8
18				59	11.2	2.6	1.8
19				58	9.5	2.6	1.8
20				56	8.6	2.6	1.8
21				55	7.9	2.3	1.8
22				54	6.7	2.3	1.8
23			16.5	52	6.2	2.3	1.8
24			36	51	5.9	2.0	1.6
25			36	50	5.4	1.8	1.6
26			36	49	4.6	1.8	1.6
27			30	48	4.1	1.8	1.6
28			37	46	4.1	1.8	1.6
29			44	45	3.8	1.8	1.6
30			45	44	3.6	1.8	1.6
31			46		3.2	2.8	
Mean			36.3	55.5	18.8	2.7	2.0
Runoff in acre-feet			648	3,300	1,160	165	122

TABLE A-22

DAILY MEAN DISCHARGE
MIDDLE FORK FEATHER RIVER NEAR PORTOLA

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	123	524	126	77	17	0.5	0.1
2	122	541	172	70	35	0.4	0.1
3	125	503	214	63	23	0.4	0.1
4	115	437	254	55	17	0.4	0.1
5	113	365	268	53	13	0.2	0.1
6	155	316	288	50	12	0.3	0.1
7	158	297	365	61	9.2	0.3	0.1
8	149	283	360	90	7.5	0.3	0.0
9	135	317	281	111	6.6	0.3	0.1
10	132	425	246	104	5.7	0.2	0.1
11	141	500	215	122	5.1	0.2	0.1
12	138	523	187	127	4.3	0.2	0.1
13	149	491	163	109	3.8	0.2	0.1
14	162	524	143	94	3.3	0.1	0.1
15	191	468	125	83	3.1	0.1	0.1
16	242	409	109	78	2.8	0.1	0.1
17	321	331	117	72	1.5	0.1	0.1
18	488	222	103	63	1.2	0.1	0.1
19	588	257	82	57	1.1	0.1	0.1
20	648	259	66	51	1.1	0.1	0.1
21	661	251	57	44	0.9	0.1	0.1
22	689	219	61	38	0.9	0.1	0.1
23	614	236	64	35	0.8	0.1	0.1
24	504	208	64	34	0.7	0.1	0.1
25	402	213	64	32	0.7	0.0	0.1
26	316	240	71	27	0.6	0.0	0.1
27	287	219	88	23	0.5	0.0	0.1
28	315	178	83	19	0.5	0.0	0.1
29	390	160	82	17	0.5	0.0	0.1
30	450	137	80	16	0.6	0.0	0.1
31	476		80		0.5	0.0	
Mean	306	335	151	62.5	5.8	0.2	0.1
Runoff in acre-feet	18,840	19,940	9,280	3,720	358	10	6

TABLE A-23

DAILY MEAN DISCHARGE
SMITHNECK CREEK NEAR LOYALTON

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	9.3	20	16	8.1	3.8	3.4	4.4
2	8.8	16	14	8.4	3.4	3.7	3.6
3	7.8	14	14	6.6	3.6	3.0	3.7
4	7.8	13	13	6.9	2.4	2.9	3.6
5	6.8	14	14	7.1	2.5	2.9	3.5
6	4.9	11	14	7.6	2.6	2.9	3.5
7	3.9	13	14	10	3.2	3.3	3.6
8	6.0	15	13	11	2.8	3.3	3.4
9	5.4	19	13	9.6	2.8	3.3	3.9
10	5.4	22	14	8.4	3.1	3.5	3.5
11	6.0	27	13	7.8	2.8	3.0	3.6
12	5.9	26	13	7.8	9.4	3.0	3.6
13	6.0	26	13	6.9	6.7	3.2	3.8
14	6.3	26	12	7.1	4.2	3.5	3.8
15	7.1	26	12	5.4	3.4	3.8	3.5
16	7.4	25	10	6.0	3.4	4.1	3.2
17	9.4	23	10	5.8	3.6	3.5	3.2
18	10	18	10	6.6	3.6	3.5	3.6
19	8.9	16	11	7.6	3.3	3.9	3.4
20	9.9	15	9.7	6.2	3.3	4.1	3.5
21	11	13	8.8	6.3	2.8	4.0	3.3
22	9.2	15	8.0	5.5	2.4	3.9	3.5
23	8.5	16	7.5	5.4	2.9	4.1	3.1
24	7.9	14	7.7	4.2	2.9	3.3	3.0
25	8.6	14	7.1	3.8	3.3	2.9	3.2
26	9.0	13	8.4	4.0	3.5	3.1	3.2
27	9.8	12	13	4.7	3.2	3.3	2.9
28	11	14	9.7	3.6	3.6	3.4	3.0
29	15	15	8.6	3.7	3.6	3.3	2.9
30	20	13	7.5	4.6	3.5	3.3	3.1
31	22		9.7		3.5	3.9	
Mean	8.9	17.5	11.2	6.6	3.5	3.4	3.4
Runoff in acre-feet	545	1,040	692	390	216	211	204

TABLE A-24

DAILY MEAN DISCHARGE
MILLER CREEK NEAR SATTLEY

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	7.2	8.4	14	21	11	6.0	4.9
2	6.7	7.4	11	20	11	5.8	4.7
3	6.3	7.1	10	19	10	5.8	4.3
4	6.5	7.3	9.4	19	9.9	5.5	4.2
5	6.6	7.4	9.3	19	9.6	5.5	4.1
6	6.6	6.9	8.7	21	9.2	5.4	4.3
7	6.7	7.1	9.1	26	9.2	5.4	4.1
8	6.7	7.9	10	24	8.8	5.4	4.1
9	6.6	9.5	12	20	8.8	5.5	4.0
10	6.6	11	16	18	8.8	5.1	3.8
11	6.7	12	19	18	8.2	5.2	3.9
12	6.5	12	22	17	8.6	5.1	3.9
13	6.3	13	24	16	8.6	5.1	3.8
14	6.4	15	22	16	7.8	5.1	3.7
15	6.8	18	22	17	7.9	5.1	3.6
16	6.4	20	24	16	7.7	5.0	3.6
17	6.7	17	26	15	7.4	5.0	3.6
18	6.9	15	25	15	7.4	4.8	3.7
19	6.7	14	27	14	7.3	4.8	3.8
20	6.8	15	25	14	7.1	4.9	3.8
21	7.1	16	23	13	7.2	4.7	3.8
22	7.1	15	24	13	6.8	4.7	3.9
23	6.8	12	24	12	6.6	4.5	3.5
24	6.6	10	24	12	6.6	4.3	3.5
25	6.7	9.9	24	12	6.6	4.4	3.4
26	6.7	12	25	12	6.7	4.4	3.3
27	6.9	15	24	12	6.6	4.4	3.4
28	7.3	17	21	12	6.6	4.3	3.4
29	7.8	21	20	11	6.5	4.2	3.4
30	8.5	19	20	11	6.3	4.3	3.4
31	8.9		21		6.1	5.7	
Mean	6.9	12.6	19.2	16.2	8.0	5.0	3.8
Runoff in acre-feet	423	750	1,180	962	490	308	228

TABLE A-25

DAILY MEAN DISCHARGE
NORTH FORK COTTONWOOD CREEK NEAR IGO

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	87	47	15	14	6.2	4.3	8.7
2	81	37	30	15	6.6	4.7	11
3	75	36	46	15	6.3	4.7	8.3
4	74	35	48	17	6.1	4.4	6.8
5	73	35	44	20	6.7	4.0	6.4
6	76	33	44	22	6.7	3.6	6.9
7	77	31	44	28	5.8	3.6	6.5
8	73	30	39	25	6.7	3.8	5.9
9	73	30	36	39	7.2	3.8	6.7
10	71	30	35	46	7.8	3.8	6.6
11	95	30	33	37	7.3	3.8	6.0
12	97	30	30	31	7.1	4.2	6.4
13	77	27	15	23	6.7	3.8	6.7
14	74	27	13	21	6.0	3.1	6.9
15	72	27	14	19	4.9	3.3	6.6
16	66	27	13	20	4.7	3.4	6.2
17	45	26	24	18	4.3	3.6	6.6
18	42	25	23	17	4.2	3.8	6.1
19	42	23	22	17	4.3	3.3	6.2
20	41	23	21	16	4.0	3.1	5.9
21	42	24	21	13	3.8	2.0	5.9
22	54	25	19	13	3.8	2.2	6.1
23	47	25	20	11	3.5	2.7	5.7
24	45	26	21	8.5	4.1	3.4	6.1
25	39	24	20	7.4	4.6	3.5	6.3
26	38	23	21	7.3	3.9	3.0	6.7
27	38	24	24	7.3	3.5	3.8	7.1
28	39	22	28	7.2	4.0	3.8	8.3
29	39	21	25	5.9	4.8	3.6	8.3
30	37	17	19	5.8	4.9	4.0	8.0
31	38		16		4.2	4.5	
Mean	60.2	28.0	26.5	18.2	5.3	3.6	6.9
Runoff in acre-feet	3,700	1,670	1,630	1,080	327	223	408

TABLE A-26

DAILY MEAN DISCHARGE
NEW PINE CREEK BELOW SCHROEDER'S

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1				45	29	12	4.5
2				45	28	11	4.5
3				45	25	11	4.4
4			15	45	25	10	4.4
5			15	45	25	* 9.6	4.4
6			14	50	25	9.2	4.4
7			14	65	24	8.8	4.3
8			13	80	22	8.4	4.3
9			14	170	21	8.0	4.3
10			18	300	21	7.6	4.2
11			23	120	21	7.1	4.2
12			26	95	20	6.9	4.2
13			29	81	20	6.7	4.2
14			29	73	20	6.5	4.2
15			26	58	20	6.3	4.1
16			34	57	19	6.1	4.1
17			34	52	19	5.9	4.1
18			36	52	19	5.7	4.0
19			40	48	19	5.5	4.0
20			45	43	18	5.3	4.0
21			45	45	18	5.1	4.0
22			43	45	18	5.1	4.0
23			43	39	18	5.0	4.0
24			45	38	18	5.0	4.0
25			50	38	17	5.0	4.0
26			46	38	16	4.9	4.0
27			40	35	17	4.9	4.0
28			40	33	16	4.8	4.0
29			42	33	15	4.8	4.0
30			45	29	13	4.7	4.0
31			45		12	4.6	
Mean			32.5	64.7	19.9	6.8	4.2
Runoff in acre-feet			1,800	3,850	1,230	420	248

* Flows for period August 5-September 30 are estimated due to malfunction of recorder.

TABLE A-27

DAILY MEAN DISCHARGE
COTTONWOOD CREEK BELOW LARKIN GARDEN DITCH

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1				16	3.0	0.8	
2				16	2.9	0.8	
3				15	2.9	0.8	
4				15	2.8	0.6	
5				14	2.4	0.6	
6				14	2.2	0.6	
7				16	2.2	0.6	
8				21	2.2	0.6	
9				20	1.8	0.5	
10				75	1.8	0.6	
11				30	1.5	0.5	
12			16	24	1.5	0.5	
13			17	21	1.1	0.4	
14			16	14	1.1	0.4	
15			16	12	1.1	0.4	
16			16	9.5	1.1	0.5	
17			16	7.2	1.0	0.5	
18			16	6.3	1.0	0.5	
19			17	5.5	1.0	0.4	
20			16	5.5	1.0	0.4	
21			16	5.1	1.0	0.4	
22			16	4.8	0.9	0.4	
23			16	4.5	0.9	0.4	
24			16	3.9	0.9	0.4	
25			16	3.9	0.9	0.4	
26			16	3.8	0.9	0.4	
27			15	3.7	0.9	0.4	
28			17	3.5	0.9	0.4	
29			19	3.4	0.9	0.4	
30			16	3.3	0.8	0.5	
31			16		0.8	0.5	
Mean			16.2	13.2	1.5	0.5	
Runoff in acre-feet			645	787	90	31	

TABLE A-28

DAILY MEAN DISCHARGE
DAVIS CREEK AT OLD FISH WHEEL

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1				24	26	9.2	7.0
2				23	25	9.2	6.6
3				23	24	9.2	6.4
4				23	24	9.0	6.4
5				25	22	9.1	6.4
6				35	21	8.6	6.2
7				44	19	8.2	6.0
8				75	18	8.0	6.0
9				100	18	8.0	5.8
10				300	17	8.0	5.8
11				300	16	8.1	5.5
12				100	16	8.0	5.4
13				90	17	8.1	5.4
14				90	15	8.1	5.2
15				85	13	8.1	5.2
16				80	13	8.1	
17				74	12	8.1	
18				95	11	8.0	
19				86	11	8.0	
20				72	11	7.9	
21			30	68	12	7.9	
22			30	56	11	7.9	
23			29	47	10	7.9	
24			28	38	10	7.8	
25			26	35	10	7.9	
26			25	33	10	7.8	
27			29	30	10	7.6	
28			29	30	10	7.5	
29			29	29	10	7.3	
30			24	28	9.8	7.3	
31			24		9.5	7.0	
Mean			27.5	71.3	14.9	8.1	6.0
Runoff in acre-feet			601	4,240	915	498	177

TABLE A-29

DAILY MEAN DISCHARGE
LINVILLE CREEK AT OLD POWER HOUSE

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1				2.5	2.4	2.1	2.4
2				2.5	2.4	2.1	2.2
3				2.5	2.4	2.1	2.1
4				2.5	2.4	2.0	2.0
5				2.5	2.4	2.1	2.0
6				3.0	2.4	2.0	2.0
7			2.6	3.2	2.3	2.0	2.0
8			2.6	4.7	2.3	2.0	1.9
9			2.6	15	2.3	2.1	1.9
10			2.6	20	2.3	2.1	1.9
11			2.7	10	2.2	2.1	1.9
12			2.8	5.4	2.1	2.1	1.9
13			2.8	5.0	2.2	2.1	1.9
14			2.8	3.5	2.2	2.1	1.9
15			2.8	3.5	2.2	2.1	1.9
16			2.8	3.4	2.2	2.1	1.9
17			2.7	3.4	2.2	2.1	1.9
18			2.6	3.0	2.2	2.1	1.9
19			2.6	3.0	2.2	2.1	1.9
20			2.6	3.0	2.1	2.1	1.9
21			2.6	3.1	2.2	2.1	1.9
22			2.6	3.1	2.2	2.1	1.9
23			2.6	3.1	2.2	2.1	
24			2.6	3.1	2.2	2.1	
25			2.6	3.0	2.2	2.1	
26			2.6	2.8	2.2	2.1	
27			2.5	2.8	2.2	2.1	
28			2.5	2.6	2.2	2.1	
29			2.5	2.5	2.2	2.1	
30			2.5	2.5	2.1	2.2	
31			2.5		2.1	2.2	
Mean			2.6	4.3	2.2	2.1	2.0
Runoff in acre-feet			130	258	138	129	86

TABLE A-30

DAILY MEAN DISCHARGE
FRANKLIN CREEK ABOVE DIVERSIONS

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1			9.9	8.8	6.5	3.1	3.6
2			9.5	8.6	5.8	3.1	3.3
3			9.3	8.0	5.5	3.0	3.2
4			9.0	7.7	5.2	3.0	3.1
5			8.6	7.6	4.7	3.0	3.0
6			8.5	7.7	4.4	3.0	2.8
7			8.3	11	4.3	2.9	2.8
8			7.9	11	4.3	2.7	2.7
9			8.4	25	4.1	2.7	2.6
10			9.3	25	3.6	2.7	2.4
11			10	18	3.6	2.5	2.4
12			12	18	3.6	2.3	2.4
13			13	16	3.6	2.3	2.3
14			13	15	3.6	2.3	2.3
15			13	16	3.6	2.3	2.3
16			12	14	3.6	2.5	2.2
17			12	14	3.5	2.3	2.2
18			11	16	3.5	2.3	2.2
19			11	14	3.5	2.3	2.2
20			10	13	3.5	2.2	2.2
21			9.5	12	3.3	2.2	2.2
22			9.1	11	3.2	2.2	2.1
23			8.6	11	3.2	2.3	2.1
24			8.1	10	3.0	2.3	2.1
25			7.7	9.1	3.0	2.3	2.1
26			6.9	8.2	3.2	2.3	2.1
27			7.1	7.4	3.2	2.3	2.1
28			7.6	6.6	3.2	2.3	
29			9.1	6.6	3.2	2.3	
30		10.2	9.4	6.5	3.2	2.4	
31			9.1		3.1	3.0	
Mean		10.2	9.6	12.1	3.8	2.5	2.5
Runoff in acre-feet		20	591	720	236	156	133

TABLE A-31

DAILY MEAN DISCHARGE
JOSEPH CREEK BELOW COUCH CREEK

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1			17	14	10	2.0	3.4
2			15	14	9.2	1.9	2.5
3			14	14	8.5	1.7	1.4
4			14	14	8.0	1.7	1.4
5			14	14	7.5	1.7	1.2
6			14	14	6.9	1.6	1.1
7			14	41	6.8	1.6	1.1
8			13	46	6.8	1.6	1.1
9			13	100	6.3	1.6	1.1
10			14	200	6.0	1.6	1.0
11			15	71	5.5	1.6	1.0
12			15	62	5.1	1.6	1.0
13			16	50	4.7	1.6	1.0
14			14	43	4.3	1.6	0.9
15			14	46	4.3	1.6	0.9
16			14	43	3.9	1.6	0.9
17			14	42	3.6	1.6	0.9
18			14	66	3.4	1.6	0.9
19			15	47	3.1	1.6	0.9
20			15	41	3.1	1.5	1.0
21			14	35	3.1	1.5	1.0
22			13	26	3.1	1.4	1.0
23			13	23	3.0	1.4	1.1
24			13	21	3.0	1.4	1.1
25			13	19	2.8	1.4	1.1
26			16	15	2.7	1.4	1.0
27			19	12	2.4	1.2	
28			27	11	2.4	1.2	
29		16	26	11	2.2	1.2	
30		17	18	11	2.0	1.4	
31			20		2.0	1.4	
Mean		16.5	15.5	38.9	4.7	1.5	1.2
Runoff in acre-feet		65	952	2,310	289	95	61

TABLE A-32

DAILY MEAN DISCHARGE
NORTH FORK PIT RIVER BELOW THOMS CREEK

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1			90	50	11	6.1	2.5
2			90	50	11	5.9	2.3
3			85	48	8.4	5.9	2.3
4			81	48	7.6	5.9	1.9
5			84	47	7.3	5.5	1.8
6			75	65	7.3	5.5	1.8
7			75	165	6.8	5.4	1.8
8			70	200	6.8	5.2	1.5
9			75	1,000	6.9	5.2	1.5
10			75	1,000	6.5	5.2	1.5
11			73	500	5.9	5.0	1.5
12			82	350	5.9	5.0	1.3
13			73	250	5.5	4.8	1.3
14			72	205	5.5	4.7	1.3
15			68	200	5.2	4.8	1.2
16			68	190	4.9	4.5	
17			65	175	4.6	4.1	
18			60	325	4.6	4.1	
19			58	225	4.2	3.8	
20			57	175	4.3	3.8	
21			49	150	4.3	3.7	
22			43	125	4.2	3.5	
23			40	110	4.2	3.5	
24			34	85	4.1	3.1	
25			30	68	3.9	3.0	
26			30	45	7.8	3.2	
27		62	75	33	7.4	2.8	
28		70	180	25	6.2	2.8	
29		85	165	17	6.2	2.8	
30		70	85	12	6.1	2.5	
31			67		6.1	2.5	
Mean		71.8	73.4	198	6.2	4.3	1.7
Runoff in acre-feet		569	4,510	11,780	378	265	51

TABLE A-33

DAILY MEAN DISCHARGE
THOMS CREEK AT CEDARVILLE-ALTURAS HIGHWAY

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1				23			
2				23			
3				*22			
4				22		1.5	
5				23			
6					8.1		
7				23			
8			7.0	24			
9			10	24			
10			14	25			
11			14	26			
12			13	26		0.8	
13			10	27	5.3		
14			11	27			
15			11	28			
16			11	19			
17			12	17			
18			11	16			
19			12	15		0.5	
20			13	13	4.5		
21			17	12			
22			15	11			
23			17	10			
24			18				
25			20		4.2		
26			20				
27			25				
28			30	10			
29			33				
30			33				
31			25	10	2.3		
Mean			16.8				
Runoff in acre-feet			797				

* Recorder removed after June 3 due to highway construction at site. Subsequent flows are instantaneous measurements at time of visit.

TABLE A-34

DAILY MEAN DISCHARGE
PARKER CREEK AT FOGARTY RANCH

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1			80	53	20	5.4	
2			72	50	20	5.4	
3			72	45	19	5.4	
4			76	45	18	5.4	
5			72	50	18	5.1	
6			68	51	17	5.1	
7			78	90	18	5.1	
8			100	190	16	5.0	
9			109	500	18	4.8	
10			110	500	17	4.8	
11			110	250	15	4.7	
12			110	180	16	4.0	
13			103	145	20	4.7	
14			93	116	15	4.7	
15			86	115	13	4.8	
16			77	110	12	4.8	
17			75	110	12	4.8	
18			75	175	12	5.0	
19			75	114	12	5.0	
20			68	92	12	3.6	
21			60	77	13	3.6	
22			54	95	14	3.6	
23			54	80	10	3.2	
24			54	58	10	3.2	
25			48	46	10	3.2	
26			48	39	13	3.2	
27			72	34	11	2.6	
28			85	34	6.9	2.6	
29		92	70	29	6.5	2.6	
30		82	63	23	5.4	2.4	
31			56		5.4	2.4	
Mean		87	76.5	117	13.7	4.2	
Runoff in acre-feet		345	4,710	6,930	843	258	

TABLE A-35

DAILY MEAN DISCHARGE
SHIELDS CREEK BELOW PEPPERDINE RANCH

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1			8.8	7.1	7.2	2.0	
2			9.0	6.3	5.4	1.9	
3			12	6.0	4.5	1.9	
4			14	6.0	4.7	1.7	
5			12	6.1	5.6	1.7	
6			9.0	10	6.3	1.3	
7			10	19	7.8	1.3	
8			13	27	6.1	1.2	
9			12	43	5.6	1.2	
10			11	100	5.1	0.9	
11			11	30	5.1	0.9	
12			10	21	5.0	0.9	
13			6.5	16	5.1	0.9	
14			6.3	15	4.7	0.8	
15			6.3	15	3.5	0.8	
16			6.0	14	3.5	0.8	
17			6.1	13	3.5	0.7	
18			7.0	28	3.5	0.7	
19			6.9	15	3.5	0.7	
20			7.1	12	3.9	0.6	
21			7.1	10	3.9	0.6	
22			6.9	9.5	3.9	0.5	
23			6.4	9.5	3.8	0.4	
24			6.4	9.0	3.8	0.4	
25			6.0	8.3	3.8	0.4	
26			8.2	8.4	3.4	0.4	
27			11	8.3	3.2	0.4	
28			17	8.0	3.2		
29		9.2	13	7.9	2.2		
30		8.8	9.4	8.3	2.2		
31			8.6		2.2		
Mean		9.0	9.2	16.6	4.4	1.0	
Runoff in acre-feet		36	563	985	268	52	

TABLE A-36

DAILY MEAN DISCHARGE
PARKER CREEK ABOVE HIGHWAY 395 NEAR ALTURAS

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16			No Data Available for 1964 Irrigation Season				
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
Mean							
Runoff in acre-feet							

TABLE A-37

DAILY MEAN DISCHARGE
NORTH FORK PIT RIVER NEAR ALTURAS

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	22	227	81	73	42	2.1	1.5
2	21	143	141	32	54	2.1	1.5
3	20	98	138	21	48	2.0	1.6
4	21	91	136	29	43	2.1	1.3
5	25	84	155	43	42	2.0	1.3
6	22	70	113	44	34	2.0	1.5
7	18	68	117	136	30	2.1	1.6
8	18	75	100	235	30	2.1	1.6
9	22	87	117	1,010	29	2.1	1.6
10	20	83	119	1,770	25	2.0	1.5
11	22	83	107	909	18	2.0	1.5
12	20	73	65	573	9.7	1.8	1.3
13	19	78	40	432	2.0	1.5	1.3
14	23	111	50	360	2.6	0.9	1.3
15	36	162	36	328	3.3	1.1	1.3
16	50	175	36	308	10	1.2	1.3
17	98	121	35	268	13	1.2	1.3
18	160	83	35	583	10	1.3	1.2
19	160	75	17	404	5.7	1.5	1.2
20	160	67	3.3	300	4.5	1.3	1.2
21	132	67	15	242	4.2	1.3	1.2
22	94	67	20	198	3.9	1.3	1.2
23	75	66	18	160	3.6	1.3	1.2
24	70	66	16	111	3.0	1.3	1.2
25	94	68	13	109	2.8	1.3	1.3
26	168	61	12	102	2.6	1.1	1.3
27	259	40	59	91	2.6	1.0	1.3
28	307	29	180	81	2.6	1.5	1.3
29	303	55	209	75	2.6	1.3	1.3
30	276	52	136	44	2.8	1.2	1.3
31	209		105		2.6	1.2	
Mean	95.0	87.5	78.2	302	15.8	1.6	1.4
Runoff in acre-feet	5,840	5,210	4,810	17,990	970	96	80

TABLE A-38

DAILY MEAN DISCHARGE
RALPH EASTLICK DITCH

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1				7.1	4.6		
2				7.1	4.6		
3				7.3	4.7		
4				7.4	4.8		
5				7.4	4.7		
6				7.4	4.7		
7				7.4	4.8		
8				7.1	4.8		
9				6.7	4.7		
10				6.7	4.5		
11				6.7	4.2		
12				6.7	4.1		
13				6.7	4.2		
14				6.7	4.2		
15				6.7	4.5		
16				6.0	4.4		
17				5.9	4.1		
18				5.8	3.9		
19				5.8	3.9		
20				5.7	3.9		
21				5.6	3.9		
22				5.6	3.8		
23				5.2	3.8		
24				5.0	3.7		
25				3.8	3.6		
26				3.6	3.5		
27			6.7	4.9	3.4		
28			6.7	4.8	*2.5		
29			6.7	4.8			
30			6.7	4.7			
31			6.7				
Mean			6.7	6.1	4.2		
Runoff in acre-feet			66	362	231		

* Ditch closed.

TABLE A-39

DAILY MEAN DISCHARGE
SHACKLEFORD DITCH

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1					14	13	9.6
2					13	12	8.9
3					13	11	8.4
4					13	10	8.7
5					13	9.1	7.8
6					13	9.1	7.4
7					13	8.7	7.4
8					13	10	7.6
9					13	12	8.0
10					13	12	7.8
11					13	12	7.6
12					12	11	7.6
13				*3.8	11	11	7.6
14				3.8	11	11	7.4
15				3.8	11	11	7.4
16				5.0	11	10	7.4
17				8.7	11	10	
18				9.8	11	10	
19				9.8	11	9.8	
20				9.8	11	9.8	
21				9.8	11	9.6	
22				9.8	11	9.1	
23				9.8	12	8.9	
24				12	11	8.9	
25				14	11	8.7	
26				14	10	8.7	
27				14	10	8.7	
28				14	10	8.7	
29				13	12	8.7	
30				13	12	8.9	
31					11	9.1	
Mean				9.9	11.8	10.0	7.9
Runoff in acre-feet				353	724	616	254

* Ditch opened.

TABLE A-40

DAILY MEAN DISCHARGE
HOWARD JONES DITCH

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1				3.6	2.8	0.8	
2				3.4	2.7	0.7	
3				3.5	2.5	0.6	
4				3.6	2.6	*0.5	
5				4.0	2.5		
6				4.5	2.2		
7				4.2	2.3		
8				3.7	2.0		
9				2.9	1.8		
10				2.7	1.6		
11				2.6	4.2		
12				2.8	4.0		
13				2.8	4.1		
14				2.9	4.1		
15				2.6	4.7		
16				2.0	4.2		
17				1.5	3.9		
18				1.2	3.5		
19				1.1	3.2		
20				1.0	2.8		
21				0.9	2.5		
22				0.9	1.4		
23				0.9	0.6		
24				1.2	0.6		
25				2.1	0.6		
26				3.9	0.6		
27			2.9	3.4	0.6		
28			2.7	3.1	0.6		
29			2.9	3.0	0.8		
30			3.0	2.9	0.6		
31			3.5		0.6		
Mean			3.0	2.6	2.3	0.6	
Runoff in acre-feet			30	157	141	5	

* Ditch closed.

TABLE A-41

DAILY MEAN DISCHARGE
CAMP DITCH

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1				7.0	8.0	1.8	2.2
2				6.8	7.5	1.8	2.1
3				6.9	7.0	1.7	2.0
4				7.0	7.1	1.6	1.9
5				7.3	6.5	2.5	1.7
6				7.4	6.0	2.5	1.7
7				5.6	6.2	2.4	1.6
8				5.4	5.4	2.3	1.6
9				5.4	5.0	2.9	1.6
10				5.2	4.5	2.8	1.6
11				5.0	2.3	2.8	1.6
12				4.9	2.0	2.6	1.6
13				4.8	2.1	2.5	1.6
14				4.6	2.0	2.4	1.6
15				4.4	6.2	2.3	1.6
16				4.2	4.9	2.2	1.6
17				4.2	4.1	2.1	
18				4.1	3.4	1.9	
19				4.0	3.0	2.3	
20				4.4	3.2	2.2	
21				7.5	2.9	2.1	
22				7.4	2.4	2.0	
23				7.6	1.6	2.0	
24				8.0	1.6	2.0	
25				7.9	1.6	2.0	
26				8.0	1.7	1.9	
27			6.8	8.7	1.7	1.8	
28			6.8	8.5	1.7	1.8	
29			6.8	8.5	1.9	1.8	
30			6.8	8.5	1.8	1.8	
31			6.8		1.8	2.0	
Mean			6.8	6.3	3.8	2.2	1.7
Runoff in acre-feet			67	375	232	132	55

TABLE A-42

DAILY MEAN DISCHARGE
EDSON-FOULKE YREKA DITCH AT SHASTA RIVER

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1			25	27	16	5.6	2.2
2			23	28	16	5.4	2.4
3			24	29	16	4.7	2.2
4			22	31	20	4.3	2.0
5			20	33	20	4.5	2.0
6			23	35	16	4.3	1.8
7			19	36	13	4.3	1.8
8			18	34	13	4.3	1.7
9			19	31	13	4.3	1.7
10		25	22	28	11	4.1	1.7
11		26	23	27	11	4.0	1.7
12		25	25	24	10	4.0	1.7
13		25	27	23	9.9	4.0	1.7
14		25	29	23	9.7	4.3	1.7
15		25	32	24	9.5	4.1	1.7
16		25	32	24	9.4	3.8	1.7
17		20	30	23	9.1	3.8	1.7
18		15	28	21	8.4	3.4	
19		15	28	19	8.4	3.0	
20		14	31	18	8.0	2.6	
21		15	32	18	7.7	2.6	
22		14	31	17	7.7	2.5	
23		13	30	19	7.3	2.4	
24		11	31	25	7.3	2.2	
25		13	31	25	7.0	2.0	
26		17	31	23	6.7	1.8	
27		20	34	23	6.3	1.7	
28		22	31	20	5.8	1.7	
29		25	26	18	5.4	1.7	
30		27	25	17	5.0	1.7	
31			27		5.2	1.7	
Mean		19.9	26.7	24.8	10.3	3.4	1.8
Runoff in acre-feet		827	1,640	1,470	632	208	62

TABLE A-43

DAILY MEAN DISCHARGE
SHASTA RIVER AT EDGEWOOD

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	49	37	23	48	15	4.4	9.0
2	47	34	26	49	15	4.6	8.2
3	46	32	29	50	14	4.4	8.0
4	47	30	31	51	14	4.5	8.3
5	47	30	29	53	14	4.2	6.3
6	47	28	32	81	14	4.0	7.5
7	45	27	29	103	12	4.0	8.7
8	43	26	27	132	11	3.8	8.7
9	45	26	26	98	11	3.9	8.3
10	43	24	26	86	10	4.0	8.0
11	47	23	26	81	9.8	3.6	7.7
12	47	21	24	71	9.5	3.1	8.1
13	46	20	26	68	9.1	2.7	8.6
14	47	19	25	64	8.6	3.6	9.3
15	47	20	25	62	8.2	4.0	9.2
16	45	20	26	58	7.8	5.4	8.6
17	40	22	30	56	7.8	5.5	7.5
18	39	22	30	51	7.6	3.7	7.7
19	35	21	31	48	8.2	4.7	7.7
20	33	20	34	44	7.8	5.0	8.1
21	34	20	37	38	7.6	3.9	7.9
22	35	20	36	36	7.2	4.7	7.0
23	34	21	36	30	6.8	5.5	6.6
24	36	20	37	23	6.4	4.3	6.5
25	34	20	40	20	5.7	4.6	5.8
26	32	20	42	20	5.5	4.8	4.6
27	32	21	59	21	5.6	5.7	5.5
28	31	20	66	20	5.1	5.5	6.3
29	31	21	57	18	5.0	5.3	6.3
30	31	22	51	17	4.6	7.2	7.3
31	32		48		4.6	8.6	
Mean	40.2	23.6	34.3	53.2	9.0	4.6	7.6
Runoff in acre-feet	2470	1400	2110	3170	552	284	451

TABLE A-44

DAILY MEAN DISCHARGE
PARKS CREEK ABOVE EDSON-FOULKE YREKA DITCH

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1			24	24	5.6	6.4	5.8
2			22	24	5.4	6.4	5.8
3		19	21	23	5.6	6.0	5.4
4		20	20	22	5.8	5.8	5.0
5		20	19	21	7.8	5.6	4.9
6		19	19	32	5.0	5.4	4.9
7		19	18	32	5.0	5.4	4.9
8		19	18	33	5.0	5.4	4.8
9		22	20	37	5.0	3.5	4.8
10		21	23	37	4.4	1.5	4.8
11		22	25	29	3.2	1.3	4.4
12		23	30	27	3.1	1.3	4.4
13		24	31	25	3.5	1.3	4.4
14		25	32	25	7.5	1.3	4.0
15		30	31	23	7.8	1.3	1.5
16		29	30	21	7.0	1.3	1.5
17		26	29	19	6.6	1.3	1.3
18		25	28	18	6.4	1.3	
19		23	28	17	3.5	1.3	
20		23	30	16	2.5	1.3	
21		22	28	15	2.4	1.2	
22		22	27	15	2.0	1.0	
23		21	27	15	2.0	1.0	
24		18	26	14	1.8	1.0	
25		18	26	13	1.7	1.0	
26		19	26	12	1.6	1.0	
27		21	27	12	1.6	1.0	
28		26	28	12	2.0	1.0	
29		28	26	11	3.7	1.0	
30		27	25	6.0	6.4	2.0	
31			25		6.4	4.8	
Mean		22.5	25.5	21.0	4.4	2.6	4.3
Runoff in acre-feet		1,250	1,560	1,250	272	159	144

TABLE A-45

DAILY MEAN DISCHARGE
EDSON-FOULKE YREKA DITCH NORTH OF PARKS CREEK

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1			54	43	12	5.4	6.5
2			49	43	14	5.2	6.5
3		49	48	40	13	4.8	5.9
4		48	44	44	20	4.5	5.5
5		49	41	50	20	4.3	5.4
6		45	42	60	15	4.1	5.4
7		44	37	66	15	3.7	5.2
8		46	36	66	14	3.7	5.2
9		52	41	67	14	4.0	3.7
10		42	49	66	12	4.0	2.0
11		40	55	63	11	4.1	2.1
12		41	60	57	10	4.3	2.0
13		38	64	53	10	4.8	2.0
14		42	61	52	8.5	4.8	2.0
15		46	64	50	10	4.5	2.0
16		50	64	46	10	4.0	2.0
17		42	63	46	10	3.7	2.0
18		33	55	42	9.2	3.7	
19		32	51	39	9.0	3.1	
20		31	55	35	8.0	3.1	
21		30	53	33	7.2	2.6	
22		30	50	30	7.0	2.6	
23		26	49	31	5.9	2.5	
24		28	50	36	6.0	2.5	
25		28	50	34	5.5	2.5	
26		32	49	30	5.4	2.3	
27		36	51	29	5.2	2.3	
28		45	53	26	4.8	2.5	
29		60	44	20	4.8	2.5	
30		60	41	15	4.8	3.7	
31			42		5.0	5.4	
Mean		40.9	50.5	43.7	9.9	3.7	3.8
Runoff in acre-feet		2,270	3,100	2,600	608	228	130

DAILY MEAN STORAGE - DWINNELL RESERVOIR

October 1, 1963 through September 30, 1964 (In acre-feet)

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15,300	14,920	19,690	22,200	26,330	27,760	27,980	23,930	18,980	16,800	10,850	5,540
2	15,200	14,940	19,780	22,280	26,440	27,800	27,980	23,750	18,810	16,620	10,700	5,460
3	15,080	14,970	19,880	22,380	26,540	27,800	27,960	23,570	18,690	16,650	10,640	5,370
4	14,920	15,000	19,960	22,450	26,600	27,800	27,960	23,430	18,560	16,280	10,580	5,260
5	14,790	15,080	20,030	22,520	26,680	27,830	27,950	23,280	18,390	16,100	10,540	5,140
6	14,610	15,380	20,140	22,580	26,750	27,860	27,940	23,170	18,320	15,930	10,370	5,040
7	14,500	15,560	20,230	22,660	26,810	27,880	27,900	23,000	18,380	15,780	10,190	4,940
8	14,500	15,560	20,320	22,700	26,870	27,880	27,880	22,870	18,560	15,570	10,000	4,830
9	14,380	15,580	20,420	22,790	26,940	27,900	27,840	22,720	18,810	15,310	9,820	4,750
10	14,320	15,780	20,510	22,830	27,020	27,940	27,800	22,560	18,910	15,120	9,640	4,640
11	14,320	16,100	20,550	22,900	27,050	27,960	27,740	22,370	18,980	14,900	9,450	4,540
12	14,380	16,200	20,620	22,970	27,110	28,000	27,710	22,200	19,050	14,700	9,220	4,430
13	14,420	16,340	20,690	23,000	27,170	28,010	27,620	22,000	19,080	14,490	9,010	4,320
14	14,470	16,620	20,760	23,070	27,200	28,060	27,500	21,820	19,060	14,300	8,820	4,210
15	14,500	17,300	20,830	23,120	27,280	28,070	27,360	21,610	19,010	14,110	8,630	4,100
16	14,440	17,600	20,880	23,180	27,340	28,100	27,140	21,460	18,980	13,920	8,440	4,000
17	14,460	17,780	20,950	23,260	27,380	28,120	26,940	21,250	18,920	13,730	8,260	3,880
18	14,480	17,940	21,020	23,320	27,410	28,120	26,750	21,050	18,840	13,510	8,060	3,780
19	14,490	18,140	21,050	23,400	27,460	28,120	26,520	20,910	18,770	13,320	7,840	3,700
20	14,520	18,350	21,110	24,200	27,500	28,100	26,300	20,690	18,690	13,110	7,640	3,630
21	14,540	18,490	21,160	24,980	27,530	28,100	26,080	20,510	18,600	12,940	7,440	3,550
22	14,590	18,630	21,220	25,160	27,580	28,080	25,880	20,340	18,500	12,740	7,250	3,480
23	14,620	18,770	21,290	25,310	27,600	28,070	25,640	20,170	18,390	12,510	7,050	3,400
24	14,680	18,950	21,360	25,480	27,640	28,100	25,420	20,000	18,210	12,320	6,840	3,340
25	14,720	19,060	21,390	25,600	27,650	28,100	25,200	19,820	18,000	12,100	6,640	3,260
26	14,740	19,190	21,440	25,700	27,650	28,080	25,000	19,620	17,800	11,920	6,440	3,200
27	14,780	19,300	21,530	25,820	27,680	28,070	24,770	19,480	17,610	11,730	6,240	3,120
28	14,800	19,400	21,710	25,940	27,710	28,060	24,580	19,410	17,420	11,550	6,080	3,020
29	14,840	19,510	21,890	26,000	27,730	28,020	24,360	19,330	17,220	11,350	5,890	2,920
30	14,860	19,610	22,030	26,100		28,000	24,140	19,220	17,020	11,200	5,750	2,850
31	14,900		22,120	26,200		27,980		19,120		11,000	5,640	

TABLE A-47

DAILY MEAN RELEASES
DWINNELL RESERVOIR

April through October 1964
(In second-feet)

Day	April	May	June	July	August	September	October
1		76	66	70	84	50	33
2		75	69	66	48	50	30
3		72	65	66	16	50	28
4		68	61	63	16	52	27
5		64	61	63	17	53	27
6		62	32	63	53	52	22
7		62	18	66	69	51	**9
8	*1.5	59	15	71	71	50	
9	5.0	60	14	72	73	49	
10	5.0	66	13	74	76	51	
11	5.0	72	14	75	78	52	
12	5.0	72	14	77	82	56	
13	18	73	15	80	86	55	
14	38	73	15	80	86	53	
15	53	73	21	78	86	56	
16	64	72	30	78	86	54	
17	64	71	37	79	86	46	
18	70	68	44	81	86	44	
19	78	66	43	81	87	40	
20	81	68	37	80	87	35	
21	79	68	38	75	87	36	
22	78	68	42	80	87	35	
23	74	68	50	82	86	35	
24	74	67	55	82	85	35	
25	74	68	61	82	84	34	
26	76	70	66	83	84	34	
27	76	69	66	86	83	37	
28	77	69	67	85	78	36	
29	77	67	67	85	77	35	
30	78	65	67	85	64	36	
31		65		85	56		
Mean	54.4	68.3	42.1	76.5	72.4	45.1	25.1
Releases in acre-feet	2,480	4,200	2,510	4,710	4,450	2,680	349

* Reservoir opened.
** Reservoir closed.

TABLE A-48

DAILY MEAN DISCHARGE
BIG SPRINGS IRRIGATION DISTRICT FLUME

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1			12	28	25	28	24
2			13	28	25	28	30
3			23	28	27	28	29
4			22	28	29	28	27
5			22	29	29	28	29
6			0	28	30	28	30
7			0	18	30	28	30
8			0	0	29	29	32
9			0	0	29	29	31
10			0	0	29	29	25
11			18	0	29	29	25
12			22	0	27	30	27
13			23	0	22	27	0
14		22	23	0	22	27	0
15		22	24	27	27	27	12
16		22	24	29	27	29	30
17		24	24	29	28	31	
18		25	24	29	31	31	
19		25	24	29	31	31	
20		27	24	29	31	31	
21		27	24	29	31	31	
22		28	24	27	31	32	
23		27	24	29	31	30	
24		24	24	24	31	30	
25		24	25	17	31	30	
26		24	26	17	31	30	
27		21	26	21	31	30	
28		28	27	29	30	32	
29		28	27	24	15	33	
30		27	28	24	16	32	
31			28		28	30	
Mean		25.0	19.5	20.0	27.8	29.5	23.8
Runoff in acre-feet		843	1,200	1,190	1,710	1,820	756

TABLE A-49

DAILY MEAN DISCHARGE
GRENADA IRRIGATION DISTRICT PUMPING PLANT

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1			34	34	34	34	34
2			34	34	34	34	34
3			34	34	34	34	34
4			34	34	34	34	34
5			34	29	34	17	34
6		*22	34	24	34	0	34
7		34	34	24	34	0	34
8		34	34	24	34	0	34
9		34	34	20	34	0	34
10		34	34	0	28	28	34
11		34	34	0	6	34	34
12		34	34	0	0	29	34
13		34	30	0	0	24	34
14		34	0	0	0	24	30
15		34	0	0	0	24	18
16		34	0	0	25	24	18
17		34	0	0	34	24	18
18		34	0	0	34	29	**15
19		34	0	0	34	34	
20		34	5	0	34	34	
21		34	34	25	34	34	
22		34	34	34	34	34	
23		34	34	34	34	20	
24		34	34	34	34	24	
25		34	34	34	34	24	
26		34	34	34	34	24	
27		34	34	34	30	24	
28		34	34	34	24	24	
29		34	34	34	24	24	
30		34	34	34	24	24	
31			34		29	29	
Mean		33.5	26.4	19.6	27.0	24.1	30.1
Runoff in acre-feet		1,660	1,620	1,170	1,660	1,480	1,070

* Plant opened.
** Plant closed.

TABLE A-50

DAILY MEAN DISCHARGE
SHASTA RIVER WATER ASSOCIATION PUMPING PLANT

March through October 1964
(In second-feet)

Day	March	April	May	June	July	August	September	October
1		47	47	39	43	43	43	16
2		47	47	47	43	43	43	16
3		47	44	47	43	43	43	16
4		47	47	47	43	43	43	16
5		47	47	45	43	43	43	16
6		47	47	47	43	43	43	47
7		47	47	47	43	43	43	47
8		47	47	31	43	43	43	47
9		47	47	0	43	43	47	47
10		47	31	0	43	43	47	47
11		47	31	0	35	43	47	47
12		47	31	0	41	43	47	47
13		47	45	47	35	43	47	27
14		47	47	47	32	43	47	16
15		47	47	47	16	43	47	13
16		47	47	47	32	43	47	13
17		47	47	47	47	43	47	13
18		47	47	47	43	43	47	** 9
19		47	47	47	36	43	43	
20		47	47	47	43	43	47	
21		47	47	47	43	43	47	
22		47	47	47	43	43	47	
23		47	47	47	43	36	47	
24		47	47	47	43	36	47	
25		47	47	47	43	43	47	
26		49	47	47	43	43	47	
27		47	47	47	43	43	42	
28		47	47	47	43	43	31	
29		47	28	47	43	43	31	
30	*43	47	16	47	43	43	47	
31	47		47		43	43		
Mean	45.0	47.1	43.7	39.9	40.7	42.5	44.7	27.8
Runoff in acre-feet	179	2,800	2,690	2,370	2,510	2,620	2,660	992

* Plant opened
** Plant closed

TABLE A-51

DAILY MEAN DISCHARGE
LITTLE SHASTA RIVER NEAR MONTAGUE

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	13	70	40	38	17	8.0	5.0
2	12	42	36	38	16	7.2	4.7
3	12	33	34	37	15	6.7	4.4
4	36	36	31	40	16	6.5	4.0
5	32	38	30	37	16	6.2	3.8
6	20	32	29	69	15	6.2	4.2
7	17	37	29	106	14	6.1	3.9
8	16	50	29	83	13	5.3	4.1
9	17	52	35	89	13	5.4	4.2
10	15	47	40	64	13	5.6	3.8
11	14	54	42	52	13	5.4	3.7
12	12	51	46	46	12	5.6	3.6
13	12	51	46	42	12	5.4	3.3
14	12	57	44	38	12	5.0	3.2
15	17	65	44	39	12	5.0	3.5
16	22	62	42	37	11	4.9	3.5
17	32	48	43	39	9.7	5.0	3.6
18	34	42	43	35	9.7	4.6	3.7
19	30	40	44	32	9.5	4.5	3.6
20	27	40	44	30	9.3	4.4	3.8
21	22	43	43	28	9.0	4.3	3.6
22	19	41	42	26	8.1	4.5	3.3
23	17	34	40	25	8.3	4.4	3.3
24	16	30	40	24	7.9	4.5	3.6
25	15	26	40	22	7.8	4.5	3.4
26	16	29	39	20	7.8	4.5	3.0
27	20	35	46	20	7.0	4.5	3.2
28	33	46	51	19	7.3	4.5	3.1
29	41	52	43	17	9.4	4.5	3.0
30	44	43	41	17	9.5	4.5	3.0
31	44		39		7.4	4.5	
Mean	22.2	44.2	39.8	40.3	11.2	5.2	3.7
Runoff in acre-feet	1,370	2,630	2,450	2,400	690	322	218

TABLE A-52

DAILY MEAN DISCHARGE
SHASTA RIVER AT MONTAGUE-GRENADA HIGHWAY BRIDGE

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1			53	56	20	40	36
2			58	52	29	30	35
3			62	46	29	29	35
4			67	52	29	29	34
5			71	48	31	31	38
6			81	75	31	44	37
7			83	140	35	60	36
8			75	150	33	56	29
9			74	220	29	56	31
10			75	250	29	45	24
11			80	200	40	27	27
12			81	150	48	22	39
13			56	120	56	15	48
14			65	100	65	24	71
15			68	98	81	20	81
16			64	80	65	17	75
17			69	81	41	14	
18			73	74	28	16	
19			72	71	33	24	
20			65	67	31	27	
21			52	59	25	24	
22			39	40	21	27	
23			42	45	29	20	
24			45	44	24	20	
25			49	39	20	31	
26			39	37	16	31	
27			46	39	19	25	
28		48	71	27	18	29	
29		48	88	29	32	32	
30		48	83	25	42	29	
31			57		48	28	
Mean		48.0	64.6	83.8	34.7	29.7	42.2
Runoff in acre-feet		286	3,970	4,990	2,140	1,830	1,340

TABLE A-53

DAILY MEAN DISCHARGE
SHASTA RIVER NEAR YREKA

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	236	196	91	74	26	34	20
2	247	200	107	71	26	25	35
3	236	203	129	56	30	18	24
4	236	186	141	69	30	17	29
5	247	183	138	63	33	12	29
6	243	186	144	112	33	17	34
7	240	138	151	243	30	42	33
8	225	138	141	251	33	44	30
9	221	138	129	362	33	49	23
10	221	121	121	362	26	43	25
11	228	112	124	306	21	29	19
12	243	124	126	247	40	16	20
13	236	118	86	193	68	12	36
14	225	110	81	163	60	11	49
15	221	101	104	160	86	16	75
16	221	104	96	135	84	16	84
17	225	118	110	121	42	16	62
18	221	107	110	115	26	12	48
19	214	94	115	115	24	12	62
20	210	88	104	110	27	14	68
21	218	78	86	94	24	16	82
22	232	71	49	54	15	13	86
23	228	81	43	60	10	16	71
24	225	99	51	58	16	7.5	69
25	221	83	58	44	17	8.0	88
26	207	71	58	39	12	15	82
27	203	76	54	40	13	15	71
28	200	78	91	34	14	13	88
29	218	76	126	26	10	13	93
30	196	74	121	27	29	21	98
31	183		74		34	18	
Mean	223	118	102	127	31.4	19.7	54.4
Runoff in acre-feet	13,740	7,050	6,270	7,550	1,930	1,210	3,240

TABLE A-54

DAILY MEAN DISCHARGE
SOUTH FORK PIT RIVER NEAR LIKELY

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	30	103	132	191	112	146	87
2	31	53	109	174	102	143	86
3	33	35	114	162	94	141	81
4	31	40	126	162	89	139	81
5	32	37	132	174	86	136	78
6	32	31	109	185	83	152	77
7	32	38	95	349	73	181	80
8	35	39	93	361	61	177	54
9	31	36	109	511	77	176	41
10	30	34	137	736	102	176	41
11	30	30	176	572	93	176	49
12	31	25	209	474	92	173	58
13	31	39	248	418	99	176	59
14	32	79	280	376	90	172	46
15	35	106	301	355	92	170	14
16	35	116	325	334	103	168	34
17	42	105	328	319	118	168	49
18	53	103	322	358	134	176	48
19	54	100	313	343	130	189	48
20	58	123	313	292	129	206	48
21	40	133	298	258	79	221	48
22	21	132	290	226	105	202	39
23	15	127	265	198	163	185	36
24	16	114	240	181	157	139	34
25	21	105	220	155	159	102	32
26	35	95	218	154	159	102	34
27	58	93	278	145	159	83	35
28	95	106	313	136	159	71	35
29	130	123	310	127	159	73	34
30	130	132	268	120	155	72	31
31	97		218		152	74	
Mean	44.4	81.1	222	285	115	150	50.6
Runoff in acre-feet	2,730	4,820	13,660	16,950	7,070	9,250	3,010

-2290

Apr 15- 3400 13,660 14,660

Σ = 51,050 AF.
+ 15,429 + AP
66

Cost incl WW Service = 60.33
Pine + Pittsburgh
Cost/AF ≤ .10

TABLE A-55

DAILY MEAN DISCHARGE
WEST VALLEY CREEK BELOW WEST VALLEY RESERVOIR

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1			0.2	27	15	123	64
2			0.2	24	13	123	62
3			0.2	23	12	123	62
4			0.2	22	11	123	62
5			0.2	21	11	122	62
6			0.2	22	11	143	62
7			0.1	38	11	162	62
8			*0.2	45	12	162	62
9			0.9	85	17	162	29
10			2.2	202	**49	162	28
11			6.1	169	49	162	41
12			10	132	48	161	50
13			14	103	48	160	50
14		19	20	83	48	158	25
15		30	24	68	50	156	0.2
16		30	26	58	54	156	13
17		30	26	54	66	154	33
18		30	27	55	92	164	34
19		30	27	53	92	183	34
20		43	26	49	92	210	34
21		47	25	43	42	224	34
22		35	24	40	72	199	25
23		35	24	36	138	180	18
24		28	23	31	138	132	19
25		21	21	29	138	92	19
26		21	22	26	136	92	19
27		8.5	27	20	136	80	19
28		1.0	30	19	135	65	19
29		0.8	30	18	135	65	19
30		0.6	30	15	127	65	19
31			28		123	64	
Mean		24.1	16.0	53.7	68.4	140	36.0
Runoff in acre-feet		813	981	3,190	4,210	8,580	2,140

* Reservoir began to spill.
** Reservoir ceased spilling.

TABLE A-56

DAILY MEAN DISCHARGE
PAYNE DITCH (DIVERTED FROM MILL CREEK TO FITZHUGH CREEK)

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1					*2.8	2.7	1.8
2					2.8	2.6	1.8
3					2.8	2.6	1.8
4					2.8	2.6	1.8
5					2.8	2.6	1.8
6					2.8	2.6	1.8
7					2.8	2.6	1.8
8					2.8	2.5	1.8
9					2.8	2.4	1.8
10					2.8	2.4	1.8
11					2.8	2.3	1.8
12					2.8	2.3	1.8
13					3.1	2.3	1.8
14					3.2	2.2	1.8
15					3.2	2.2	1.8
16					3.1	2.1	1.8
17					3.1	2.1	1.8
18					3.0	2.0	1.8
19					2.9	2.0	1.8
20					2.9	2.0	1.8
21					2.9	1.9	1.8
22					2.9	1.9	1.8
23					2.9	1.9	1.8
24					2.8	1.9	1.8
25					2.8	1.9	1.8
26					2.8	1.9	1.8
27					2.8	1.9	1.8
28					2.8	1.9	**1.8
29					2.8	1.9	
30					2.8	1.9	
31					2.7	1.9	
Mean					2.9	2.2	1.8
Runoff in acre-feet					177	135	100

* Ditch opened.
** Ditch closed.

TABLE A-57

DAILY MEAN DISCHARGE
BOWMAN DITCH ON NORTH FORK FITZHUGH CREEK

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1					*3.2	2.9	3.1
2					3.2	2.9	3.0
3					3.2	2.9	2.9
4					3.2	2.8	2.8
5					3.2	2.8	2.8
6					3.2	2.8	2.7
7					3.2	2.7	2.7
8					3.2	2.7	2.7
9					3.1	2.7	2.7
10					3.1	2.7	2.7
11					2.9	2.7	2.7
12					2.9	2.7	2.7
13					3.3	2.6	2.7
14					3.3	2.6	2.7
15					3.3	2.6	2.7
16					3.3	2.6	2.7
17					3.3	2.7	2.6
18					3.3	2.5	2.6
19					3.2	2.7	2.6
20					3.2	2.7	2.6
21					3.2	2.7	2.6
22					3.2	2.7	2.6
23					3.1	2.7	2.6
24					3.0	2.7	2.6
25					3.0	2.8	2.6
26					3.0	2.8	2.6
27					3.0	2.8	2.6
28					3.0	2.8	**2.6
29					3.0	2.8	
30					3.0	3.0	
31					2.9	3.1	
Mean					3.1	2.7	2.7
Runoff in acre-feet					193	169	150

* Ditch opened.
** Ditch closed.

TABLE A-58

DAILY MEAN DISCHARGE
NORTH FORK FITZHUGH CREEK BELOW BOWMAN DITCH

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1					2.3	1.8	1.2
2					2.3	1.8	1.1
3					2.3	1.8	1.1
4					2.3	1.8	1.1
5					2.3	1.8	1.1
6					2.3	1.8	1.0
7					2.3	1.7	1.0
8					2.2	1.7	1.0
9					2.1	1.6	1.0
10					2.0	1.6	1.0
11					1.9	1.6	1.0
12					2.1	1.6	1.1
13					2.2	1.6	1.1
14					2.1	1.6	1.1
15					2.1	1.6	1.2
16					2.1	1.6	1.2
17					2.1	1.5	1.2
18					2.0	1.4	1.2
19					1.9	1.8	1.2
20					1.9	1.2	1.2
21					1.9	1.2	1.2
22					1.9	1.2	1.2
23					1.8	1.2	1.2
24					1.8	1.1	1.2
25					1.8	1.1	1.2
26					1.8	1.1	1.2
27					1.8	1.1	1.2
28					1.8	1.1	1.2
29					1.8	1.1	1.2
30					1.8	1.1	1.2
31					1.8	1.2	
Mean					2.0	1.5	1.1
Runoff in acre-feet					125	90	68

TABLE A-59

DAILY MEAN DISCHARGE
FITZHUGH CREEK BELOW DIVERSION NO. 137

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1			5.4	21	11	2.9	3.2
2			5.6	16	8.8	1.8	3.4
3			19	16	8.8	1.8	3.5
4			54	16	8.2	1.8	1.8
5			58	17	8.2	1.7	1.8
6			10	16	7.2	1.6	1.8
7			15	80	6.0	1.6	1.8
8			9.0	82	5.6	1.6	1.8
9			6.6	410	5.6	1.4	1.8
10			6.2	425	5.6	1.3	1.8
11			10	82	4.4	1.3	1.8
12			40	50	3.6	1.3	1.8
13			41	46	5.8	1.2	1.8
14			39	39	4.4	1.2	1.9
15			34	35	4.4	1.2	1.9
16			30	34	6.0	1.2	1.8
17			28	34	5.6	1.2	1.6
18			26	54	4.8	1.2	1.8
19			23	50	4.0	1.1	1.8
20			21	34	3.6	1.1	1.9
21			19	32	3.6	1.3	2.0
22			18	24	3.6	1.3	1.9
23			16	20	3.4	1.2	1.9
24			16	19	3.2	1.2	1.9
25			15	15	3.4	1.4	1.9
26			14	13	2.8	1.4	1.9
27		3.7	27	13	2.6	1.4	1.9
28		4.4	40	12	2.9	1.6	1.9
29		4.8	52	11	4.0	1.5	1.9
30		6.2	33	11	3.5	1.6	1.9
31			25		2.9	1.9	
Mean		4.8	24.4	57.6	5.1	1.5	2.0
Runoff in acre-feet		38	1,500	3,430	312	90	119

TABLE A-60

DAILY MEAN DISCHARGE
PINE CREEK NEAR ALTURAS

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	23	16	25	50	45	17	14
2	23	15	24	47	44	16	13
3	23	14	32	45	42	16	12
4	22	14	40	46	41	15	12
5	18	14	41	45	39	15	12
6	16	13	26	47	37	15	12
7	15	13	25	74	35	15	11
8	17	14	25	64	34	15	11
9	13	15	28	191	34	14	11
10	14	15	31	163	31	14	11
11	13	15	34	91	30	14	11
12	12	15	37	78	30	14	11
13	13	16	39	69	31	14	11
14	16	18	41	63	27	14	11
15	26	19	42	63	27	14	11
16	26	20	45	64	26	14	11
17	27	19	47	66	25	14	10
18	23	18	53	104	25	13	11
19	17	18	62	79	24	13	11
20	16	18	64	66	23	13	11
21	15	19	62	60	23	13	11
22	16	19	63	57	20	13	10
23	16	19	64	54	15	13	10
24	14	18	63	52	20	12	10
25	14	18	63	50	20	12	10
26	13	18	62	50	20	12	10
27	14	18	65	51	19	13	11
28	15	19	71	51	19	12	10
29	17	21	71	50	18	12	11
30	18	24	58	47	18	12	10
31	18		53		17	13	
Mean	17.5	17.1	47.0	67.9	27.7	13.7	11.0
Runoff in acre-feet	1,080	1,020	2,890	4,040	1,700	845	657

TABLE A-61

DAILY MEAN DISCHARGE
BIDWELL CREEK NEAR FORT BIDWELL

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	6.8	41	50	57	36	9.6	13
2	7.0	34	46	57	35	8.7	7.2
3	7.9	30	42	57	33	7.9	6.0
4	11	29	40	57	32	8.7	5.5
5	17	27	38	56	32	8.7	5.0
6	17	24	36	62	31	7.9	5.0
7	18	24	35	67	30	7.9	4.1
8	18	28	38	68	29	7.2	4.1
9	15	34	42	71	29	7.2	5.0
10	13	34	49	84	28	6.6	5.0
11	12	35	53	87	27	6.6	4.1
12	13	35	57	80	27	6.0	4.1
13	14	38	59	77	27	6.0	4.1
14	13	42	59	73	25	6.0	4.1
15	12	49	60	75	24	5.5	4.1
16	14	50	60	73	24	5.0	3.7
17	19	47	62	70	21	5.0	3.7
18	23	44	65	68	19	5.0	4.1
19	23	43	67	60	20	5.0	3.7
20	24	44	68	57	19	5.0	3.4
21	23	44	68	54	18	4.5	3.7
22	20	43	65	54	17	4.1	3.4
23	19	41	63	50	17	4.1	2.8
24	17	39	62	51	14	3.7	2.8
25	17	38	60	50	14	3.7	2.8
26	15	35	60	49	13	4.1	2.8
27	18	36	62	47	12	4.5	3.1
28	24	43	63	43	13	4.1	2.8
29	29	53	63	40	12	4.1	3.1
30	36	54	59	39	11	5.5	3.1
31	40		56		11	9.6	
Mean	17.9	38.6	55.1	61.1	22.6	5.8	4.3
Funoff in acre-feet	1100	2300	3390	3640	1390	372	257

TABLE A-62

DAILY MEAN DISCHARGE
MILL CREEK

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1		16	24	24	20	5.9	4.4
2		12	21	23	19	5.3	4.2
3		10	20	23	18	5.3	3.3
4		11	18	23	16	5.3	3.0
5		11	14	22	15	5.3	3.0
6		11	14	23	14	5.0	2.9
7		11	14	26	14	4.7	2.9
8		11	14	31	13	4.4	2.9
9		13	17	57	13	4.4	2.7
10		14	21	71	12	4.4	2.7
11		14	23	60	12	4.4	2.7
12		14	23	51	12	4.2	2.7
13		15	26	44	12	4.2	2.7
14		20	26	38	11	4.2	2.7
15		26	25	38	11	4.2	2.7
16		25	26	37	11	4.2	2.6
17		22	26	35	9.6	4.2	2.6
18		20	26	75	9.0	4.2	2.6
19		20	28	54	9.0	4.2	2.6
20		20	38	43	8.6	4.2	2.6
21		19	34	37	8.6	4.2	2.6
22		18	32	32	7.8	4.2	2.6
23		17	30	30	7.8	3.9	2.5
24		16	30	28	7.4	3.9	2.5
25		16	28	26	7.4	3.7	2.5
26		16	27	26	7.4	3.7	2.5
27		17	23	24	7.4	2.9	2.5
28		22	23	23	8.1	2.9	2.5
29		30	26	22	7.4	2.9	2.4
30		27	25	21	7.0	2.9	2.4
31			24		6.3	3.7	
Mean		17.1	24.1	35.6	11.0	4.2	2.8
Runoff in acre-feet		1,020	1,480	2,120	678	260	166

TABLE A-63

DAILY MEAN DISCHARGE
SOLDIER CREEK

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1		14	17	16	7.2	2.4	2.7
2		12	16	16	7.1	2.4	2.1
3		11	15	15	6.9	2.4	1.9
4		11	15	14	6.9	2.4	1.7
5		11	14	14	6.6	2.2	1.5
6		10	14	14	6.1	2.1	1.5
7		10	14	19	5.9	2.0	1.4
8		11	17	20	5.7	2.0	1.4
9		13	20	20	5.3	2.0	1.4
10		12	21	17	4.6	2.0	1.4
11		13	22	14	4.2	2.0	1.3
12		13	24	12	4.4	2.0	1.5
13		14	23	11	4.0	1.8	1.5
14		15	21	10	3.8	1.8	1.5
15		18	21	11	3.8	1.8	1.5
16		18	21	10	3.8	1.8	1.5
17		17	18	19	4.0	1.8	1.6
18		16	20	30	3.8	1.8	1.6
19	6.5	16	21	14	3.8	1.8	1.6
20	6.5	16	19	12	3.6	1.6	1.6
21	6.5	16	17	10	3.4	1.6	1.7
22	6.7	14	16	9.6	3.3	1.6	1.7
23	6.7	13	17	9.0	3.2	1.6	1.7
24	6.7	12	17	8.7	2.7	1.6	1.7
25	6.9	13	16	8.4	2.7	1.6	1.7
26	7.1	14	15	8.4	2.7	1.5	1.7
27	8.0	17	16	8.2	2.7	1.5	1.7
28	9.4	21	17	8.0	3.0	1.5	1.7
29	11	25	17	7.6	2.7	1.5	1.8
30	14	19	17	7.5	2.7	1.5	1.8
31	14		17		2.5	1.8	
Mean	8.5	14.5	17.9	13.1	4.3	1.9	1.6
Runoff in acre-feet	218	863	1,100	780	264	114	98

TABLE A-64

DAILY MEAN DISCHARGE
PINE CREEK

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1		23	5.9	4.2	0.8		
2		14	8.2	3.7	0.8		
3		8.2	11	3.3	0.8		
4		7.8	11	3.2	0.7		
5		6.9	11	2.8	0.7		
6		6.8	10	3.2	0.6		
7		7.3	12	5.3	0.6		
8		8.4	16	8.4	0.5		
9		10	14	26	0.4		
10		12	14	18	0.4		
11		10	12	11	0.4		
12		9.1	13	8.4	0.3		
13		11	12	7.3	0.4		
14		16	10	5.9	0.3		
15		17	9.1	5.8	0.2		
16		12	8.7	5.3	0.1		
17		9.6	7.4	5.0	0.1		
18		8.7	6.9	16	0.1		
19		8.4	6.3	2.5	0.0		
20	5.4	9.6	6.8	1.6			
21	5.0	10	7.0	1.3			
22	4.7	12	6.7	1.2			
23	6.5	10	5.6	1.2			
24	7.6	9.4	5.2	1.1			
25	8.6	10	4.7	1.3			
26	8.6	12	4.4	1.3			
27	10.0	15	6.1	1.5			
28	12.0	16	7.6	1.4			
29	14.7	10	6.1	1.2			
30	20.8	8.2	5.3	0.8			
31	23.8		4.8				
Mean	10.6	10.9	8.7	5.3	0.5		
Runoff in acre-feet	253	651	533	316	16		

TABLE A-65

DAILY MEAN DISCHARGE
CEDAR CREEK AT CEDARVILLE

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	2.0	17	20	12	0.4	0.5	1.2
2	2.5	12	18	10	0.5	0.5	1.0
3	5.7	11	17	9.3	0.4	0.5	0.6
4	2.2	10	17	4.2	0.3	0.4	0.3
5	2.2	9.5	18	7.1	3.3	0.5	0.2
6	2.2	8.2	19	8.0	13	0.5	0.2
7	2.0	8.8	19	14	24	0.5	0.1
8	2.0	13	21	14	31	0.4	0.1
9	2.0	16	22	24	25	0.4	0.2
10	2.0	16	25	23	23	0.3	0.3
11	2.0	17	24	18	19	0.3	0.2
12	2.0	19	25	15	18	0.3	0.3
13	2.0	20	24	13	17	0.4	0.3
14	1.7	25	21	11	12	0.3	0.3
15	1.7	29	20	8.9	12	0.3	0.7
16	1.7	25	20	8.0	8.3	0.2	0.6
17	3.2	22	18	6.5	3.9	0.2	0.8
18	5.6	19	16	13	3.4	0.3	1.3
19	5.9	18	17	8.4	3.1	0.4	1.5
20	6.0	19	16	7.0	2.3	0.4	1.4
21	4.5	19	14	5.3	2.0	0.3	2.1
22	3.9	17	14	4.3	1.9	0.2	2.6
23	3.7	15	15	3.4	1.7	0.1	2.3
24	3.1	13	13	2.3	1.4	0.1	1.6
25	2.7	16	13	1.8	1.6	0.1	1.4
26	3.3	18	12	1.5	1.7	0.1	2.2
27	4.0	19	14	1.2	1.4	0.2	2.9
28	8.6	21	16	0.8	1.6	0.3	3.3
29	13	27	14	0.7	1.5	0.4	3.7
30	14	23	13	0.4	1.1	0.3	3.7
31	17		14		0.7	0.5	
Mean	4.3	17.4	17.7	8.5	7.6	0.3	1.2
Runoff in acre-feet	267	1,040	1,090	508	469	20	74

TABLE A-66

DAILY MEAN DISCHARGE
NORTH DEEP CREEK

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1		12	14	4.6	3.5	1.1	1.2
2		14	11	4.2	3.5	1.1	1.1
3		15	12	4.2	3.2	1.1	1.0
4		15	16	4.2	3.2	1.1	0.9
5		16	11	4.2	3.2	1.1	0.9
6		16	11	4.2	3.2	1.1	0.9
7		16	11	4.6	3.2	1.1	0.9
8		16	7.2	4.6	3.2	1.1	0.9
9		16	8.6	18	3.2	1.1	0.9
10		16	12	18	2.9	1.1	0.9
11		16	16	11	2.9	1.1	1.0
12		18	19	11	2.9	1.1	1.0
13		16	20	11	2.9	1.1	1.0
14		14	20	6.0	2.7	1.1	1.0
15		18	21	6.0	2.6	1.1	1.0
16		16	19	5.5	2.6	1.1	1.0
17		11	16	5.5	2.0	1.1	1.0
18		9.0	16	7.2	2.0	1.1	1.0
19		8.6	12	4.6	2.0	1.1	1.0
20		11	10	4.0	2.0	1.0	1.1
21		11	8.2	4.0	2.0	1.0	1.1
22		11	7.1	3.7	2.0	1.0	1.1
23		11	6.6	3.7	1.9	1.0	1.1
24		9.0	6.2	3.7	1.6	0.9	1.1
25		8.6	5.8	3.7	1.7	0.9	1.1
26		8.5	5.5	3.7	1.7	0.9	1.1
27		8.5	5.2	3.7	1.7	0.9	1.1
28		14	4.9	3.5	1.9	1.0	1.1
29		20	4.8	3.5	1.9	1.0	1.1
30		18	4.6	3.5	1.9	1.0	1.1
31			4.6		1.6	1.1	
Mean		13.6	11.1	6.0	2.5	1.1	1.0
Runoff in acre-feet		812	687	356	152	65	61

TABLE A-67

DAILY MEAN DISCHARGE
SOUTH DEEP CREEK

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1		11	16	8.4	3.9	1.0	0.9
2		6.4	12	7.4	3.7	1.0	0.8
3		5.6	12	7.1	3.6	0.9	0.5
4		5.5	9.5	6.9	3.4	0.9	0.4
5		5.4	9.0	6.9	3.2	0.9	0.4
6		5.1	8.7	9.0	3.1	0.9	0.4
7		5.0	8.1	9.5	2.9	0.7	0.3
8		6.3	9.5	9.3	2.7	0.7	0.3
9		7.6	12	10	2.7	0.7	0.3
10		8.1	16	9.8	2.2	0.7	0.3
11		8.1	17	6.7	2.0	0.7	0.3
12		8.1	17	6.3	2.0	0.7	0.3
13		8.7	15	11	2.5	0.4	0.3
14		10	14	10	2.1	0.4	0.3
15		13	14	9.8	2.0	0.4	0.3
16		12	13	9.0	2.0	0.4	0.3
17		9.3	11	7.6	1.7	0.4	0.2
18		9.3	10	15	1.6	0.4	0.2
19		9.0	10	12	1.6	0.4	0.2
20		9.0	9.3	10	1.5	0.4	0.2
21		9.0	9.8	9.3	1.4	0.4	0.2
22		8.4	11	8.4	1.3	0.4	0.2
23		7.7	12	7.6	1.3	0.3	0.2
24		6.4	11	6.9	1.2	0.3	0.2
25		6.9	10	6.4	1.3	0.3	0.2
26		7.1	9.5	5.1	1.2	0.3	0.2
27		9.0	10	5.0	1.1	0.3	0.2
28		12	10	4.7	1.2	0.3	0.2
29		19	10	4.4	1.1	0.3	0.2
30		18	9.5	4.2	1.1	0.3	0.2
31			9.0		1.1	0.5	
Mean		8.9	11.4	8.1	2.1	0.5	0.3
Runoff in acre-feet		528	704	483	126	33	18

TABLE A-68

DAILY MEAN DISCHARGE
OWL CREEK

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1		4.5	19	31	24	4.9	2.6
2		2.5	17	32	24	4.6	2.5
3		1.8	17	36	**22	4.4	2.3
4		1.5	16	39	21	3.9	2.2
5		3.8	14	39	20	3.8	2.2
6		6.2	13	45	19	3.6	2.2
7		5.3	13	42	18	3.5	2.1
8		20	14	43	17	3.4	2.0
9		27	18	71	17	3.3	2.0
10		36	20	69	15	2.8	2.0
11		28	21	40	14	2.7	2.0
12		27	27	40	13	2.7	1.9
13		50	35	39	14	2.6	1.9
14		35	32	39	14	2.6	1.9
15		24	33	38	13	2.6	2.0
16		15	35	38	12	2.5	1.9
17		13	36	34	12	2.5	1.9
18		11	40	47	10	2.4	2.0
19		11	48	34	9.3	2.4	2.0
20		12	*40	31	9.2	2.4	2.0
21		12	36	31	8.6	2.3	2.0
22		12	35	31	7.8	2.3	2.0
23		12	35	32	7.6	2.2	2.0
24		10	36	36	7.3	2.2	2.0
25		11	38	39	7.1	2.2	2.0
26		11	31	38	6.8	2.1	2.0
27		13	31	32	6.5	2.1	1.9
28		17	27	28	6.2	2.1	1.9
29		26	26	26	6.1	2.1	1.9
30		19	25	24	6.0	2.2	1.9
31			27		5.5	2.6	
Mean		15.9	27.6	38.1	12.7	2.8	2.0
Runoff in acre-feet		947	1,700	2,270	780	175	121

* Allen-Arreche ditch opened -- diversions included
** Allen-Arreche ditch closed

TABLE A-69

DAILY MEAN DISCHARGE
RADER CREEK

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1		4.8	9.3	17	15	2.4	1.6
2		5.0	6.7	18	13	2.4	1.6
3		5.0	6.6	18	12	2.4	1.5
4		4.8	6.3	18	9.7	2.4	1.4
5		4.7	6.2	18	8.3	2.4	1.4
6		4.6	5.8	19	7.5	2.4	1.4
7		4.6	5.8	19	6.8	2.4	1.4
8		5.1	5.8	17	6.1	2.7	1.4
9		5.6	7.0	20	6.1	2.7	1.4
10		5.6	8.3	18	6.1	2.7	1.4
11		5.6	9.3	17	4.2	2.7	1.4
12		5.6	11	19	4.2	2.5	1.4
13		6.2	13	21	4.2	2.4	1.4
14		7.0	13	22	3.7	2.4	1.4
15		8.0	13	23	3.4	2.4	1.4
16		7.8	14	24	3.2	2.4	1.4
17		7.0	14	23	3.0	2.5	1.4
18		6.7	14	24	3.0	2.5	1.4
19		6.7	16	21	2.9	1.4	1.4
20		6.6	24	17	2.7	1.4	1.4
21		6.6	23	17	2.7	1.4	1.4
22		6.3	24	17	2.5	1.4	1.4
23		6.2	23	18	2.5	1.4	1.4
24		5.6	28	19	2.4	1.4	1.4
25		5.8	24	21	2.5	1.4	1.4
26		5.8	24	21	2.5	1.5	1.4
27		5.8	22	21	2.7	1.5	1.4
28		7.6	19	19	2.7	1.5	1.4
29		11	17	18	2.7	1.5	1.4
30		11	17	17	2.7	1.5	1.4
31			17		2.7	1.6	
Mean		6.3	14.4	19.4	5.0	2.1	1.4
Runoff in acre-feet		374	887	1,150	305	126	84

TABLE A-70

DAILY MEAN DISCHARGE
EAGLE CREEK AT EAGLEVILLE

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	2.3	6.1	18	32	39	4.6	2.9
2	2.3	4.8	13	33	40	4.2	2.7
3	2.2	4.9	11	36	36	3.9	2.4
4	2.1	4.4	9.5	42	36	3.6	2.1
5	2.1	4.3	9.0	42	33	4.1	2.1
6	2.3	4.0	8.7	41	30	3.9	2.1
7	2.2	4.3	8.2	43	29	3.9	2.0
8	2.2	5.5	9.1	42	29	3.8	2.0
9	2.1	6.0	15	40	25	3.6	2.1
10	2.0	6.2	21	36	21	3.7	2.2
11	2.0	6.0	23	36	18	3.4	2.1
12	2.0	6.3	30	38	18	3.3	2.1
13	2.0	7.7	36	40	17	3.4	2.1
14	2.2	11	30	40	15	3.2	2.1
15	2.2	15	27	40	12	3.1	2.1
16	2.3	13	34	37	11	3.0	2.0
17	2.5	11	35	33	9.4	2.9	1.9
18	2.5	9.8	36	35	8.8	2.9	2.1
19	2.6	9.8	40	33	8.0	3.0	2.1
20	2.7	10	45	32	8.0	2.9	2.0
21	2.6	10	43	34	7.7	2.7	2.0
22	2.6	9.9	44	36	7.2	2.7	2.0
23	2.7	9.1	43	40	6.9	2.4	1.9
24	2.5	8.1	41	42	6.5	2.3	2.0
25	2.8	8.0	33	47	6.2	2.2	1.9
26	2.5	8.5	29	47	6.1	2.3	2.0
27	2.8	11	26	51	5.7	2.3	2.1
28	3.6	16	23	44	6.0	2.3	2.0
29	4.7	27	24	42	5.7	2.4	2.0
30	5.6	24	25	41	5.5	2.3	1.5
31	6.3		28		5.1	2.6	
Mean	2.7	9.4	26.4	39.2	16.5	3.1	2.1
Runoff in acre-feet	166	559	1,620	2,330	1,020	192	124

TABLE A-71

DAILY MEAN DISCHARGE
EMERSON CREEK

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1		15	19	14	12	3.5	4.2
2		18	15	16	13	3.4	3.8
3		23	12	16	9.7	3.4	3.7
4		25	10	18	8.2	3.4	3.5
5		26	9.7	18	8.2	3.2	3.5
6		28	10	18	7.7	3.0	3.5
7		29	9.2	22	10	3.0	3.5
8		33	8.8	22	12	3.0	3.4
9		35	9.2	25	10	3.1	3.5
10		37	11	24	9.7	3.1	3.5
11		36	15	26	9.1	3.0	3.4
12		35	26	26	8.4	3.0	3.4
13		33	24	22	7.1	3.2	3.4
14		32	25	20	5.9	3.2	3.4
15		26	23	19	5.5	3.2	3.5
16		15	22	18	5.0	3.1	3.4
17		20	22	18	4.7	3.0	3.4
18		15	22	16	4.6	3.0	3.5
19		12	22	16	4.4	2.7	3.5
20		12	22	14	4.3	2.7	3.5
21		11	23	14	4.2	2.6	3.5
22		10	23	13	4.2	2.6	3.5
23		12	22	12	4.2	2.6	3.5
24		9.7	22	12	4.2	2.6	3.5
25		10	20	10	4.2	2.6	3.5
26		8.7	20	11	4.2	2.7	3.5
27		9.2	18	13	4.2	3.0	3.5
28		10	15	12	4.2	3.0	3.5
29		11	15	10	4.0	3.1	3.5
30		15	12	9.7	3.8	3.1	3.5
31			11		3.7	3.7	
Mean		20.4	17.4	16.8	6.6	3.0	3.5
Runoff in acre-feet		1,210	1,070	1,000	406	186	209

TABLE A-72

DAILY MEAN DISCHARGE
SUSAN RIVER AT SUSANVILLE

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	23	115	99	51	96	3.9	3.9
2	22	91	94	50	89	3.4	5.9
3	21	79	94	126	85	3.6	5.6
4	22	84	88	151	87	3.6	4.1
5	26	90	87	145	85	3.8	3.0
6	23	82	91	147	85	3.6	3.0
7	21	81	88	160	83	3.4	2.7
8	19	100	84	169	82	3.4	2.6
9	21	121	84	141	82	3.3	2.7
10	20	133	88	105	81	3.3	2.7
11	21	141	91	120	81	3.4	2.7
12	21	147	95	144	46	3.4	2.7
13	20	149	94	147	25	2.8	2.8
14	21	158	89	118	19	3.3	2.8
15	30	179	84	111	16	2.8	3.0
16	32	185	81	136	13	2.8	4.3
17	37	156	81	141	11	2.8	4.8
18	43	133	74	139	8.7	2.7	3.4
19	39	120	71	131	7.4	3.0	3.4
20	43	114	66	128	6.5	3.1	3.3
21	45	114	68	123	5.6	3.3	3.3
22	37	115	69	121	5.6	3.3	3.3
23	34	108	66	120	5.4	3.3	3.3
24	33	95	73	121	4.8	3.3	3.1
25	32	87	73	120	4.5	3.3	3.0
26	40	83	72	115	4.1	3.1	3.1
27	51	89	78	112	3.4	3.3	3.8
28	65	94	70	108	3.3	3.3	3.6
29	81	102	63	107	3.8	3.3	3.9
30	101	104	57	104	3.6	3.4	3.1
31	114		54		3.6	3.9	
Mean	37.4	115	79.5	124	36.7	3.3	3.4
Runoff in acre-feet	2,300	6,840	4,890	7,360	2,250	203	204

TABLE A-73

DAILY MEAN DISCHARGE
GOLD RUN CREEK NEAR SUSANVILLE

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	1.6	8.3	17	11	3.5	0.7	0.5
2	1.6	6.2	13	11	2.9	0.7	0.5
3	1.4	5.1	12	10	3.1	0.7	0.4
4	1.6	5.4	10	9.7	2.9	0.6	0.4
5	1.5	5.5	10	8.6	2.6	0.5	0.3
6	1.5	5.5	9.1	8.4	2.3	0.5	0.3
7	1.6	5.3	9.2	8.4	2.0	0.5	0.3
8	4.2	6.2	9.5	8.4	1.7	0.5	0.3
9	1.4	9.2	11	8.8	1.7	0.4	0.3
10	1.4	11	14	8.8	1.9	0.4	0.3
11	1.5	11	19	8.8	1.9	0.4	0.3
12	1.5	11	23	8.3	2.0	0.4	0.3
13	1.3	11	22	7.9	1.9	0.4	0.3
14	1.5	13	22	7.5	1.6	0.4	0.2
15	1.6	15	21	7.1	1.5	0.4	0.2
16	1.7	17	20	6.8	1.5	0.4	0.2
17	2.0	15	20	6.6	1.4	0.3	0.2
18	2.3	13	19	6.6	1.3	0.3	0.3
19	2.3	12	21	6.4	1.2	0.3	0.3
20	2.4	13	20	6.2	1.1	0.4	0.3
21	2.7	14	18	5.8	1.1	0.3	0.4
22	2.4	13	17	5.6	1.1	0.3	0.3
23	2.2	11	17	5.5	1.0	0.3	0.3
24	2.2	9.7	15	5.1	0.9	0.3	0.3
25	2.3	8.5	15	4.8	0.9	0.3	0.2
26	2.3	9.4	15	4.5	1.0	0.2	0.3
27	2.9	12	16	4.4	1.0	0.3	0.3
28	3.7	15	15	4.1	0.9	0.3	0.3
29	5.2	18	13	3.9	0.8	0.3	0.2
30	7.3	18	12	3.7	0.8	0.3	0.3
31	8.5		12		0.8	0.3	
Mean	2.5	10.9	15.7	7.1	1.6	0.4	0.3
Runoff in acre-feet	154	649	966	422	100	25	18

TABLE A-74

DAILY MEAN DISCHARGE
SUSAN RIVER AT JOHNSTONVILLE BRIDGE

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1				30	6.0		
2				25	5.5		
3				20	5.5		
4				15	5.0		
5				14	4.5		
6				13	4.0		
7				13	4.0		
8			35	20	4.0		
9			30	35	3.5		
10			35	20	3.5		
11			36	13	3.5		
12			37	12	3.5		
13			25	11	3.0		
14			20	10	3.0		
15			14	9.0	3.0		
16			13	8.0	3.0		
17			10	8.0	3.0		
18			13	8.0	3.0		
19			30	8.0	3.0		
20			35	8.0	2.5		
21			50	7.5	2.5		
22			45	7.5	2.0		
23			35	7.5			
24			30	7.5			
25			35	7.5			
26			40	7.0			
27			40	7.0			
28			40	7.0			
29			40	6.5			
30			35	6.0			
31			30				
Mean			31.4	12.4	3.7		
Runoff in acre-feet			1,490	736	160		

TABLE A-75

DAILY MEAN DISCHARGE
WILLOW CREEK NEAR SUSANVILLE

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	29	34	13	19	12	12	11
2	30	32	16	18	12	12	11
3	28	31	18	18	12	12	11
4	30	30	20	17	12	12	11
5	30	29	22	16	12	12	11
6	23	28	25	15	12	12	10
7	19	27	25	16	12	12	10
8	19	24	23	19	12	11	10
9	22	23	22	26	12	11	10
10	26	22	20	27	12	11	10
11	28	22	20	26	14	11	10
12	31	20	19	25	13	11	10
13	36	18	18	23	14	11	10
14	38	16	16	22	14	11	10
15	46	15	16	20	14	11	10
16	48	16	15	20	13	10	10
17	48	15	14	23	13	10	10
18	44	14	13	26	12	10	10
19	35	14	13	23	12	10	10
20	31	14	13	21	12	11	11
21	31	14	12	20	12	11	11
22	32	13	13	21	12	11	11
23	34	15	12	17	12	11	11
24	36	14	12	16	12	12	11
25	34	15	12	16	12	11	11
26	33	15	13	14	12	11	11
27	32	15	14	13	12	11	11
28	33	14	16	13	12	11	11
29	36	14	18	12	12	11	11
30	36	13	18	12	12	11	11
31	35		20		12	11	
Mean	32.7	19.5	16.8	19.1	12.4	11.1	10.5
Runoff in acre-feet	2,010	1,160	1,030	1,140	760	684	627

TABLE A-76

DAILY MEAN DISCHARGE
WILLOW CREEK NEAR LITCHFIELD

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1	31	39	12	21	25	15	15
2	34	36	14	21	26	16	16
3	34	34	17	21	27	15	15
4	35	33	19	20	27	16	16
5	39	32	21	20	29	15	16
6	33	32	23	19	28	16	16
7	27	32	24	22	27	17	15
8	24	30	22	23	27	16	14
9	26	27	19	30	27	16	13
10	28	26	18	32	26	16	13
11	31	25	16	32	28	16	13
12	35	25	14	30	28	17	14
13	40	22	13	30	26	16	14
14	42	20	12	28	26	15	14
15	48	18	11	26	26	16	14
16	54	18	10	25	24	15	14
17	55	18	9.9	29	18	14	13
18	55	17	8.9	30	15	13	13
19	44	16	7.9	31	16	13	13
20	39	16	7.9	28	16	13	13
21	37	15	7.7	26	15	13	13
22	38	14	7.8	24	15	13	13
23	38	16	8.5	22	15	13	13
24	41	16	8.1	21	16	13	13
25	41	16	7.9	21	15	14	13
26	39	16	11	22	15	14	12
27	38	15	13	21	15	15	12
28	39	14	12	24	16	15	12
29	41	13	16	25	16	14	12
30	41	13	17	26	16	14	13
31	40		18		15	15	
Mean	38.3	22.1	13.8	25.0	21.3	14.8	13.7
Runoff in acre-feet	2,350	1,320	846	1,490	1,310	910	813

TABLE A-77

ESTIMATED STORED WATER AVAILABLE
FOR REDIVERSION AT SUSANVILLE

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1					79		
2					73		
3				* 78	70		
4				104	72		
5				100	71		
6				103	72		
7				117	70		
8				127	70		
9				101	70		
10				66	70		
11				83	71		
12				108	36		
13				112	16		
14				84	10		
15				79	8		
16				105	5		
17				111	4		
18				110	** 2		
19				104			
20				102			
21				98			
22				97			
23				96			
24				98			
25				98			
26				94			
27				92			
28				89			
29				89			
30				87			
31							
Mean				97.6	48.3		
Runoff in acre-feet				5,420	1,720		

* Start of reservoir releases
** End of reservoir releases

TABLE A-78

DAILY MEAN DISCHARGE
JACOB-NEUHAUS DITCH AT BARRON-MURRER PROPERTY LINE

March through September 1964
(In second-feet)

Day	March	April	May	June	July	August	September
1			2.2	2.6	2.2	2.3	3.0
2			2.2	2.6	2.1	2.4	3.1
3			1.9	2.3	2.1	2.4	3.1
4			2.2	2.2	2.2	2.5	3.1
5			2.2	2.3	2.6	2.6	3.1
6			2.5	2.1	2.4	2.7	2.8
7			2.3	1.9	2.1	2.8	2.5
8		2.0	2.2	2.0	2.1	2.6	2.2
9		1.8	1.9	2.4	2.1	2.2	2.4
10		1.8	2.0	2.3	2.4	2.1	2.9
11		1.8	2.1	2.1	2.2	1.9	2.8
12		1.8	1.9	2.0	2.3	2.5	2.8
13		1.7	0.7	2.1	2.3	2.3	
14		1.9	0	2.1	0	2.0	
15		1.9	0	1.9	0	2.0	
16		2.7	0	2.2	0	2.0	
17		3.2	2.0	2.1	2.3	2.2	
18		3.3	2.0	1.8	2.2	2.4	
19		3.3	2.4	1.9	2.2	2.3	
20		2.8	1.8	2.0	2.2	2.4	
21		2.1	1.6	2.4	2.3	2.4	
22		2.1	1.9	2.6	2.3	2.6	
23		2.2	2.4	2.6	2.3	2.7	
24		2.3	2.8	2.2	2.3	2.7	
25		2.3	2.5	2.4	2.3	2.7	
26		2.4	2.1	2.6	2.4	2.2	
27		2.0	2.2	2.6	2.4	2.2	
28		2.2	2.3	2.2	2.4	2.1	
29		2.3	2.1	2.2	2.3	2.5	
30		2.2	2.2	2.2	2.3	2.7	
31			2.5		2.2	2.7	
Mean		2.3	1.9	2.2	2.0	2.4	2.8
Runoff in acre-feet		103	117	133	126	147	67

APPENDIX B

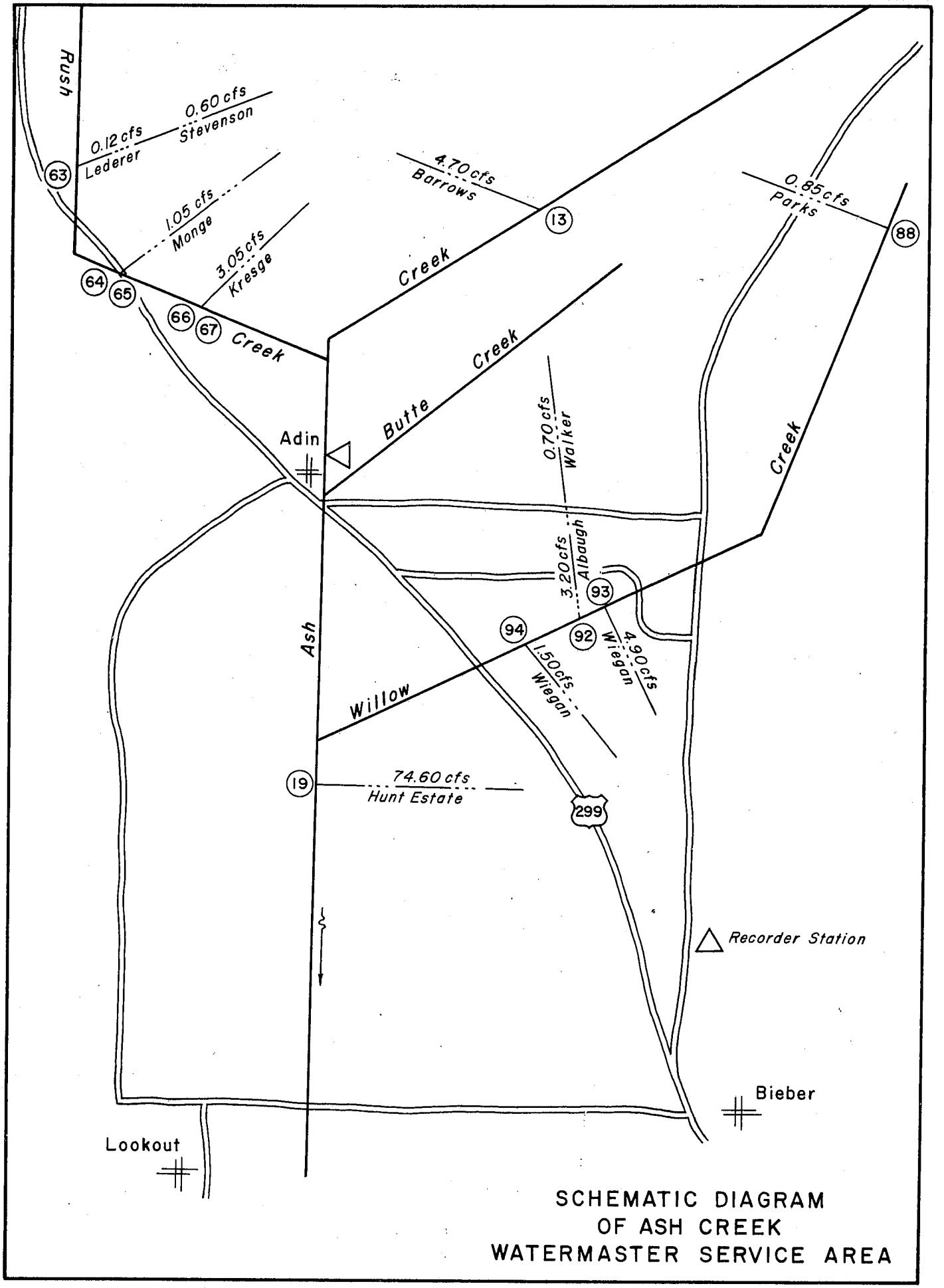
SCHEMATIC DIAGRAMS OF DIVERSIONS

APPENDIX B

TABLE OF CONTENTS

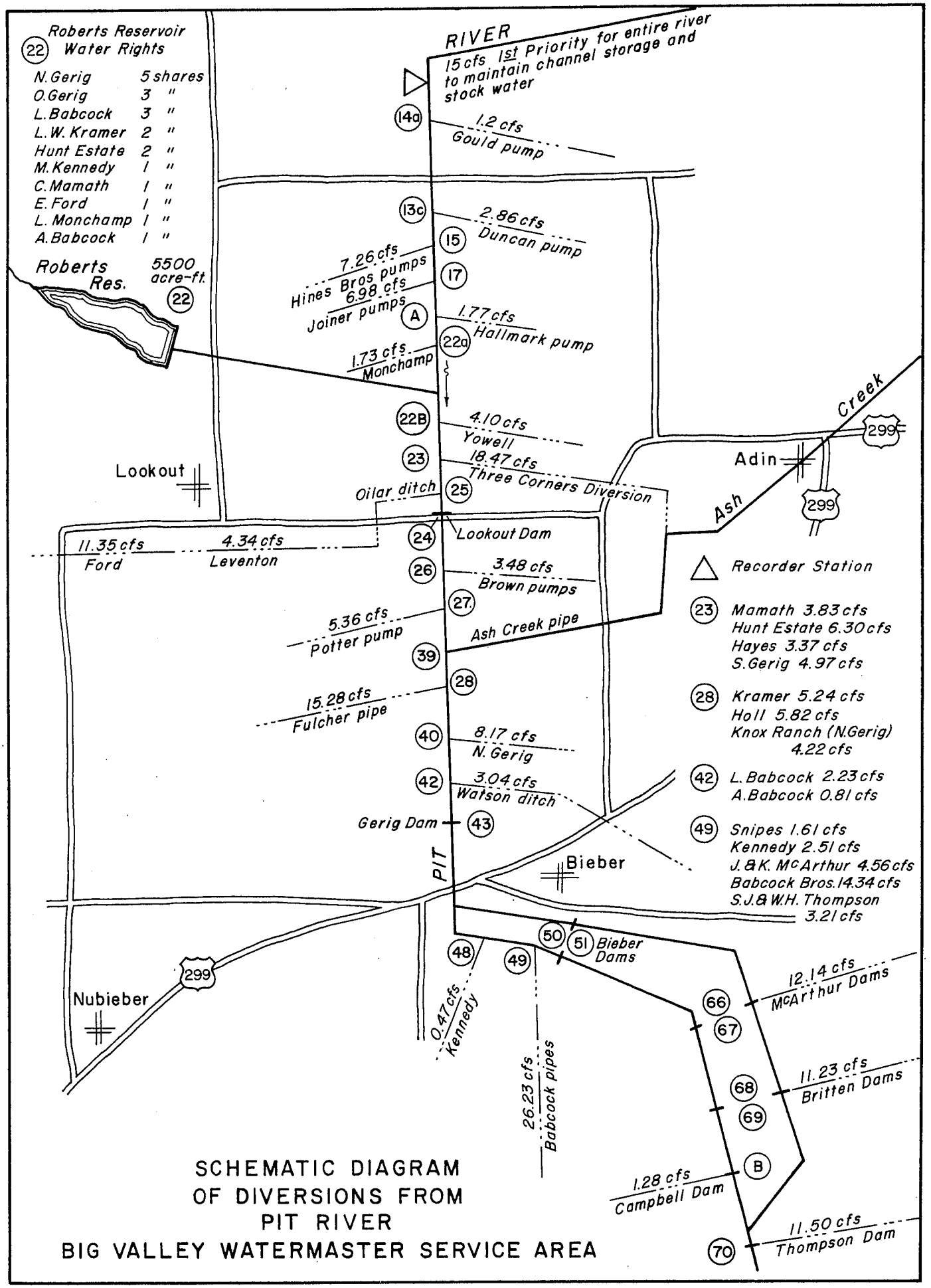
SCHEMATIC DIAGRAMS OF DIVERSIONS

FIGURE I



SCHEMATIC DIAGRAM
OF ASH CREEK
WATERMASTER SERVICE AREA

FIGURE 2



SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
PIT RIVER
BIG VALLEY WATERMASTER SERVICE AREA

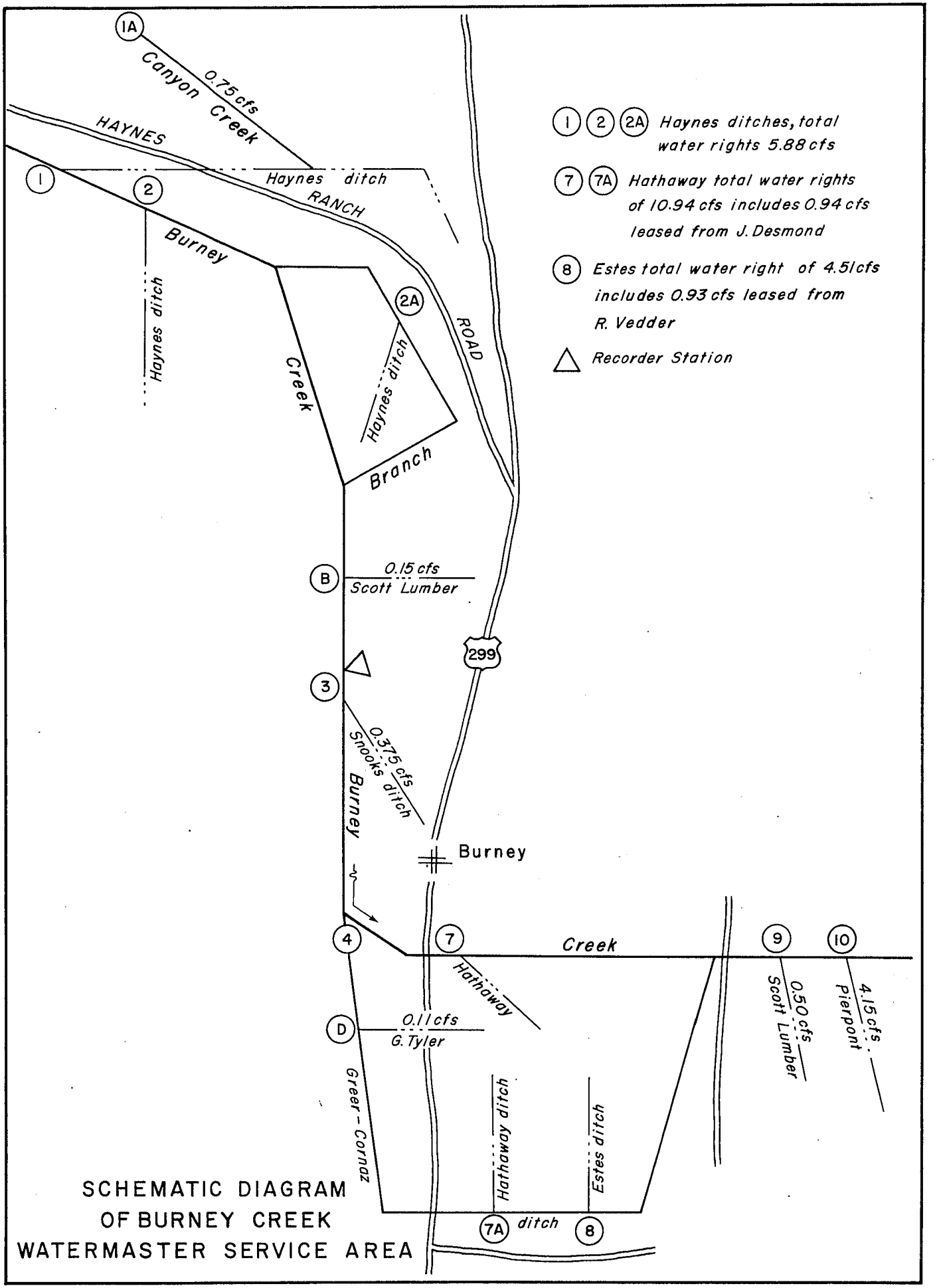
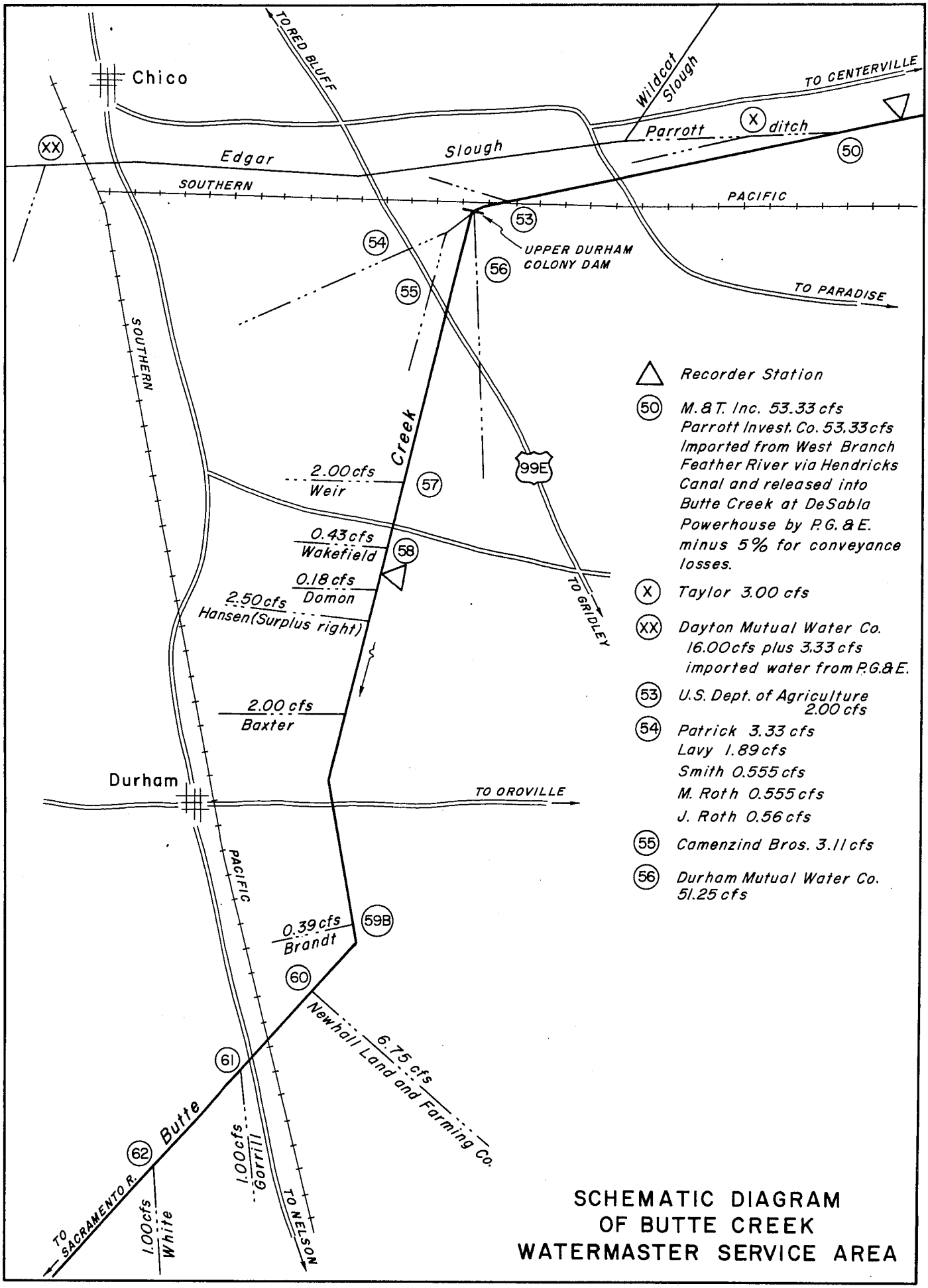
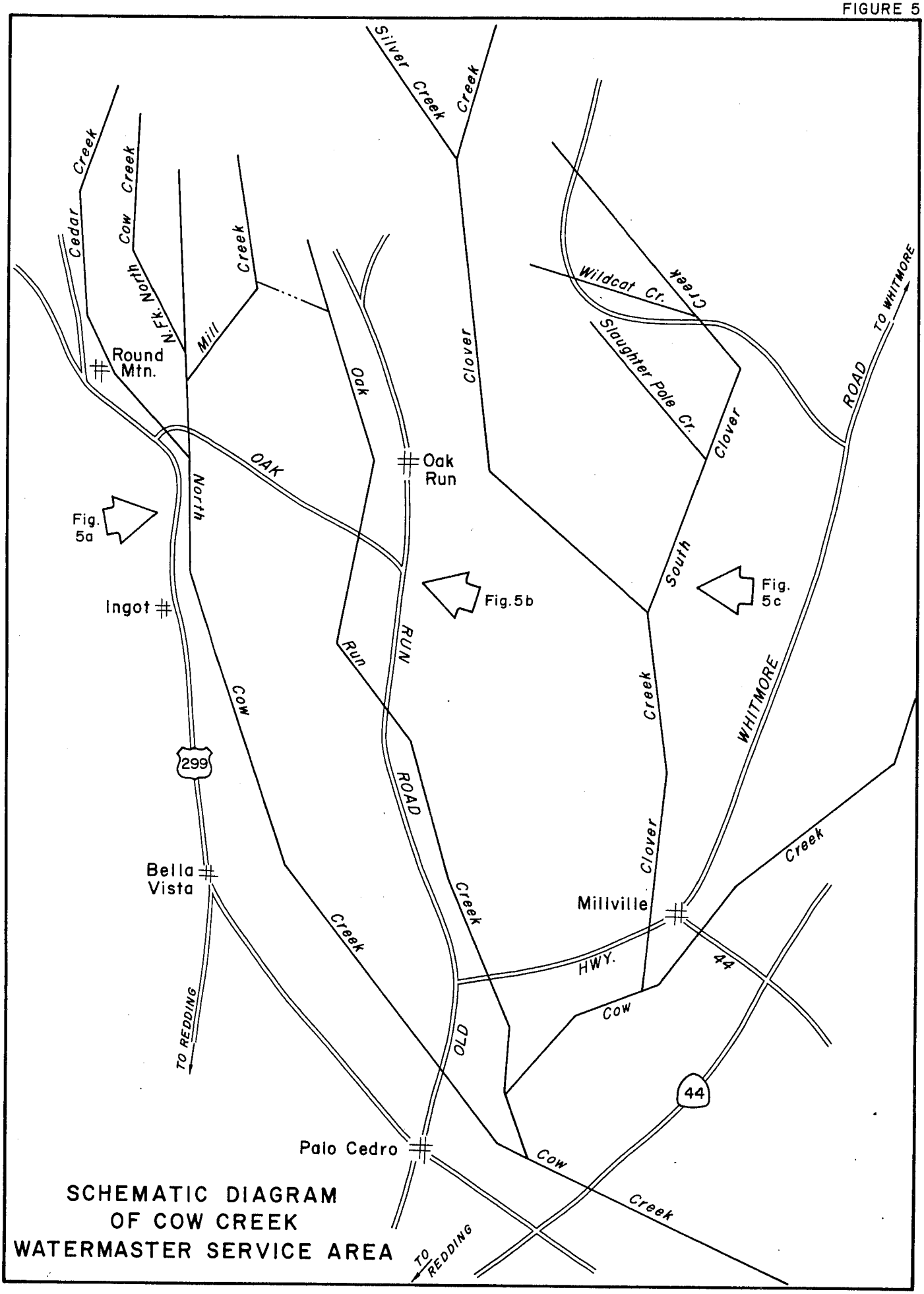

1A
0.75 cfs
Canyon Creek
HAYNES
RANCH
Haynes ditch
1
2
Burney
Haynes ditch
Creek
2A
Haynes ditch
ROAD
Branch
B
0.15 cfs
Scott Lumber
299
3
0.375 cfs
Snooks ditch
Burney
Burney
4
7
Creek
Hathaway
9
10
0.50 cfs
Scott Lumber
4.15 cfs
Pierpont
D
0.11 cfs
G. Tyler
Greer - Cornaz
Hathaway ditch
Estes ditch
7A
ditch
8
1 2 2A Haynes ditches, total water rights 5.88 cfs
7 7A Hathaway total water rights of 10.94 cfs includes 0.94 cfs leased from J. Desmond
8 Estes total water right of 4.51 cfs includes 0.93 cfs leased from R. Vedder
Recorder Station
SCHEMATIC DIAGRAM
OF BURNEY CREEK
WATERMASTER SERVICE AREA

FIGURE 4



SCHEMATIC DIAGRAM
OF BUTTE CREEK
WATERMASTER SERVICE AREA

FIGURE 5



SCHEMATIC DIAGRAM
OF COW CREEK
WATERMASTER SERVICE AREA

FIGURE 5a

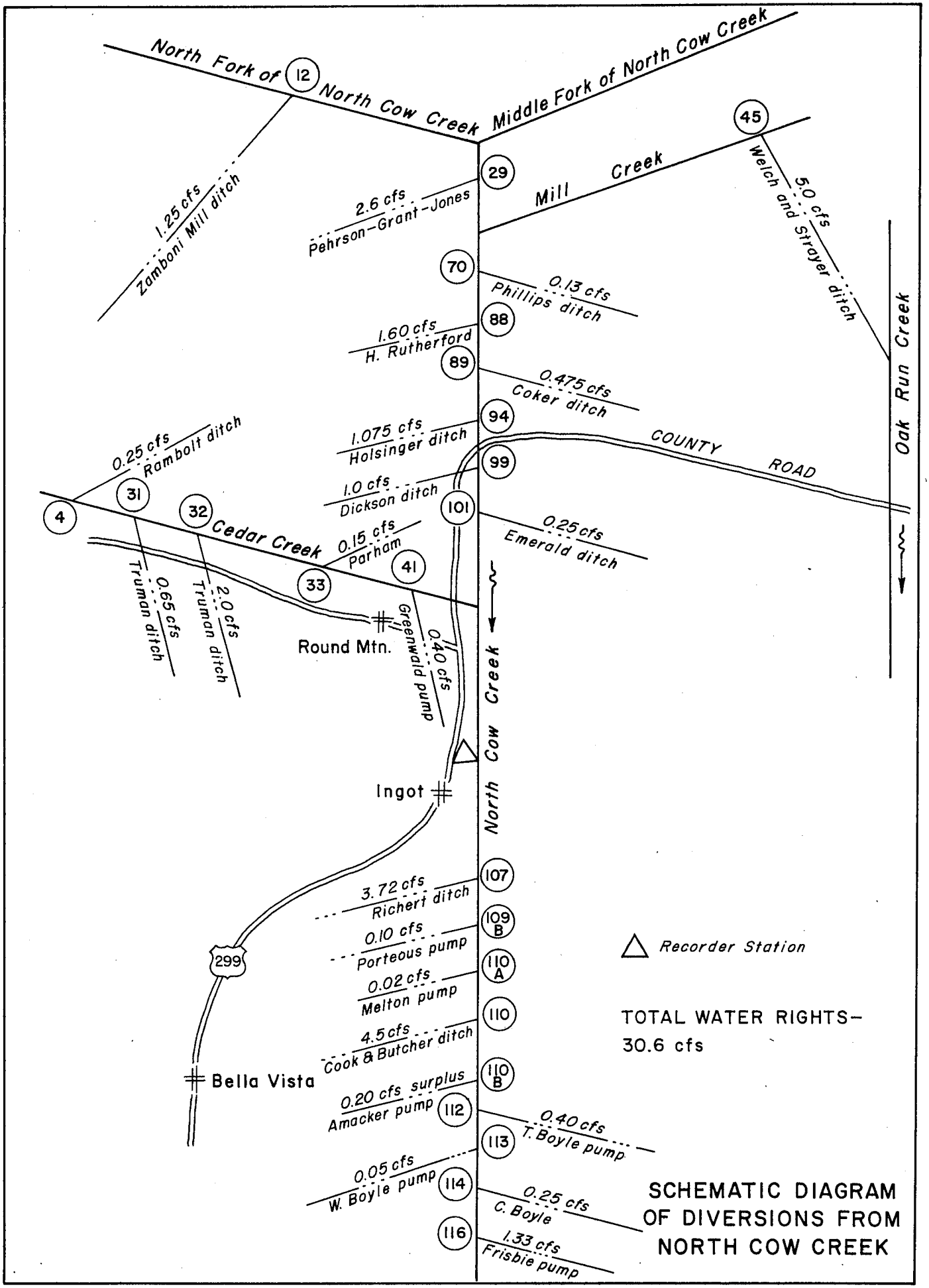

North Fork of North Cow Creek
12
Middle Fork of North Cow Creek
45
Mill Creek
29
1.25 cfs
Zamboni Mill ditch
2.6 cfs
Pehrson-Grant-Jones
Welch and Strayer ditch
5.0 cfs
70
0.13 cfs
Phillips ditch
88
1.60 cfs
H. Rutherford
89
0.475 cfs
Coker ditch
94
1.075 cfs
Holsinger ditch
0.25 cfs
Rambolt ditch
COUNTY ROAD
99
1.0 cfs
Dickson ditch
31
32
101
4
Cedar Creek
0.25 cfs
Emerald ditch
0.15 cfs
Parham
41
33
Truman ditch
0.65 cfs
2.0 cfs
Truman ditch
Round Mtn.
Greenwald pump
0.40 cfs
Oak Run Creek
North Cow Creek
Ingot
107
3.72 cfs
Richert ditch
109 B
0.10 cfs
Porteous pump
299
110 A
0.02 cfs
Melton pump
110
4.5 cfs
Cook & Butcher ditch
Bella Vista
110 B
0.20 cfs surplus
Amacker pump
112
0.40 cfs
T. Boyle pump
113
0.05 cfs
W. Boyle pump
114
0.25 cfs
C. Boyle
116
1.33 cfs
Frisbie pump
Recorder Station
TOTAL WATER RIGHTS–
30.6 cfs
SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
NORTH COW CREEK

FIGURE 5b

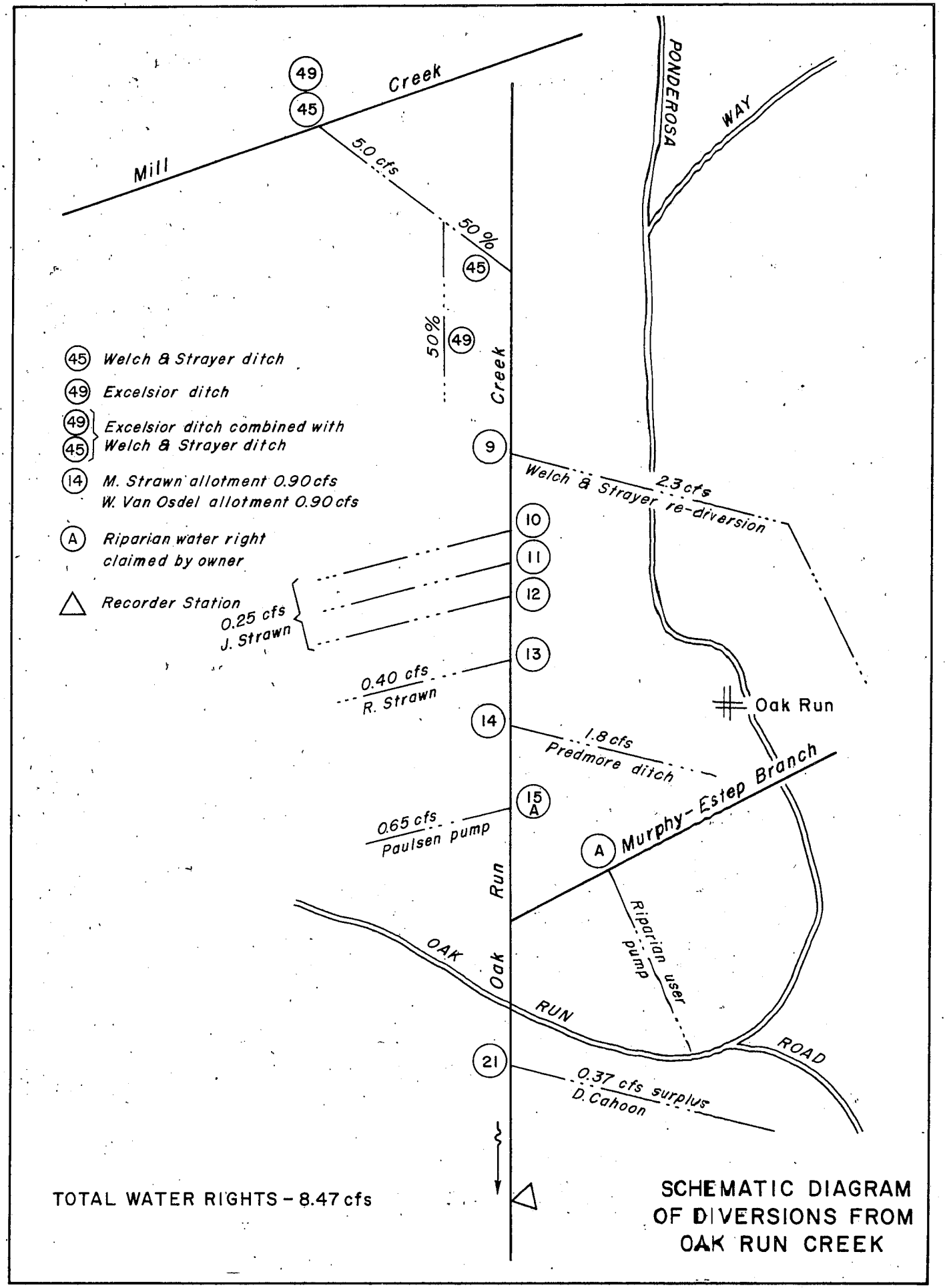
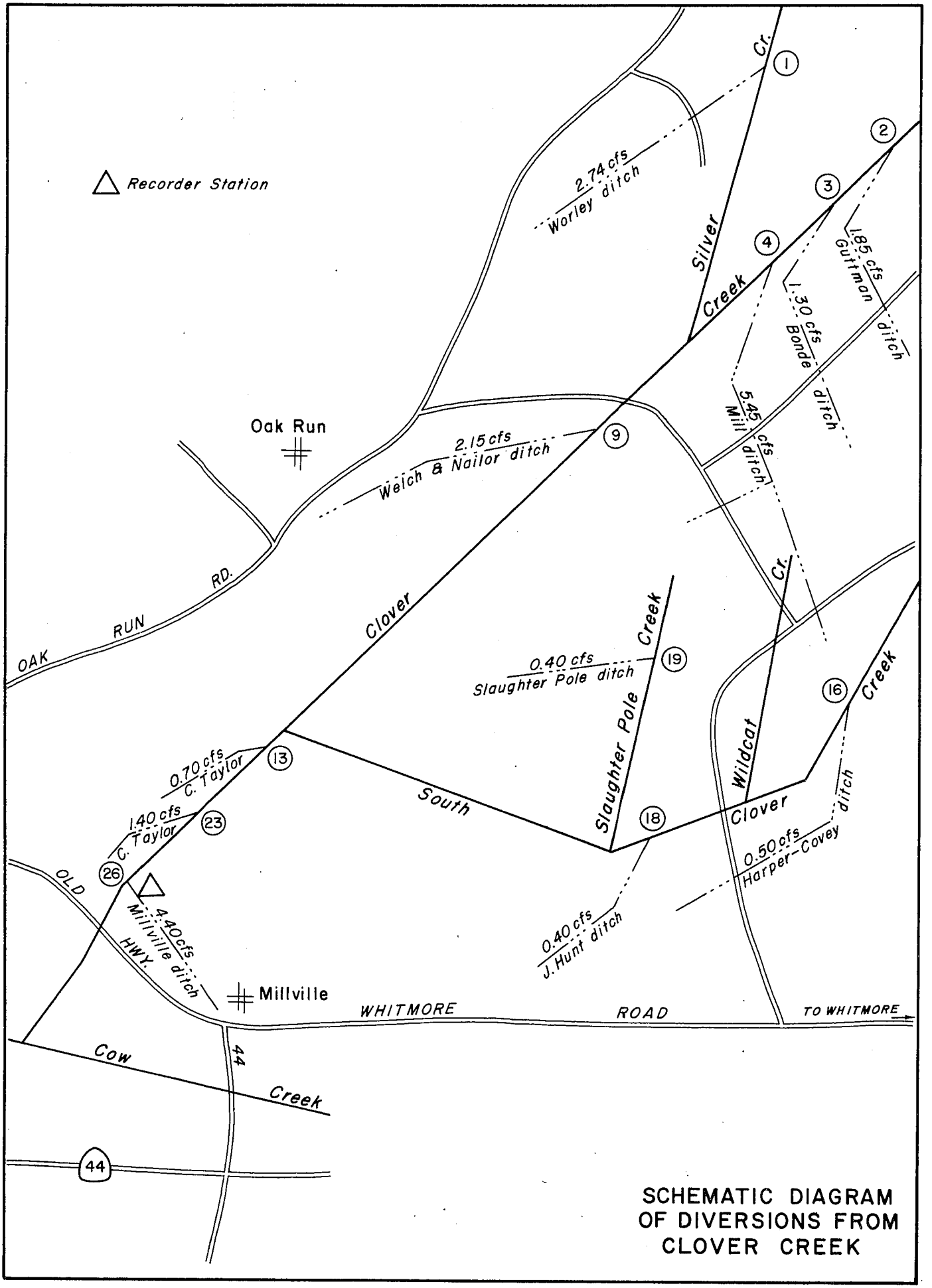
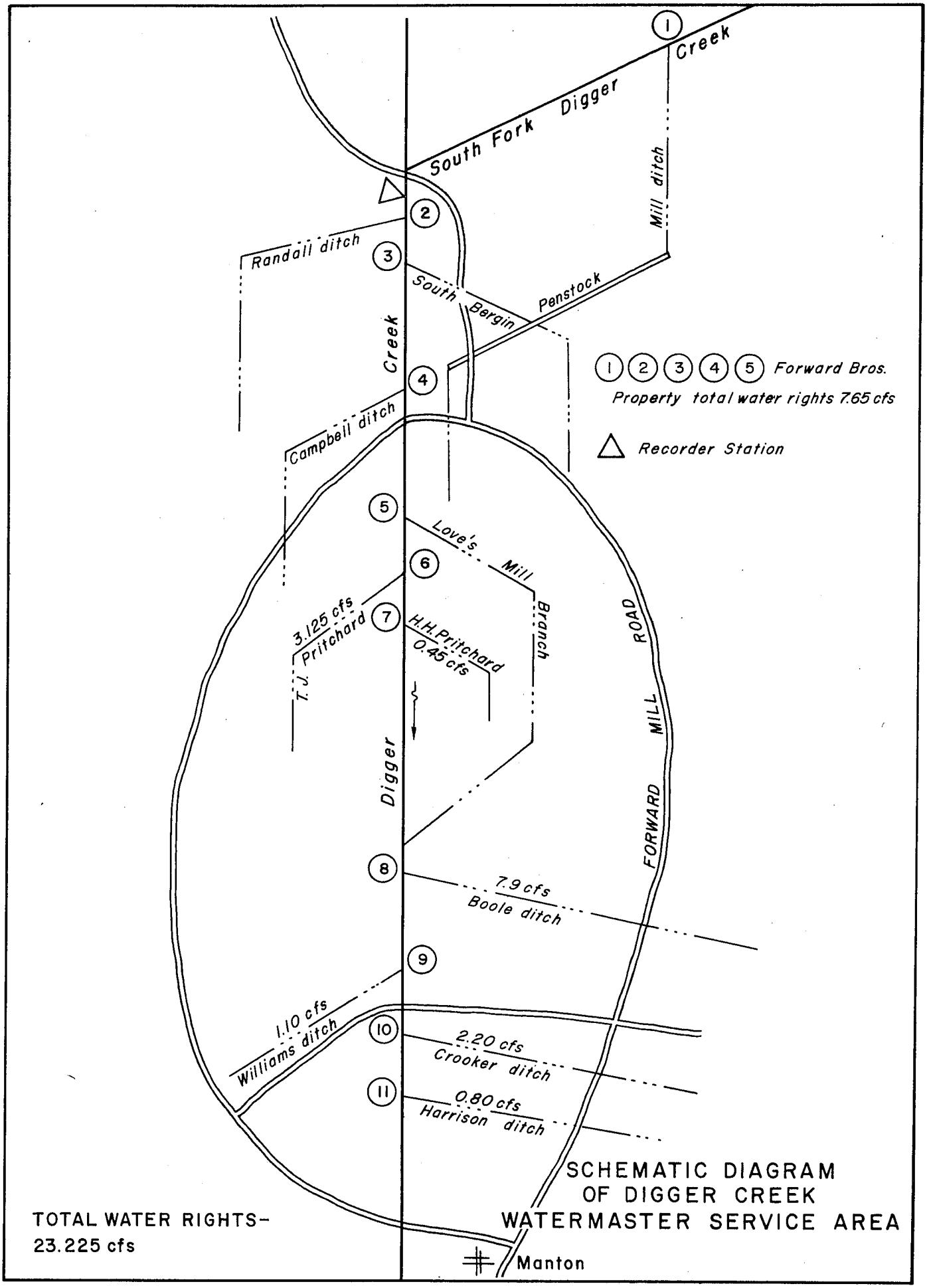
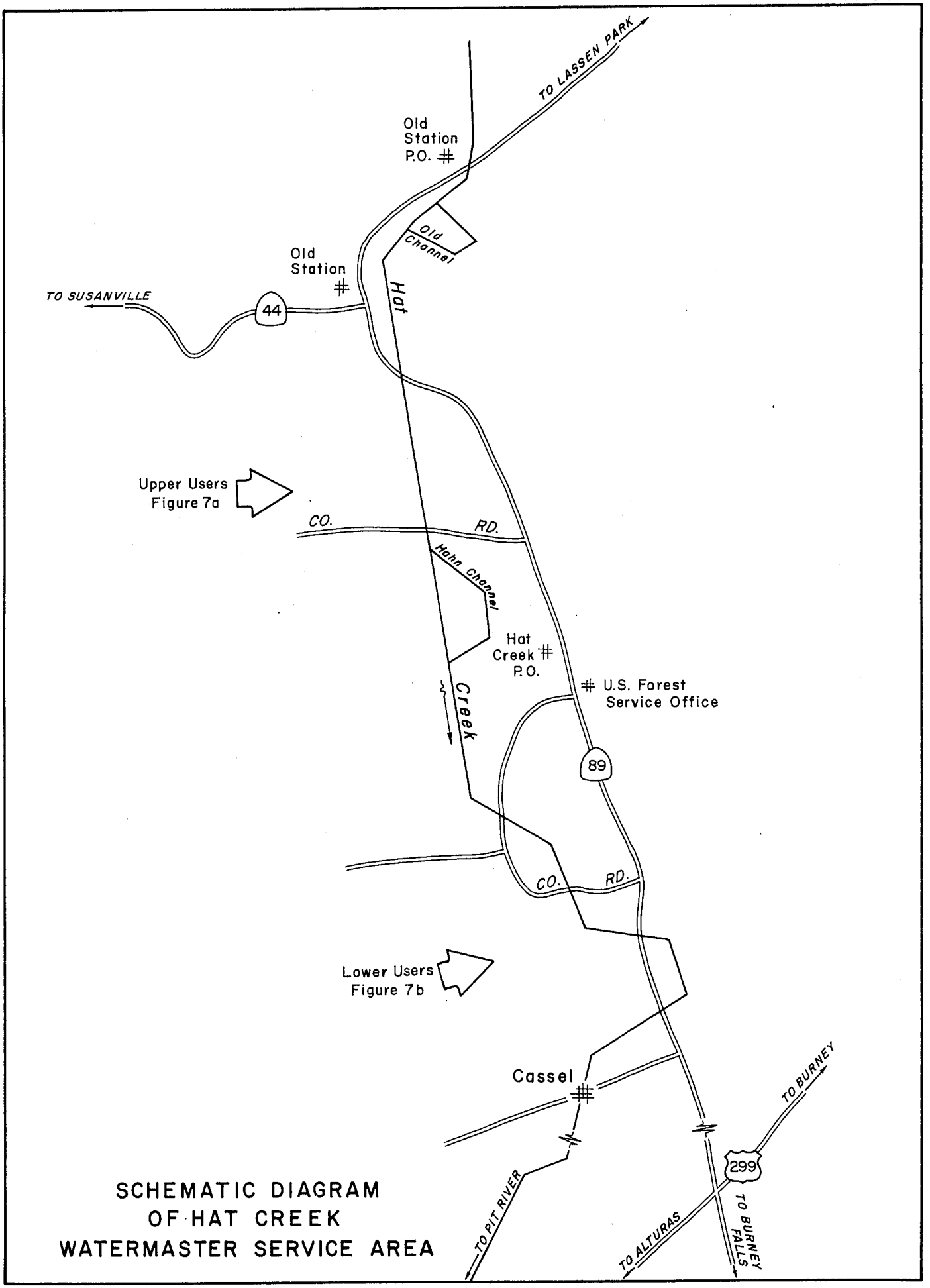

Mill Creek
49
45
5.0 cfs
50%
45
50%
49
Creek
PONDEROSA WAY
45 Welch & Strayer ditch
49 Excelsior ditch
49 45 Excelsior ditch combined with Welch & Strayer ditch
14 M. Strawn allotment 0.90 cfs
W. Van Osdel allotment 0.90 cfs
A Riparian water right claimed by owner
Recorder Station
9
Welch & Strayer re-diversion 2.3 cfs
10
11
12
0.25 cfs J. Strawn
13
0.40 cfs R. Strawn
Oak Run
14
1.8 cfs Predmore ditch
15 A
0.65 cfs Paulsen pump
Murphy-Estep Branch
A
Run
Riparian user pump
OAK Oak RUN ROAD
21
0.37 cfs surplus D. Cahoon
TOTAL WATER RIGHTS - 8.47 cfs
SCHEMATIC DIAGRAM OF DIVERSIONS FROM OAK RUN CREEK

FIGURE 5c

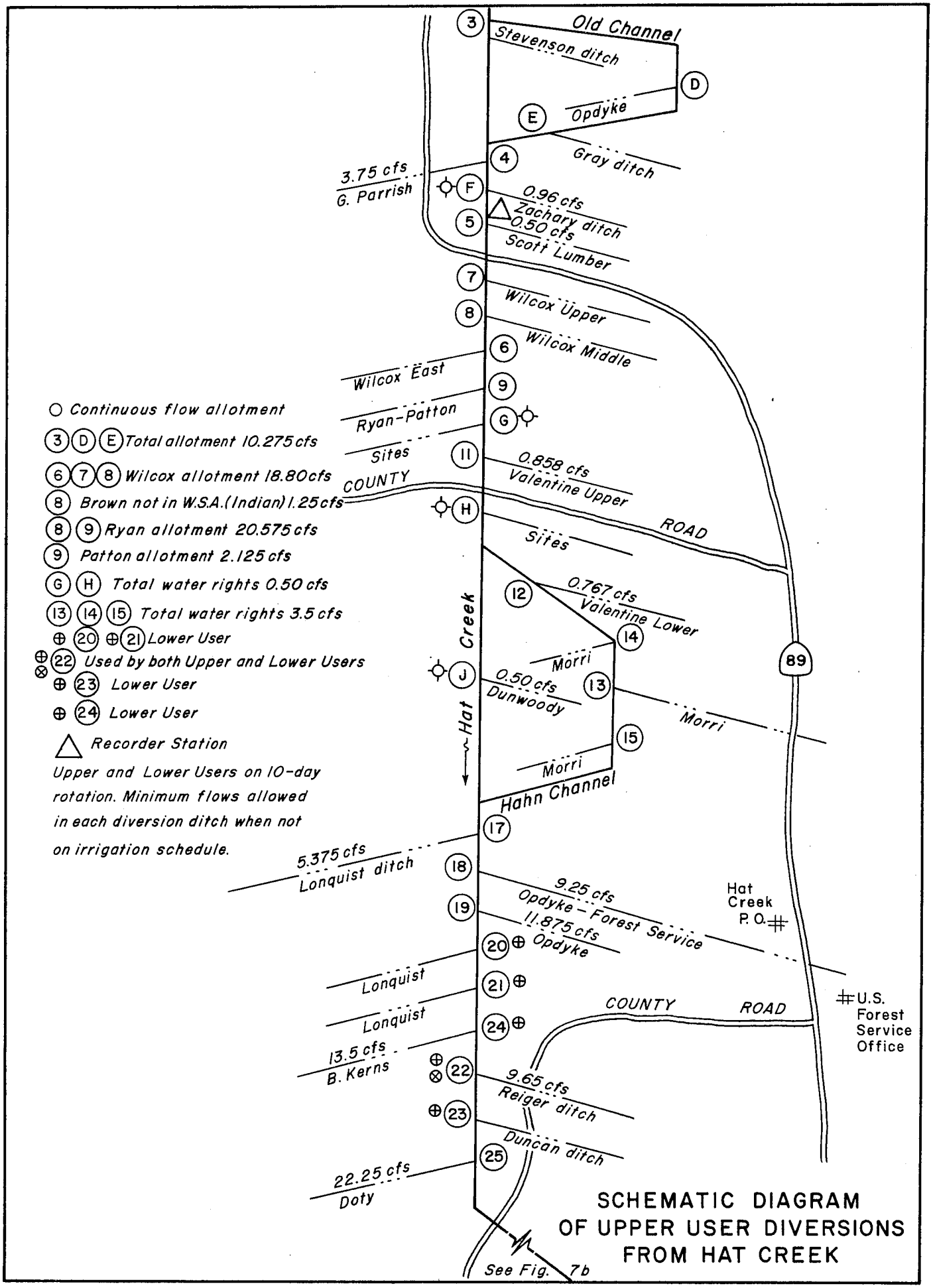


SCHEMATIC DIAGRAM OF DIVERSIONS FROM CLOVER CREEK

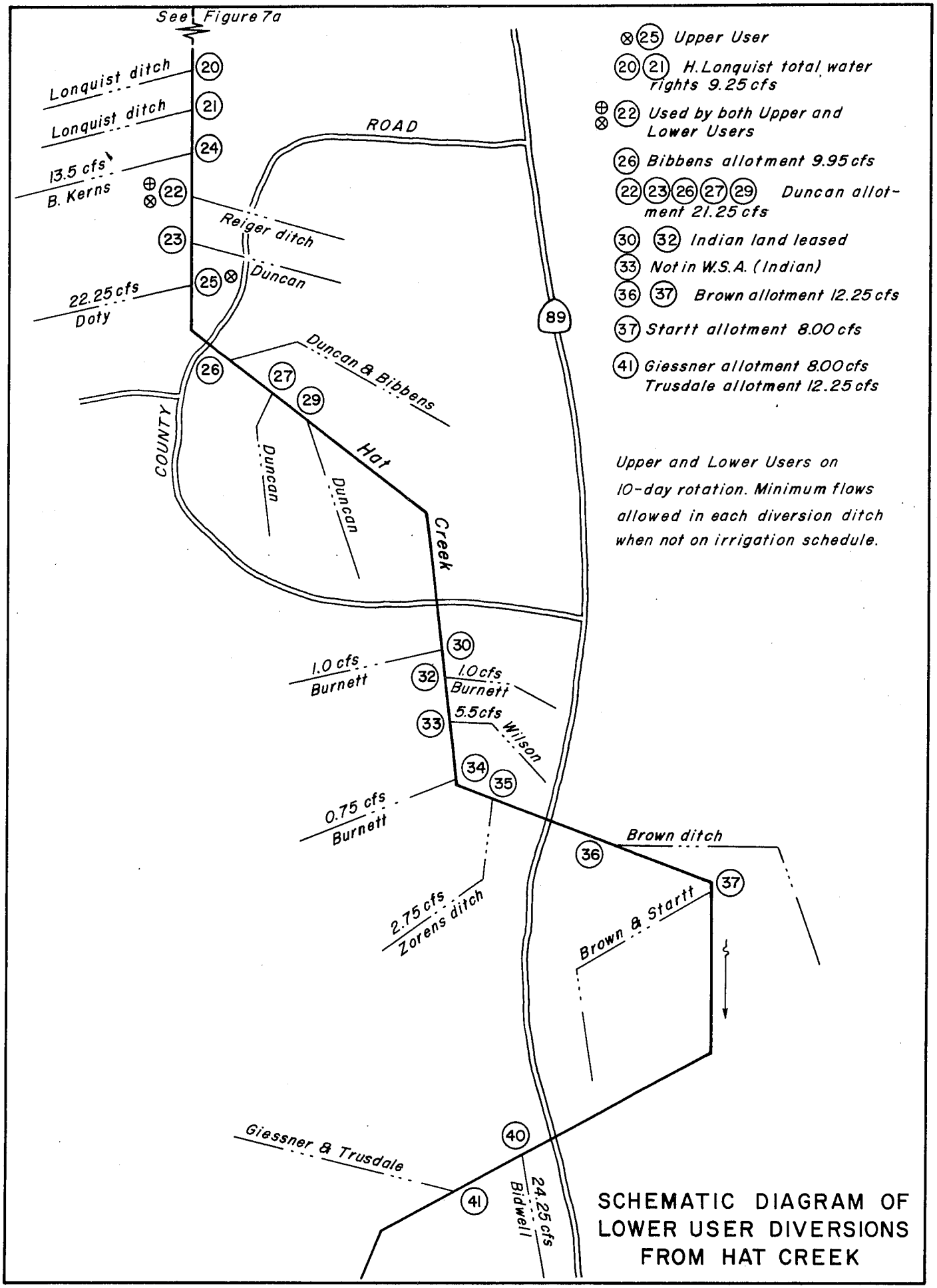

South Fork Digger Creek
Mill ditch
Randall ditch
South Bergin Creek
Penstock
Campbell ditch
1 2 3 4 5 Forward Bros.
Property total water rights 7.65 cfs
Recorder Station
Love's Mill Branch
3.125 cfs
T. J. Pritchard
H.H. Pritchard
0.45 cfs
Digger
FORWARD MILL ROAD
7.9 cfs
Boole ditch
1.10 cfs
Williams ditch
2.20 cfs
Crooker ditch
0.80 cfs
Harrison ditch
Manton
TOTAL WATER RIGHTS-
23.225 cfs
SCHEMATIC DIAGRAM
OF DIGGER CREEK
WATERMASTER SERVICE AREA



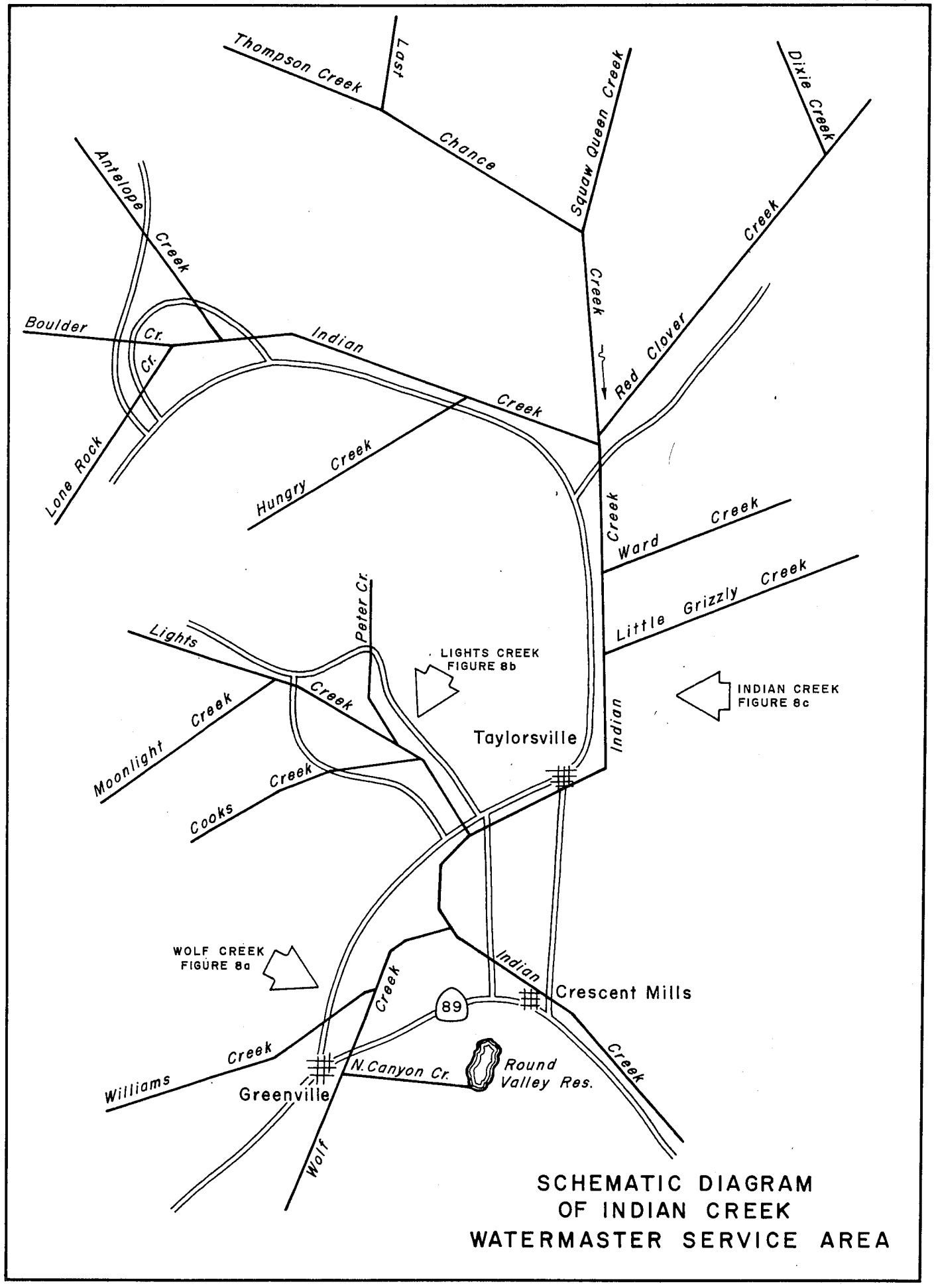
SCHEMATIC DIAGRAM
OF HAT CREEK
WATERMASTER SERVICE AREA



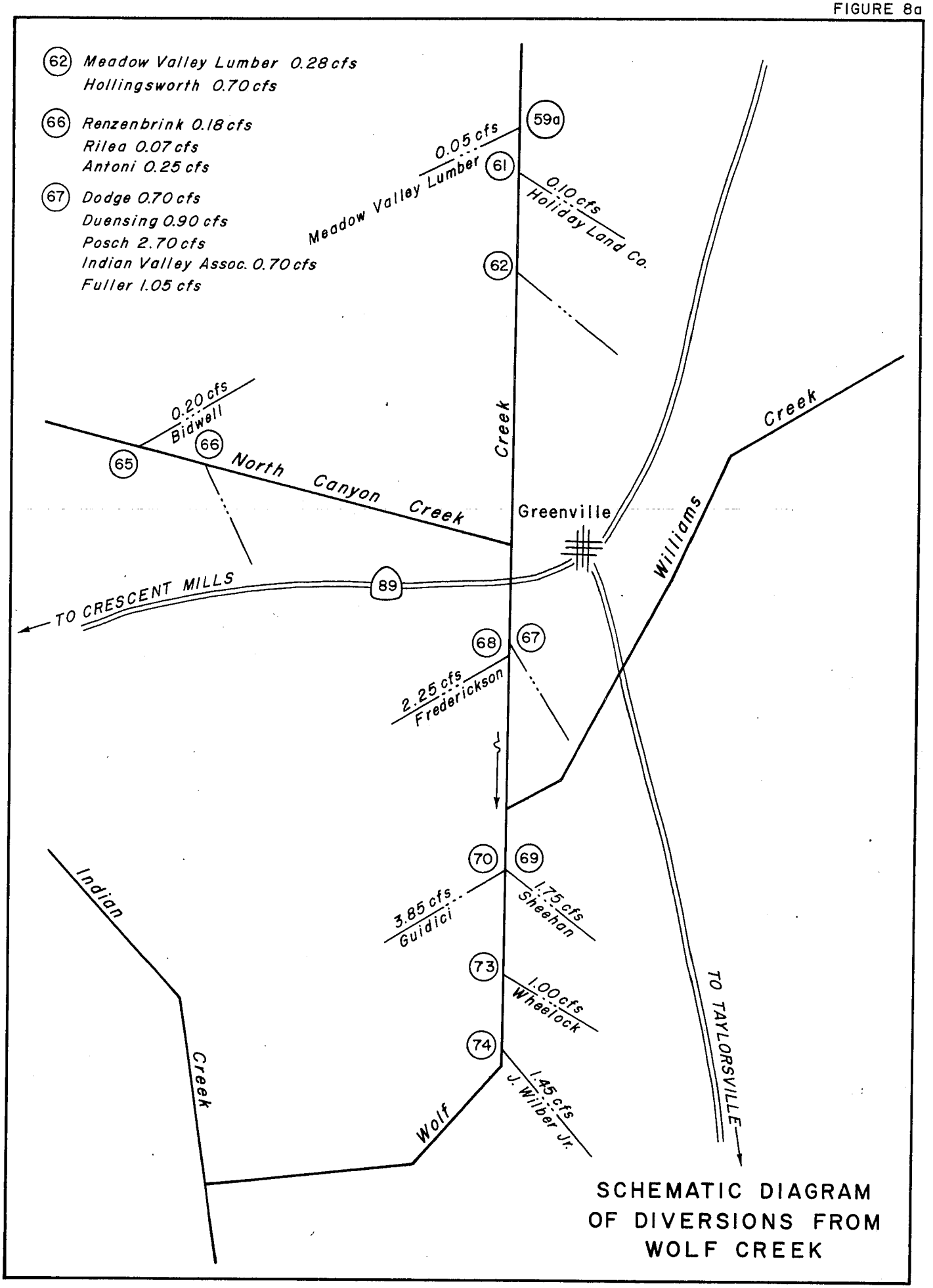
SCHEMATIC DIAGRAM OF UPPER USER DIVERSIONS FROM HAT CREEK

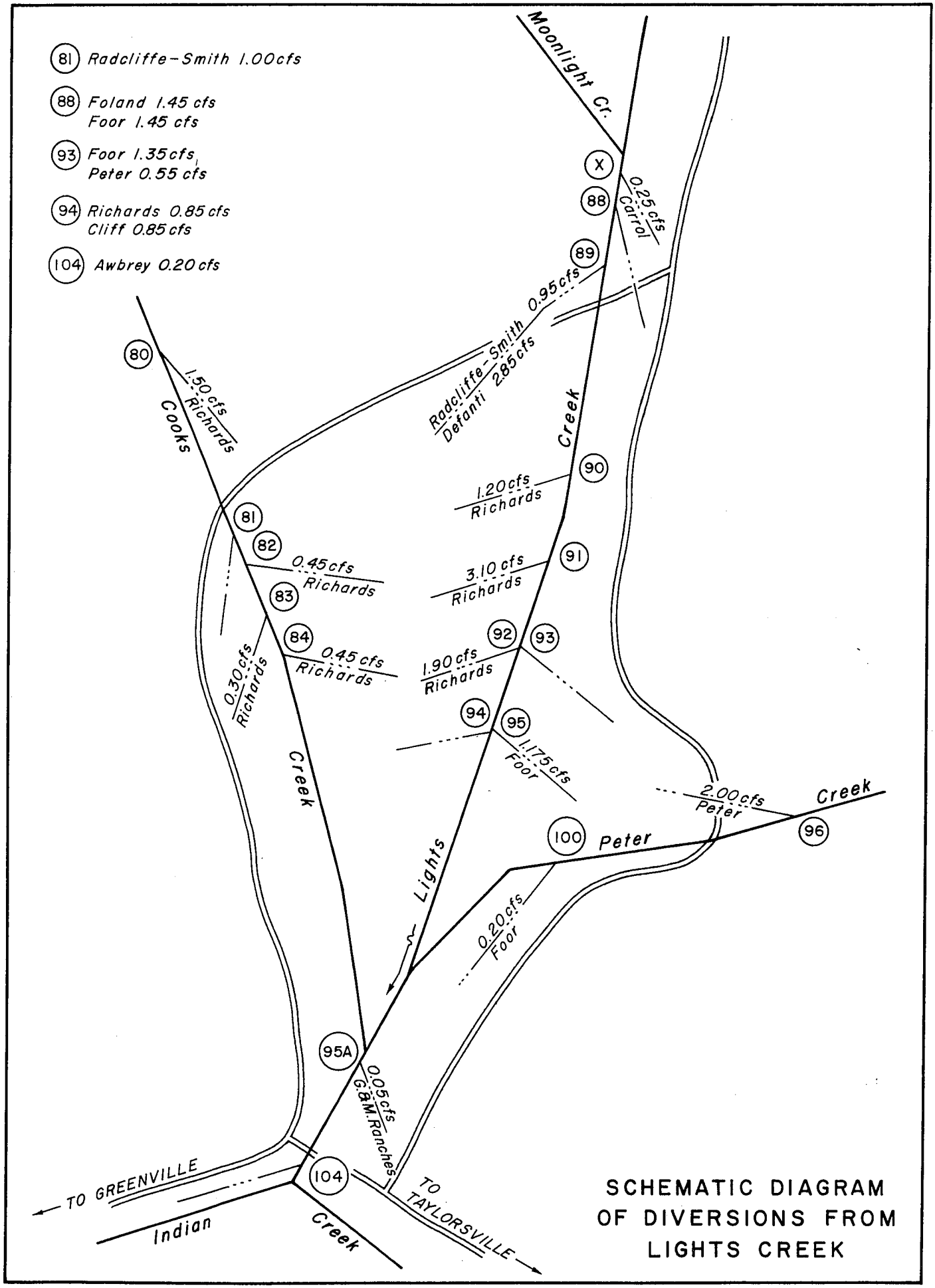


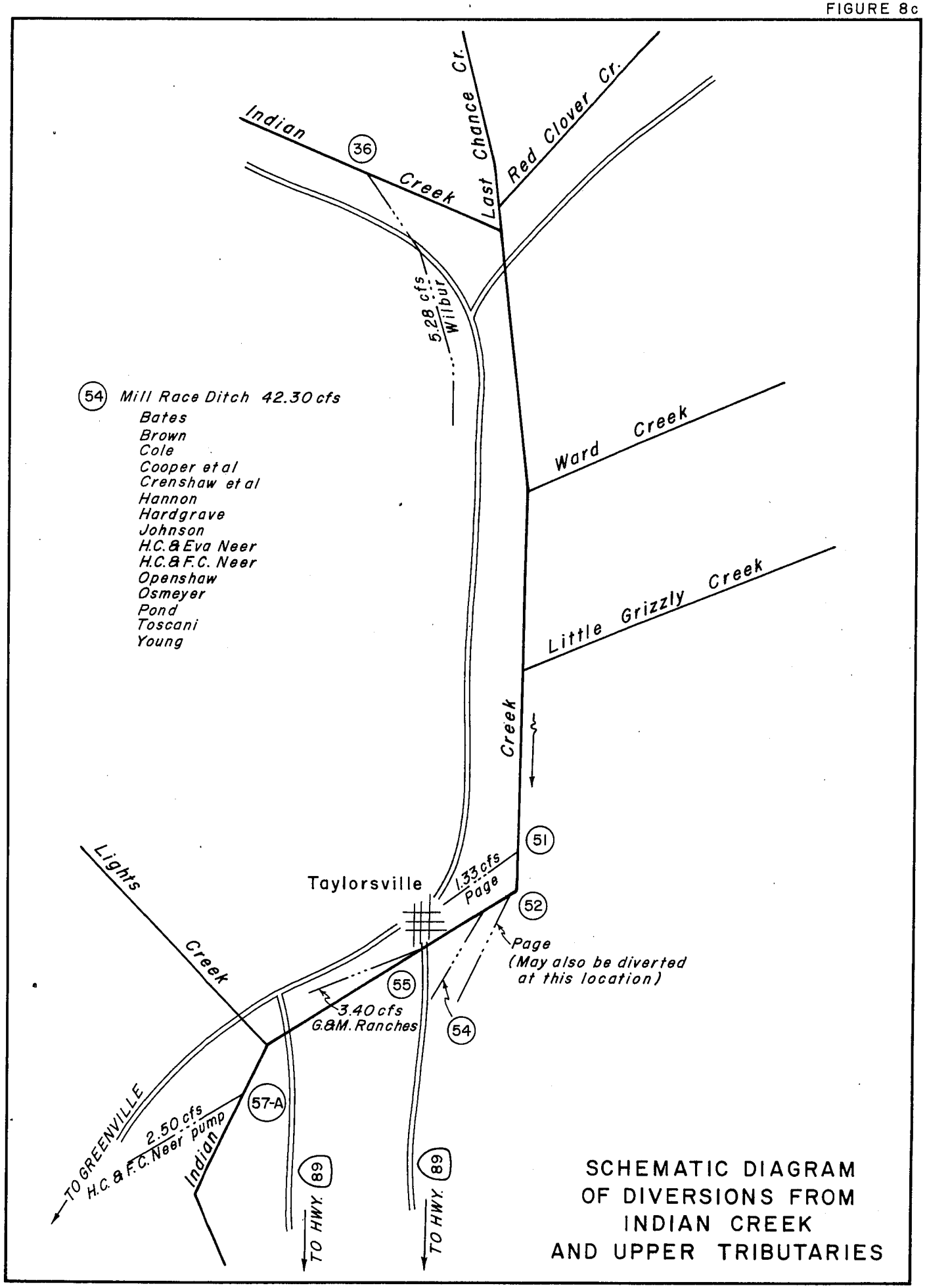
SCHEMATIC DIAGRAM OF LOWER USER DIVERSIONS FROM HAT CREEK



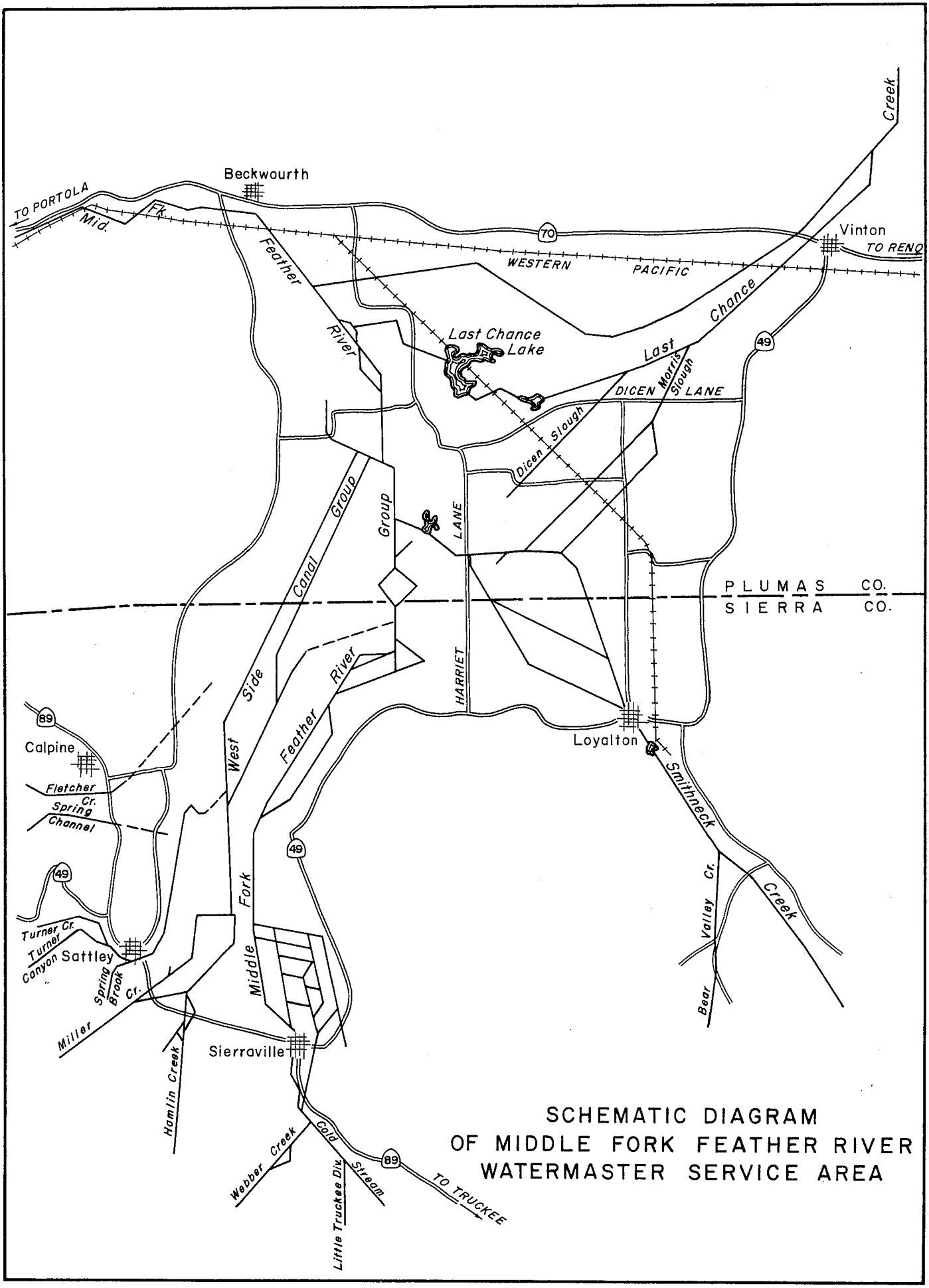
SCHEMATIC DIAGRAM
OF INDIAN CREEK
WATERMASTER SERVICE AREA


62 Meadow Valley Lumber 0.28 cfs
Hollingsworth 0.70 cfs
66 Renzenbrink 0.18 cfs
Rilea 0.07 cfs
Antoni 0.25 cfs
67 Dodge 0.70 cfs
Duensing 0.90 cfs
Posch 2.70 cfs
Indian Valley Assoc. 0.70 cfs
Fuller 1.05 cfs
59a
0.05 cfs
Meadow Valley Lumber
61
0.10 cfs
Holiday Land Co.
62
0.20 cfs
Bidwell
66
65
North Canyon Creek
Creek
Greenville
Creek
Williams
TO CRESCENT MILLS
89
68
67
2.25 cfs
Frederickson
70
69
3.85 cfs
Guidici
1.75 cfs
Sheehan
73
1.00 cfs
Wheelock
74
1.45 cfs
J. Wilber Jr.
Indian
Creek
Wolf
TO TAYLORSVILLE
SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
WOLF CREEK


(81) Radcliffe-Smith 1.00cfs
(88) Foland 1.45 cfs
Foor 1.45 cfs
(93) Foor 1.35cfs
Peter 0.55 cfs
(94) Richards 0.85cfs
Cliff 0.85cfs
(104) Awbrey 0.20cfs
Moonlight Cr.
X
88
0.25 cfs Carrol
89
Radcliffe-Smith 0.95cfs
Defanti 2.85cfs
80
1.50 cfs Richards
Cooks Creek
90
1.20cfs Richards
81
82
0.45cfs Richards
91
3.10 cfs Richards
83
84
0.45 cfs Richards
92
93
1.90 cfs Richards
0.30cfs Richards
94
95
1.175 cfs Foor
2.00cfs Peter
Creek
96
100 Peter
Lights Creek
0.20cfs Foor
95A
0.05cfs G.&M. Ranches
104
TO GREENVILLE
Indian Creek
TO TAYLORSVILLE
SCHEMATIC DIAGRAM OF DIVERSIONS FROM LIGHTS CREEK



SCHEMATIC DIAGRAM OF DIVERSIONS FROM INDIAN CREEK AND UPPER TRIBUTARIES



SCHEMATIC DIAGRAM
OF MIDDLE FORK FEATHER RIVER
WATERMASTER SERVICE AREA

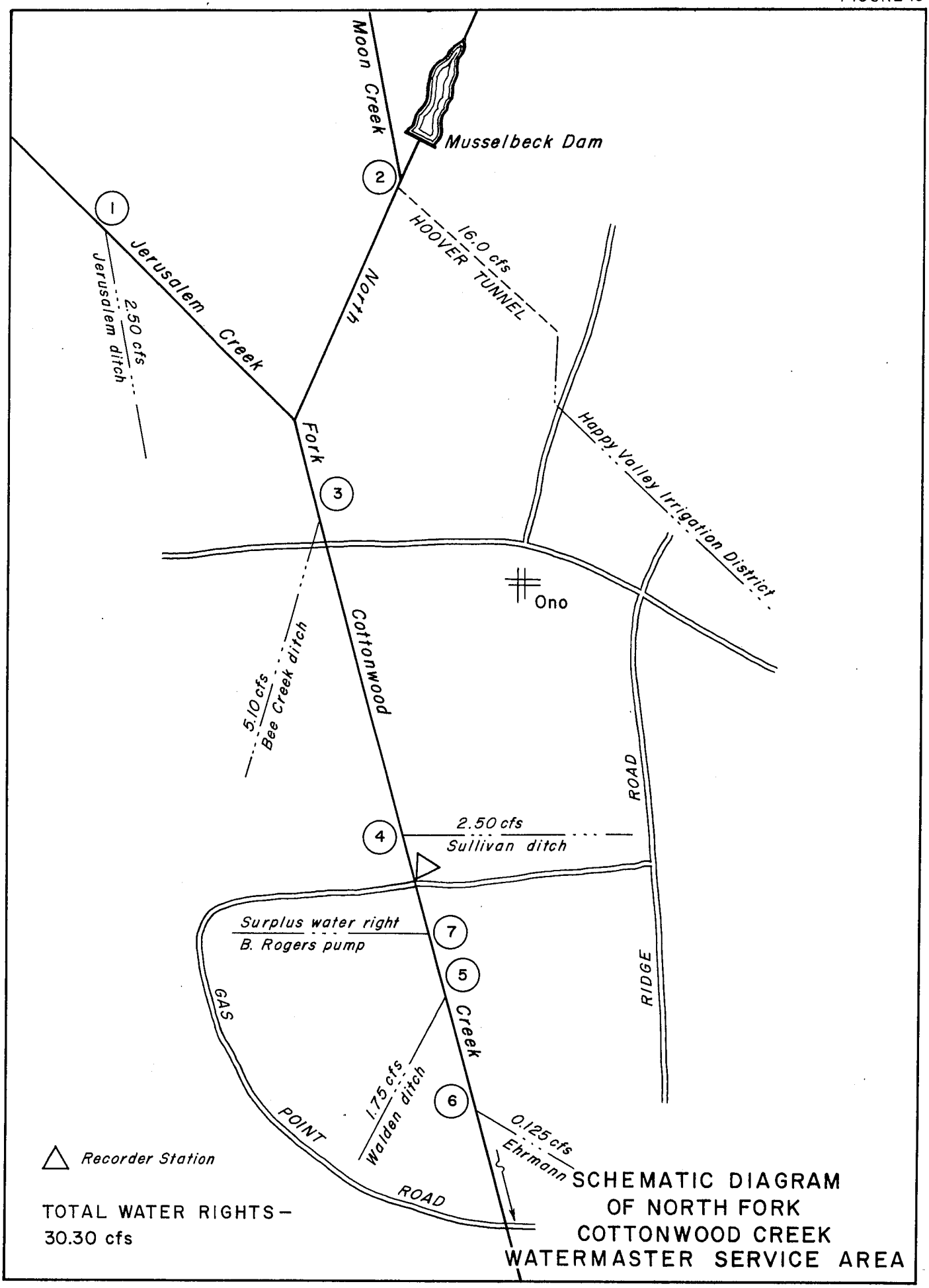

Moon Creek
Musselbeck Dam
2
1
Jerusalem Creek
2.50 cfs
Jerusalem ditch
North
16.0 cfs
HOOVER TUNNEL
Happy Valley Irrigation District
Fork
3
Ono
Cottonwood
5.10 cfs
Bee Creek ditch
ROAD
4
2.50 cfs
Sullivan ditch
Surplus water right
B. Rogers pump
7
5
RIDGE
GAS
Creek
1.75 cfs
Walden ditch
6
POINT
0.125 cfs
Ehrmann
ROAD
Recorder Station
TOTAL WATER RIGHTS –
30.30 cfs
SCHEMATIC DIAGRAM
OF NORTH FORK
COTTONWOOD CREEK
WATERMASTER SERVICE AREA

FIGURE II

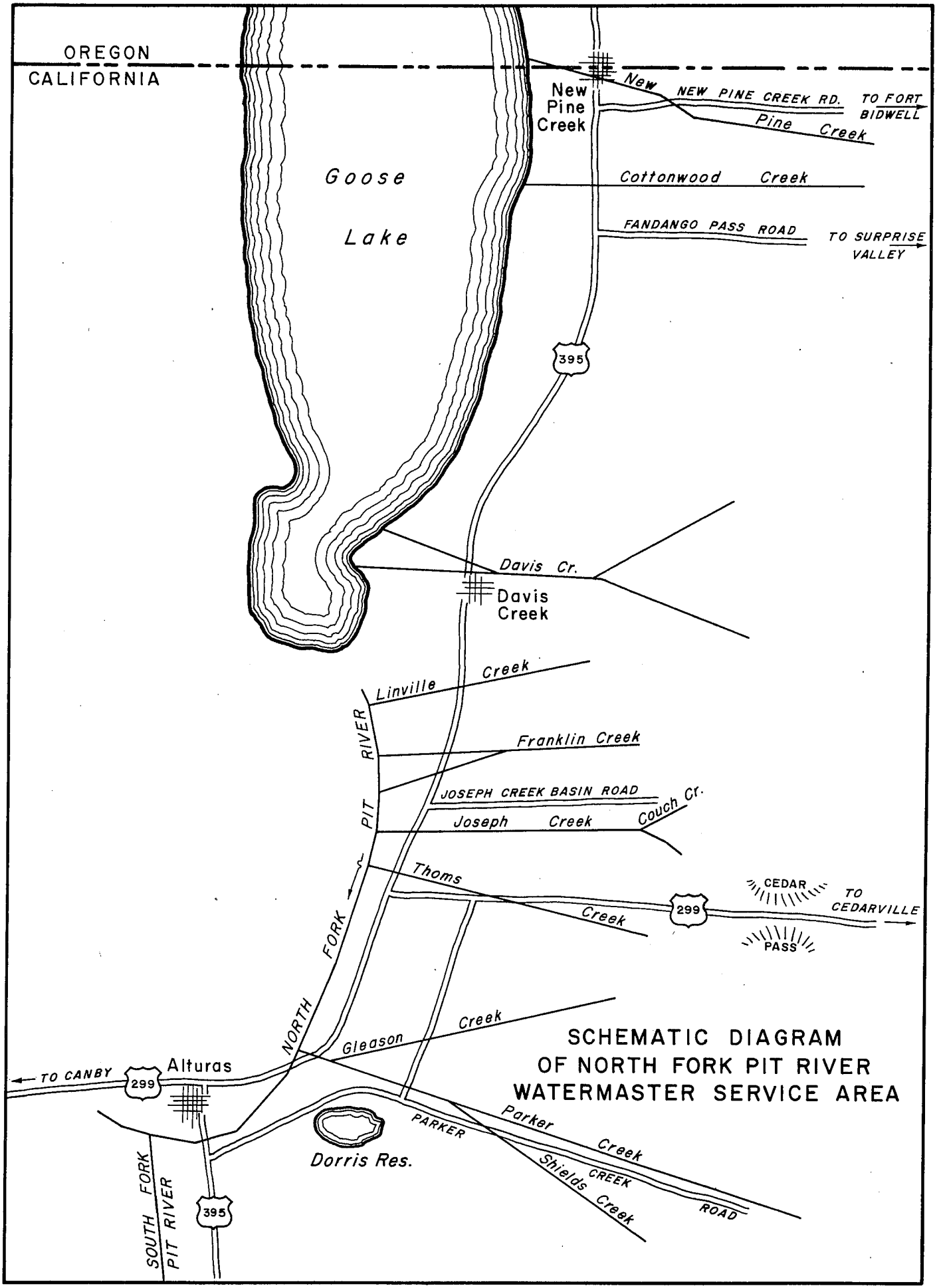
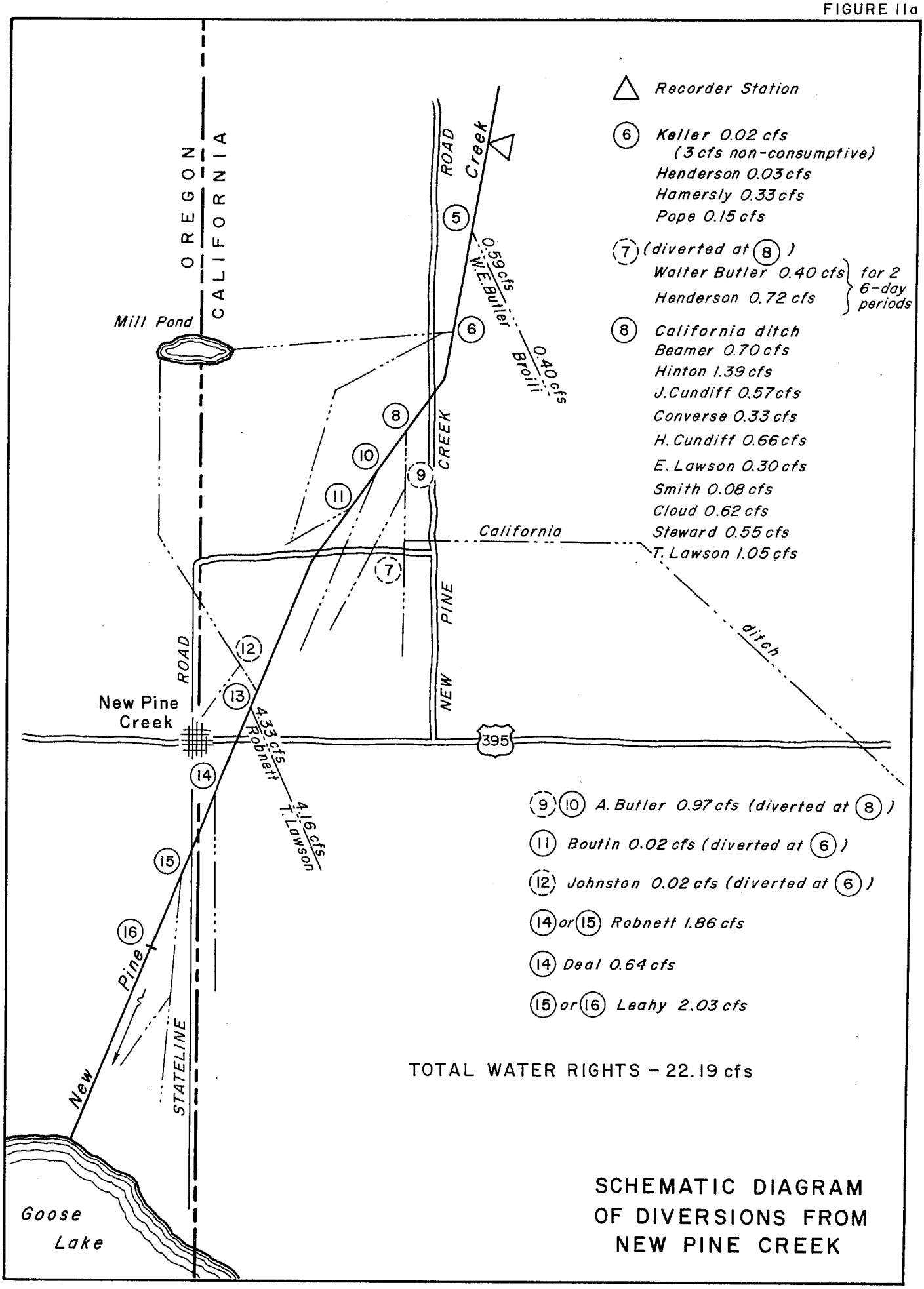

OREGON
CALIFORNIA
New Pine Creek
New Pine Creek
NEW PINE CREEK RD.
TO FORT BIDWELL
Goose Lake
Cottonwood Creek
FANDANGO PASS ROAD
TO SURPRISE VALLEY
395
Davis Cr.
Davis Creek
Linville Creek
Franklin Creek
JOSEPH CREEK BASIN ROAD
Joseph Creek
Couch Cr.
PIT RIVER
NORTH FORK
Thoms Creek
299
CEDAR PASS
TO CEDARVILLE
Gleason Creek
TO CANBY
299
Alturas
Dorris Res.
PARKER
Parker Creek
Shields Creek
CREEK ROAD
SOUTH FORK PIT RIVER
395
SCHEMATIC DIAGRAM
OF NORTH FORK PIT RIVER
WATERMASTER SERVICE AREA

FIGURE IIa


Recorder Station
(6) Keller 0.02 cfs
(3 cfs non-consumptive)
Henderson 0.03 cfs
Hamersly 0.33 cfs
Pope 0.15 cfs
(7) (diverted at (8))
Walter Butler 0.40 cfs
Henderson 0.72 cfs
for 2 6-day periods
(8) California ditch
Beamer 0.70 cfs
Hinton 1.39 cfs
J. Cundiff 0.57 cfs
Converse 0.33 cfs
H. Cundiff 0.66 cfs
E. Lawson 0.30 cfs
Smith 0.08 cfs
Cloud 0.62 cfs
Steward 0.55 cfs
T. Lawson 1.05 cfs
(9)(10) A. Butler 0.97 cfs (diverted at (8))
(11) Boutin 0.02 cfs (diverted at (6))
(12) Johnston 0.02 cfs (diverted at (6))
(14) or (15) Robnett 1.86 cfs
(14) Deal 0.64 cfs
(15) or (16) Leahy 2.03 cfs
OREGON
CALIFORNIA
Mill Pond
ROAD
Creek
(5)
0.59 cfs W.E. Butler
0.40 cfs Broili
(6)
(8)
(10)
(9)
CREEK
(11)
California
(7)
PINE
NEW
ditch
ROAD
(12)
New Pine Creek
(13)
4.33 cfs Robnett
4.16 cfs T. Lawson
395
(14)
(15)
(16)
New Pine
STATELINE
Goose Lake
TOTAL WATER RIGHTS – 22.19 cfs
SCHEMATIC DIAGRAM OF DIVERSIONS FROM NEW PINE CREEK

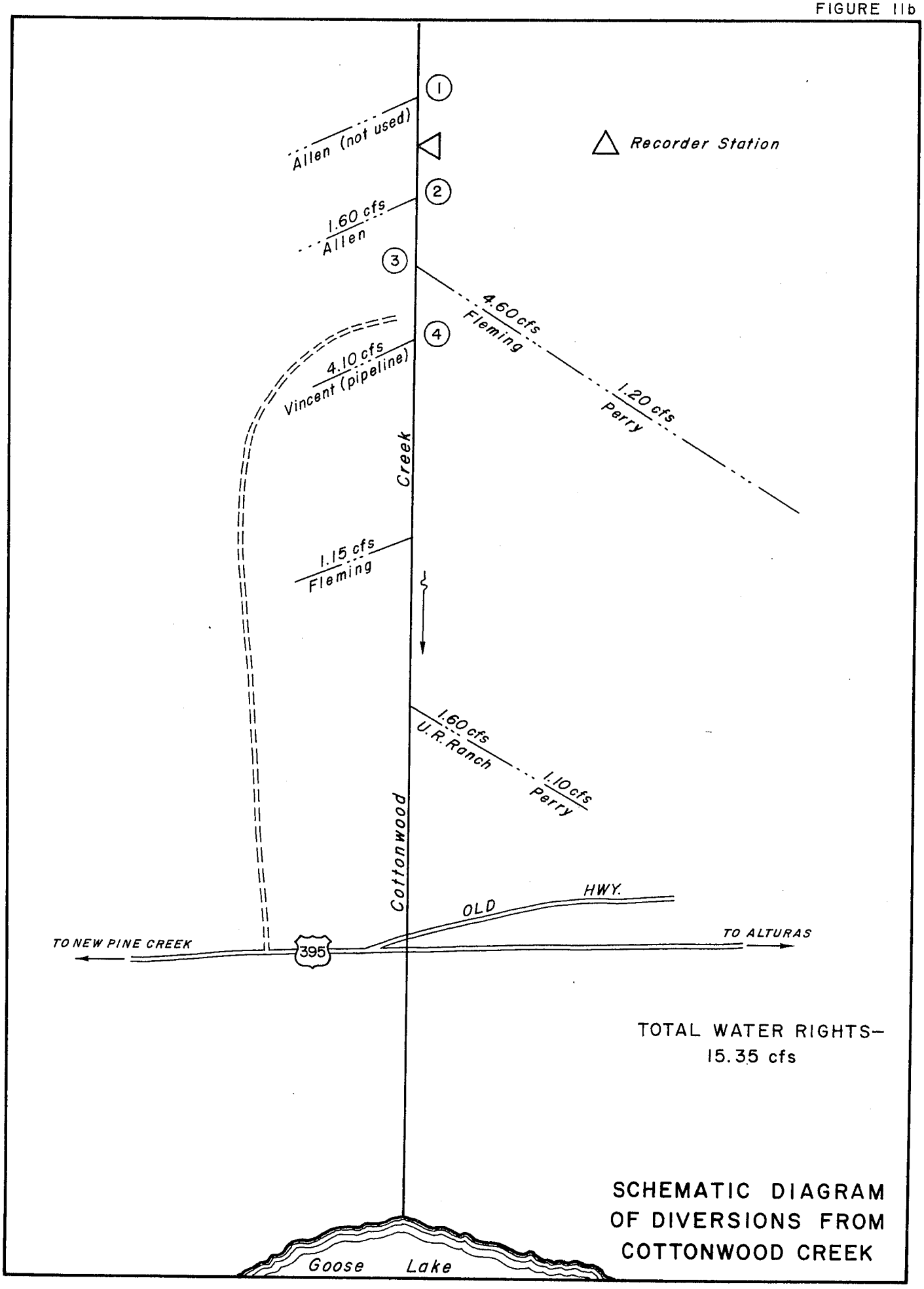

1
2
3
4
Allen (not used)
Recorder Station
1.60 cfs
Allen
4.60 cfs
Fleming
1.20 cfs
Perry
4.10 cfs
Vincent (pipeline)
Creek
1.15 cfs
Fleming
1.60 cfs
U.R. Ranch
1.10 cfs
Perry
Cottonwood
OLD
HWY.
TO NEW PINE CREEK
395
TO ALTURAS
TOTAL WATER RIGHTS–
15.35 cfs
SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
COTTONWOOD CREEK
Goose Lake

FIGURE 11c

△ Recorder Station

(1) Crabtree 0.40 cfs
Grace 0.40 cfs

(4) C. Brunnemer 0.80 cfs

(6) C. Brunnemer 0.40 cfs

(4) to (6), (8), (9), (11), (16), (19), (20), (22), (24), (25) C.M. Bishop 6.30 cfs

(5) Mann 0.20 cfs
C.M. Bishop 0.125 cfs

(7) Brown 0.1125 cfs
Dolon 0.0375 cfs
Keaton 0.15 cfs

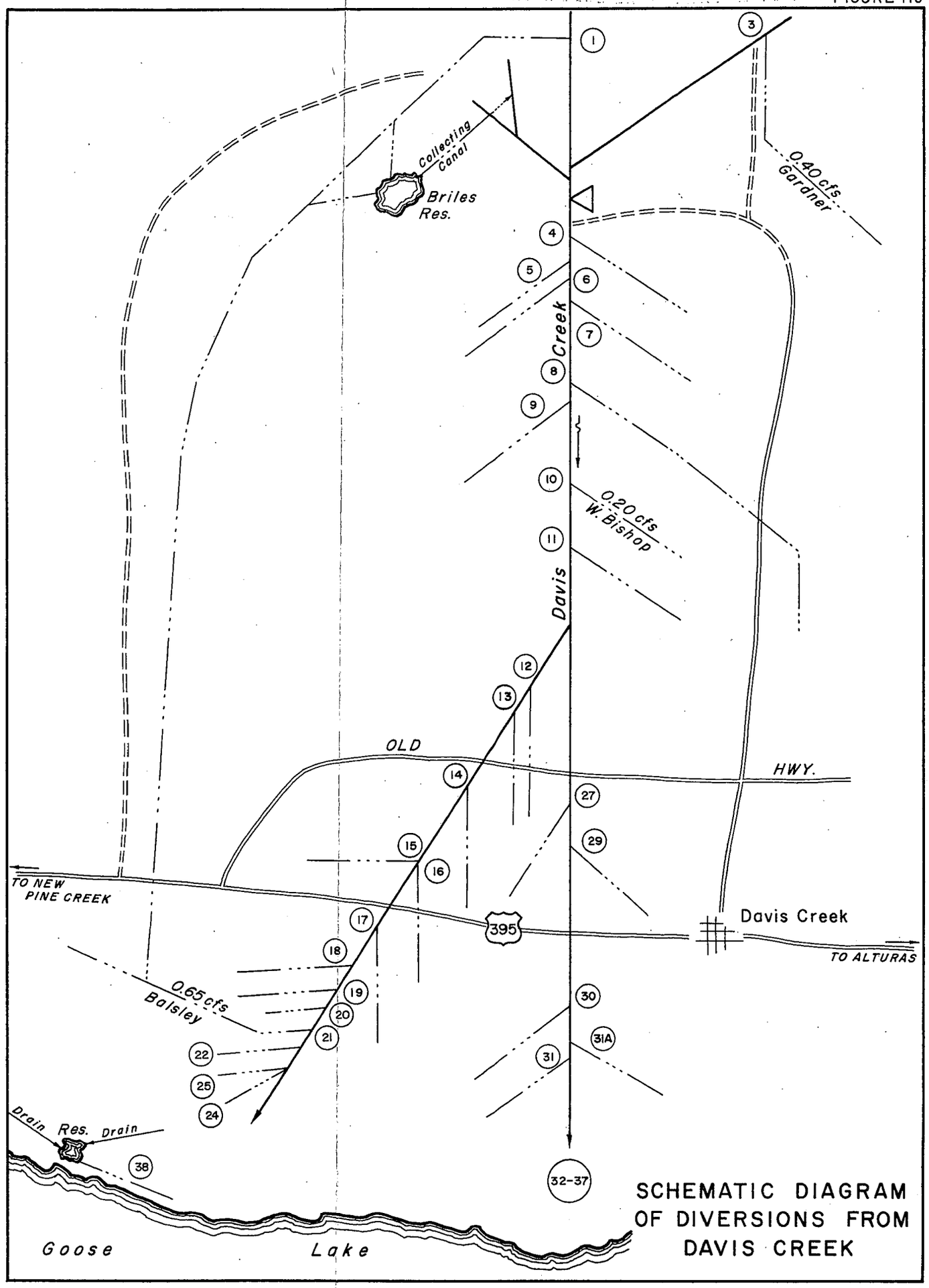
(8) Mulkey 0.15 cfs
E. Brunnemer 0.15 cfs
C. Brunnemer 0.15 cfs
Grivel 0.06 cfs
Pointere 0.04 cfs

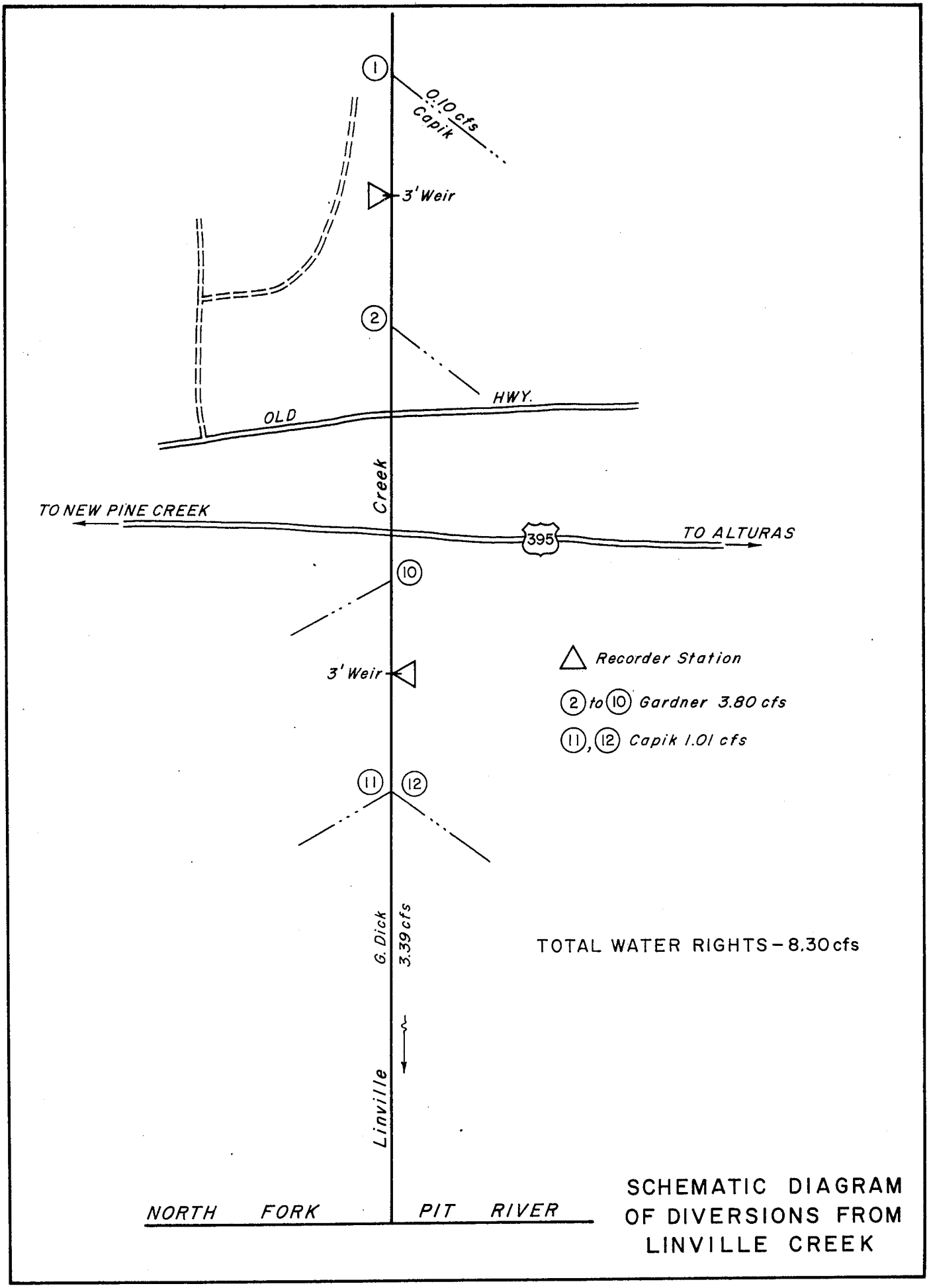
(9) or (14) Dollarhide 0.15 cfs

(9), (12), (13), (16), (27), (30), (31), (31A) Echard 1.40 cfs

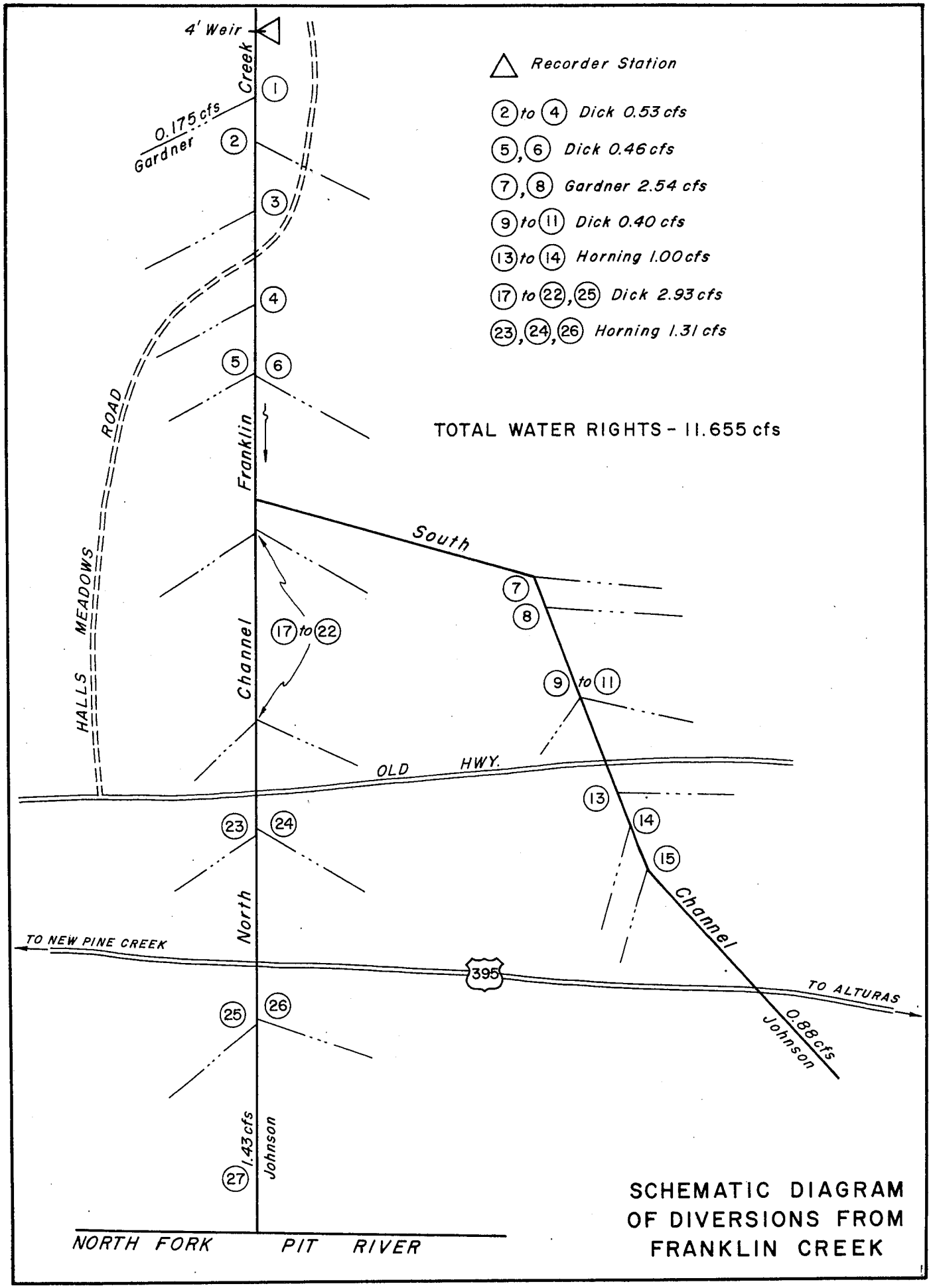
(9), (15), (17) to (19) Hammersly 1.50 cfs

(27), (29), (32) to (37) Grace 39.05 cfs



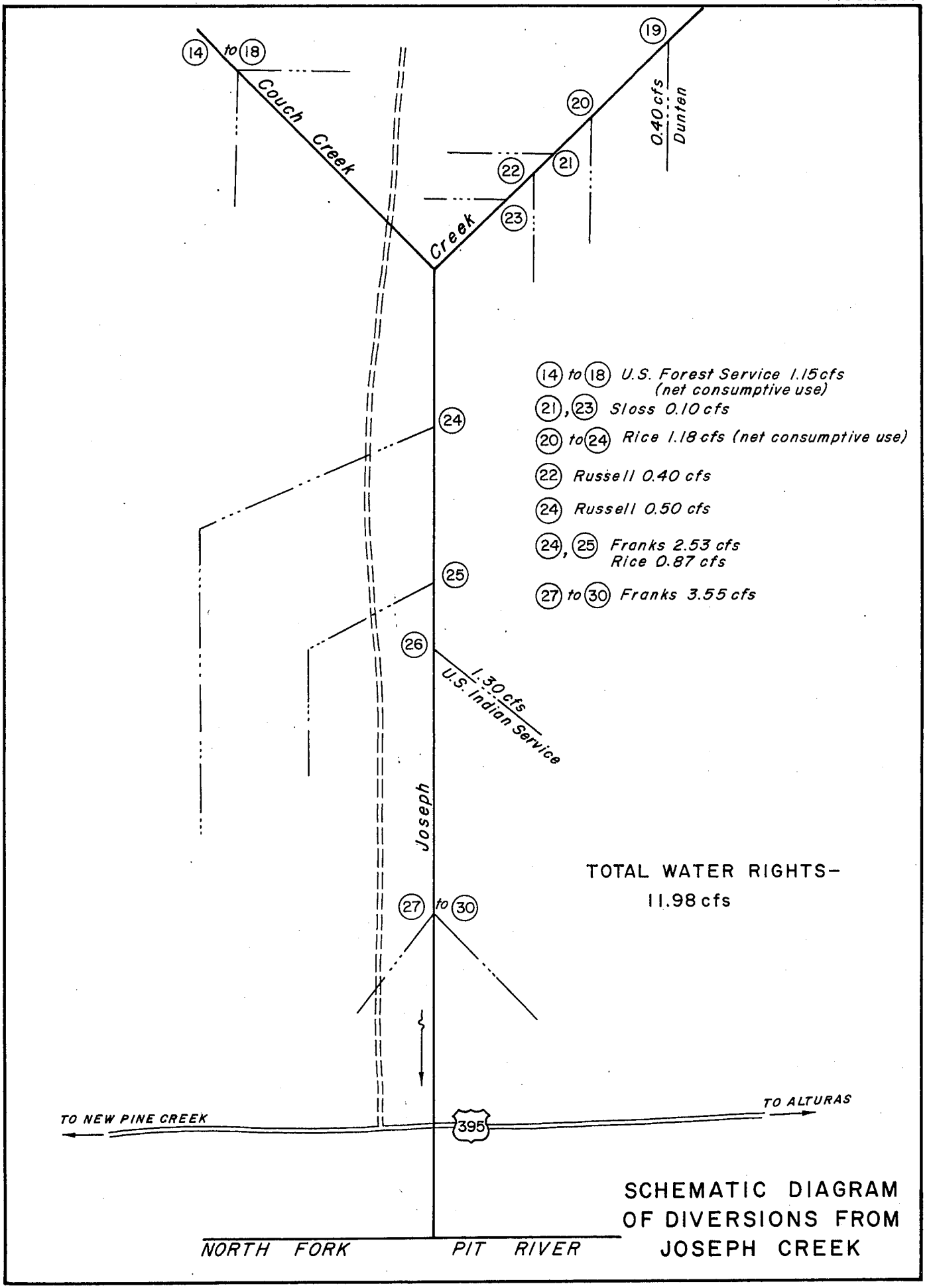


SCHEMATIC DIAGRAM OF DIVERSIONS FROM LINVILLE CREEK



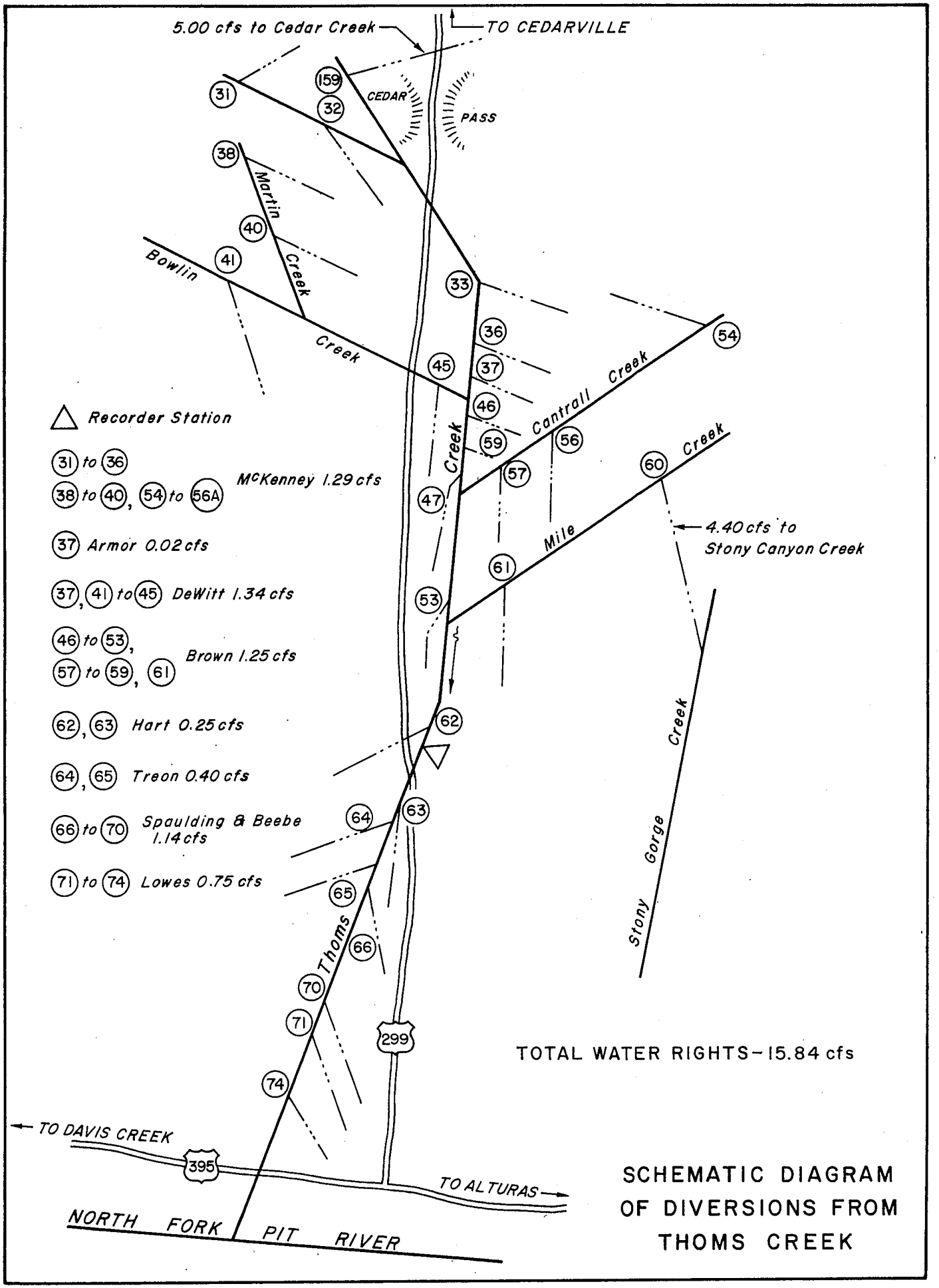
SCHEMATIC DIAGRAM OF DIVERSIONS FROM FRANKLIN CREEK

FIGURE IIf



SCHEMATIC DIAGRAM OF DIVERSIONS FROM JOSEPH CREEK

FIGURE 11g



SCHEMATIC DIAGRAM OF DIVERSIONS FROM THOMS CREEK

FIGURE 11h

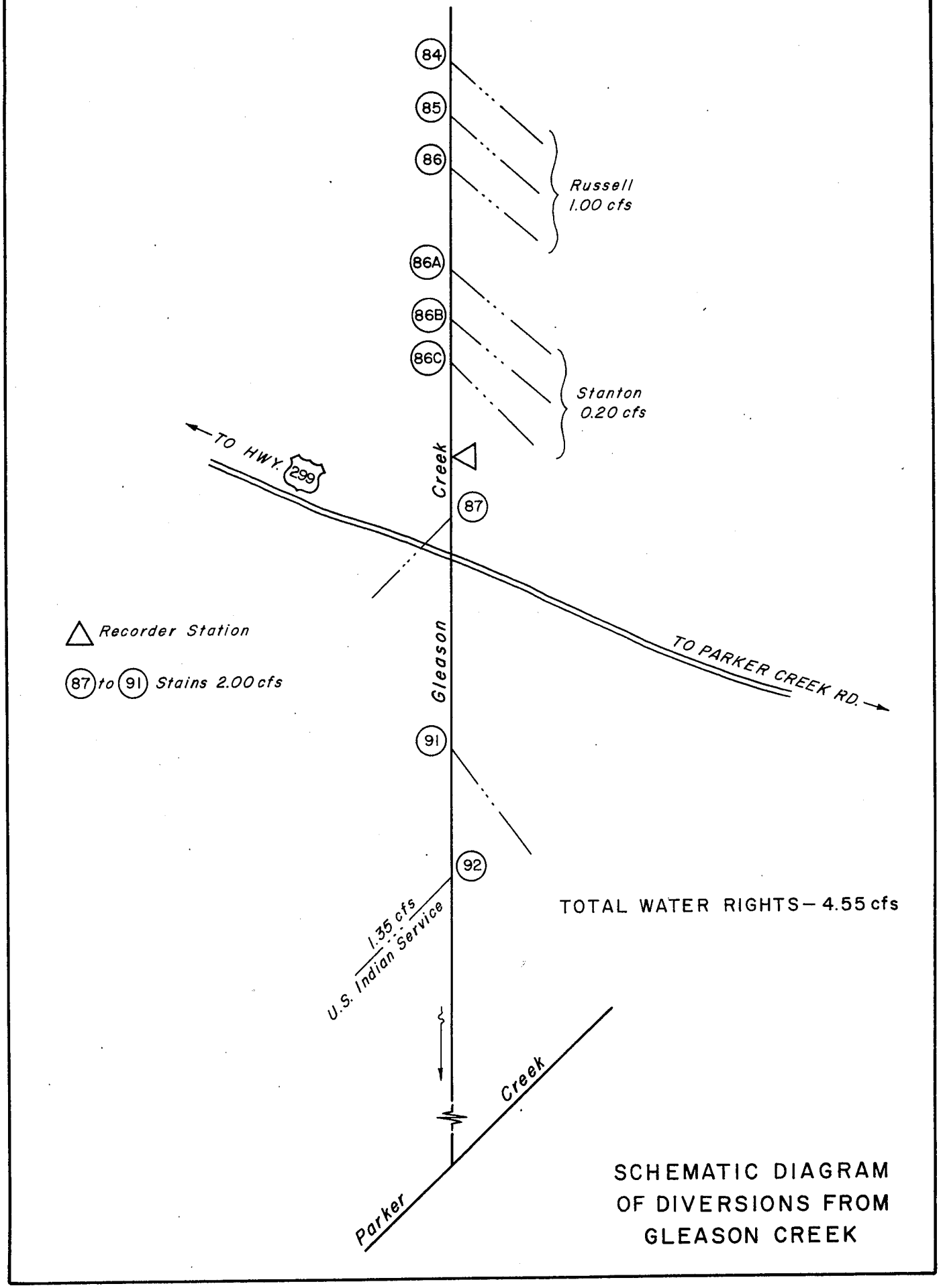
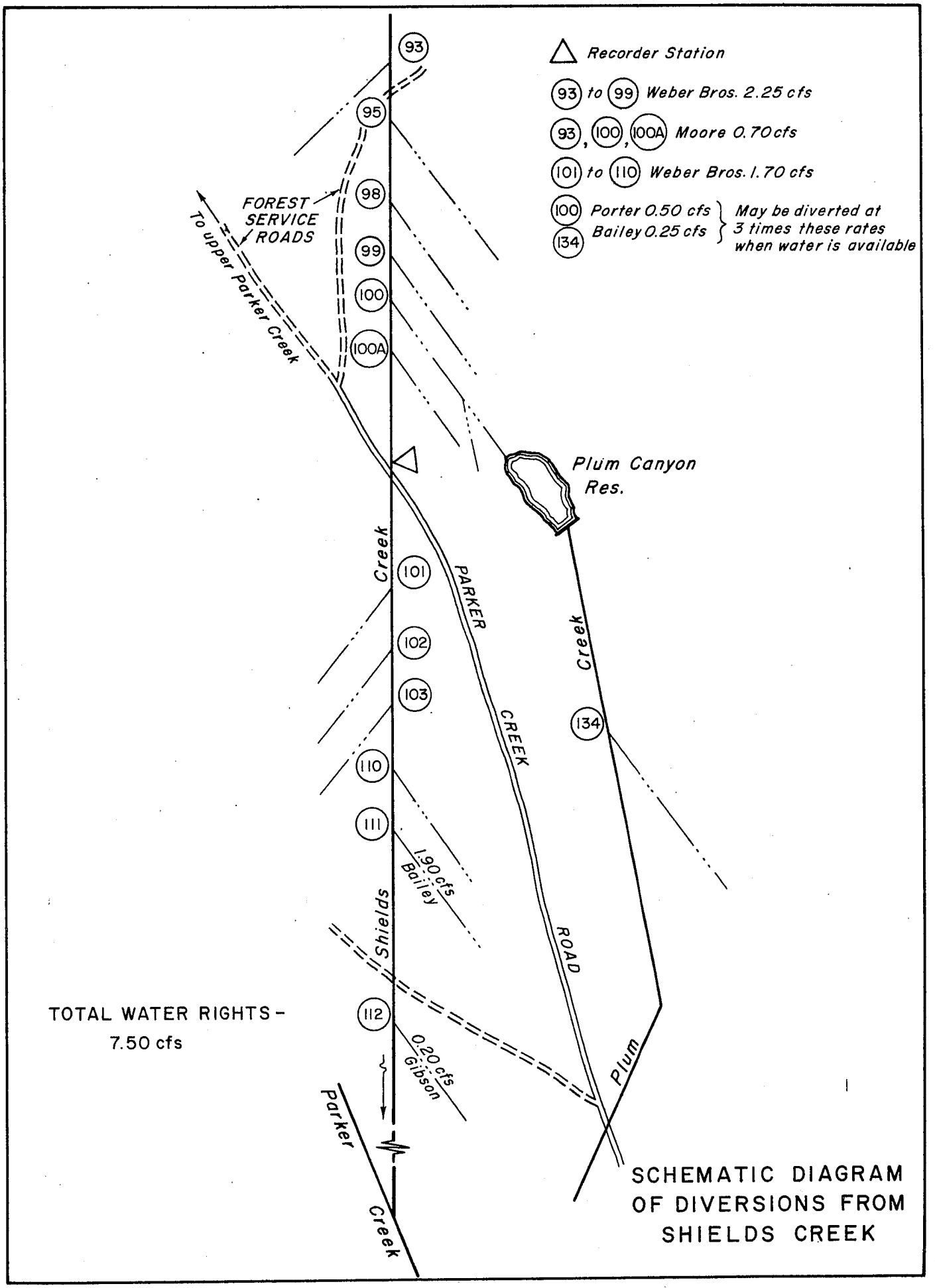

84
85
86
Russell
1.00 cfs
86A
86B
86C
Stanton
0.20 cfs
TO HWY. 299
Creek
87
Recorder Station
87 to 91 Stains 2.00 cfs
Gleason
TO PARKER CREEK RD.
91
92
1.35 cfs
U.S. Indian Service
TOTAL WATER RIGHTS – 4.55 cfs
Parker
Creek
SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
GLEASON CREEK

FIGURE III


Recorder Station
93 to 99 Weber Bros. 2.25 cfs
93, 100, 100A Moore 0.70 cfs
101 to 110 Weber Bros. 1.70 cfs
100 Porter 0.50 cfs
134 Bailey 0.25 cfs
May be diverted at 3 times these rates when water is available
93
95
98
99
100
100A
FOREST SERVICE ROADS
To upper Parker Creek
Plum Canyon Res.
Creek
101
102
103
110
111
112
134
PARKER CREEK
Plum Creek
ROAD
1.90 cfs Bailey
Shields
0.20 cfs Gibson
Parker Creek
TOTAL WATER RIGHTS - 7.50 cfs
SCHEMATIC DIAGRAM OF DIVERSIONS FROM SHIELDS CREEK

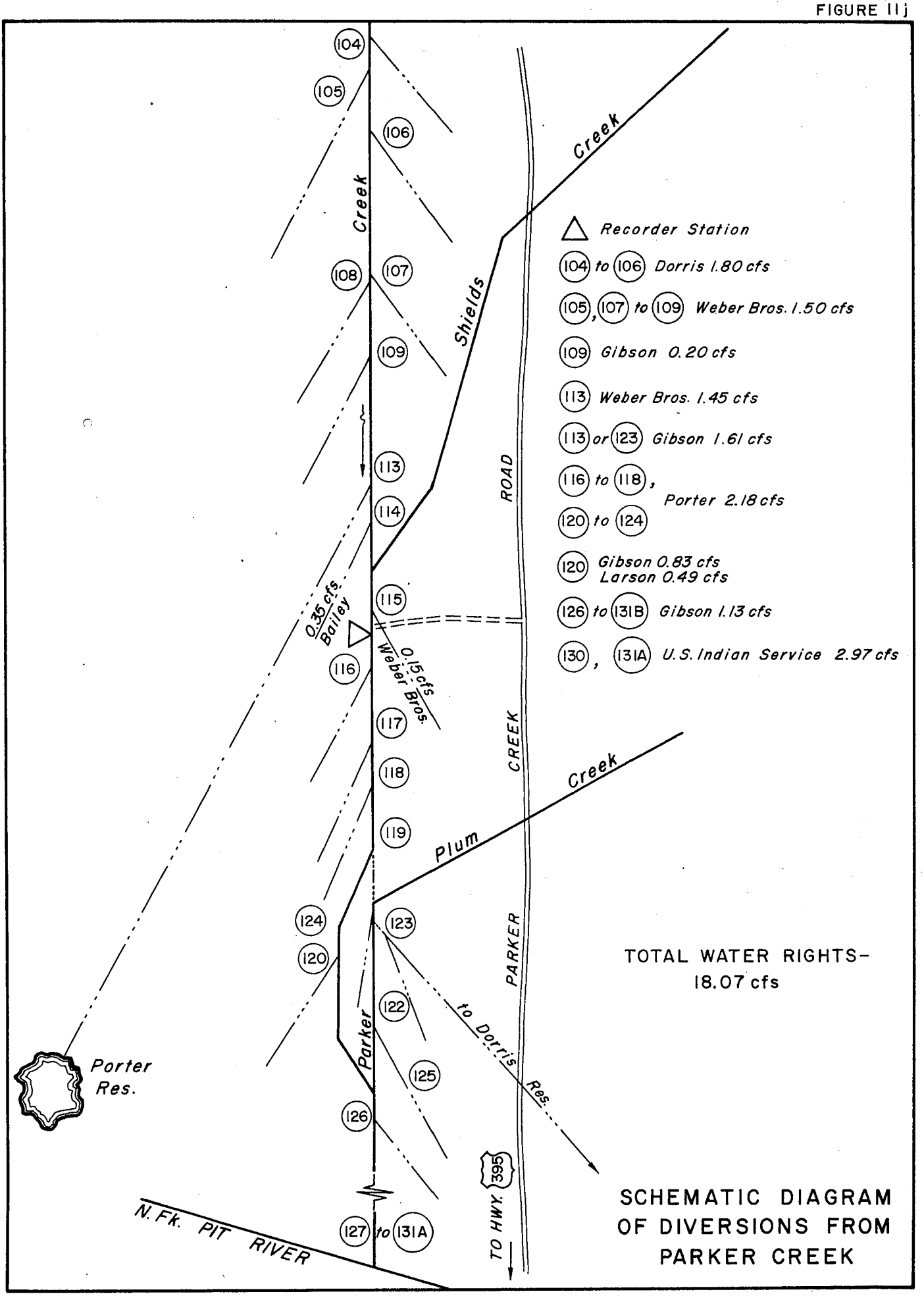
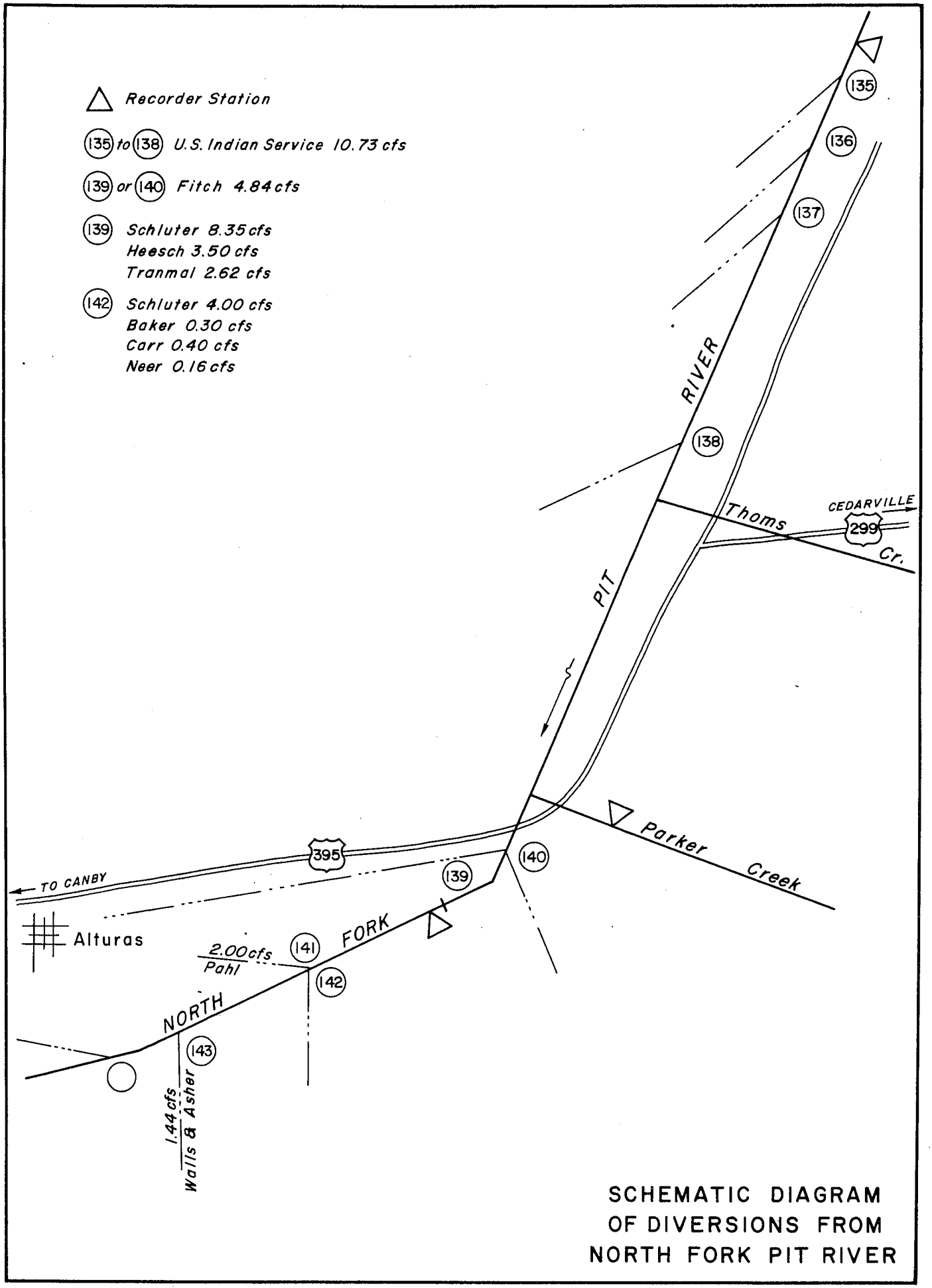
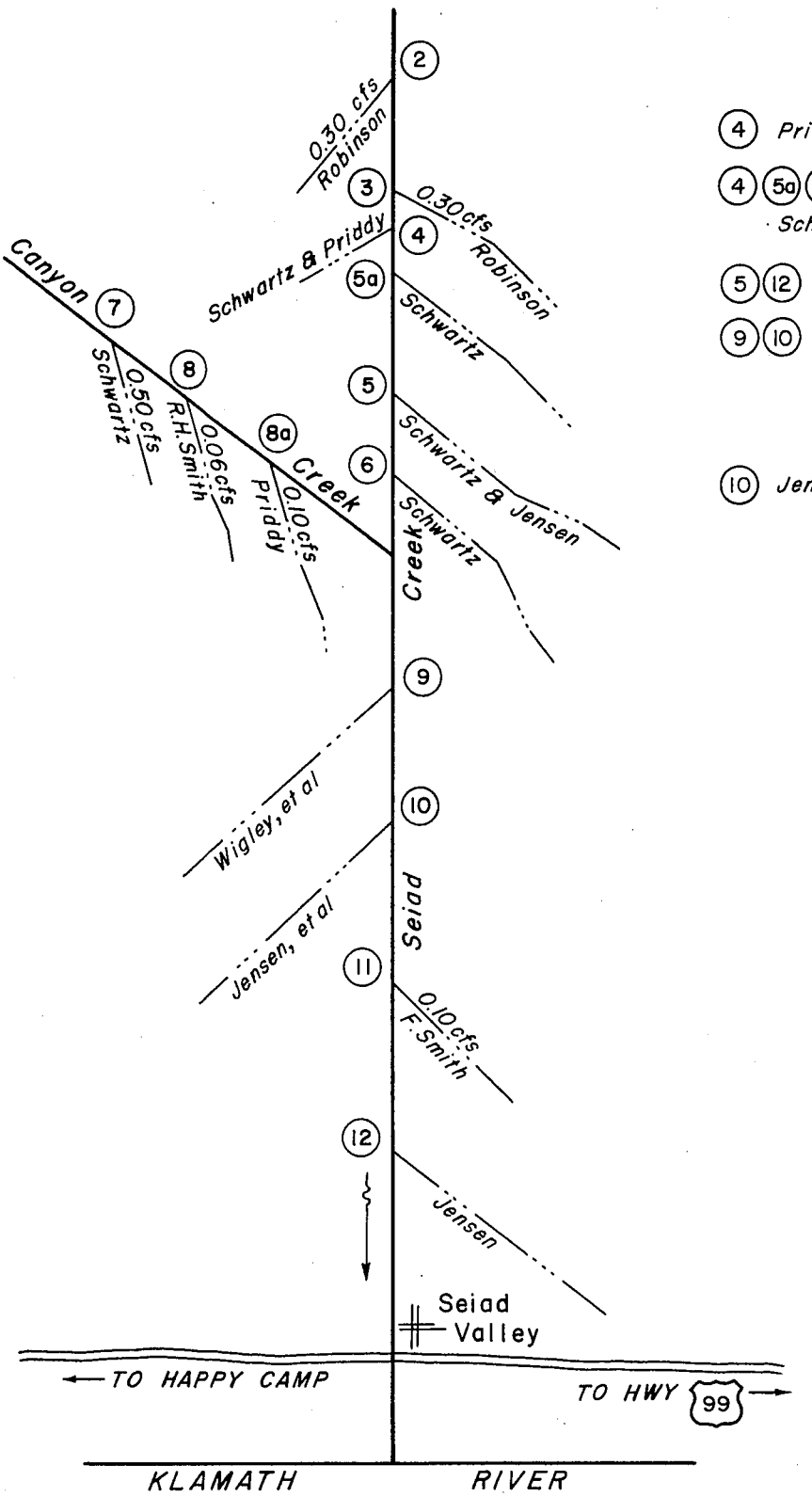

104
105
106
107
108
109
113
114
115
116
117
118
119
120
122
123
124
125
126
127 to 131A
Creek
Shields
Creek
ROAD
CREEK
Creek
Plum
PARKER
Parker
0.35 cfs Bailey
0.15 cfs Weber Bros.
Porter Res.
to Dorris Res.
TO HWY. 395
N. Fk. PIT RIVER
Recorder Station
104 to 106 Dorris 1.80 cfs
105, 107 to 109 Weber Bros. 1.50 cfs
109 Gibson 0.20 cfs
113 Weber Bros. 1.45 cfs
113 or 123 Gibson 1.61 cfs
116 to 118, 120 to 124 Porter 2.18 cfs
120 Gibson 0.83 cfs
Larson 0.49 cfs
126 to 131B Gibson 1.13 cfs
130, 131A U.S. Indian Service 2.97 cfs
TOTAL WATER RIGHTS-
18.07 cfs
SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
PARKER CREEK

FIGURE 11k



SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
NORTH FORK PIT RIVER



(4) Priddy allotment 0.60 cfs

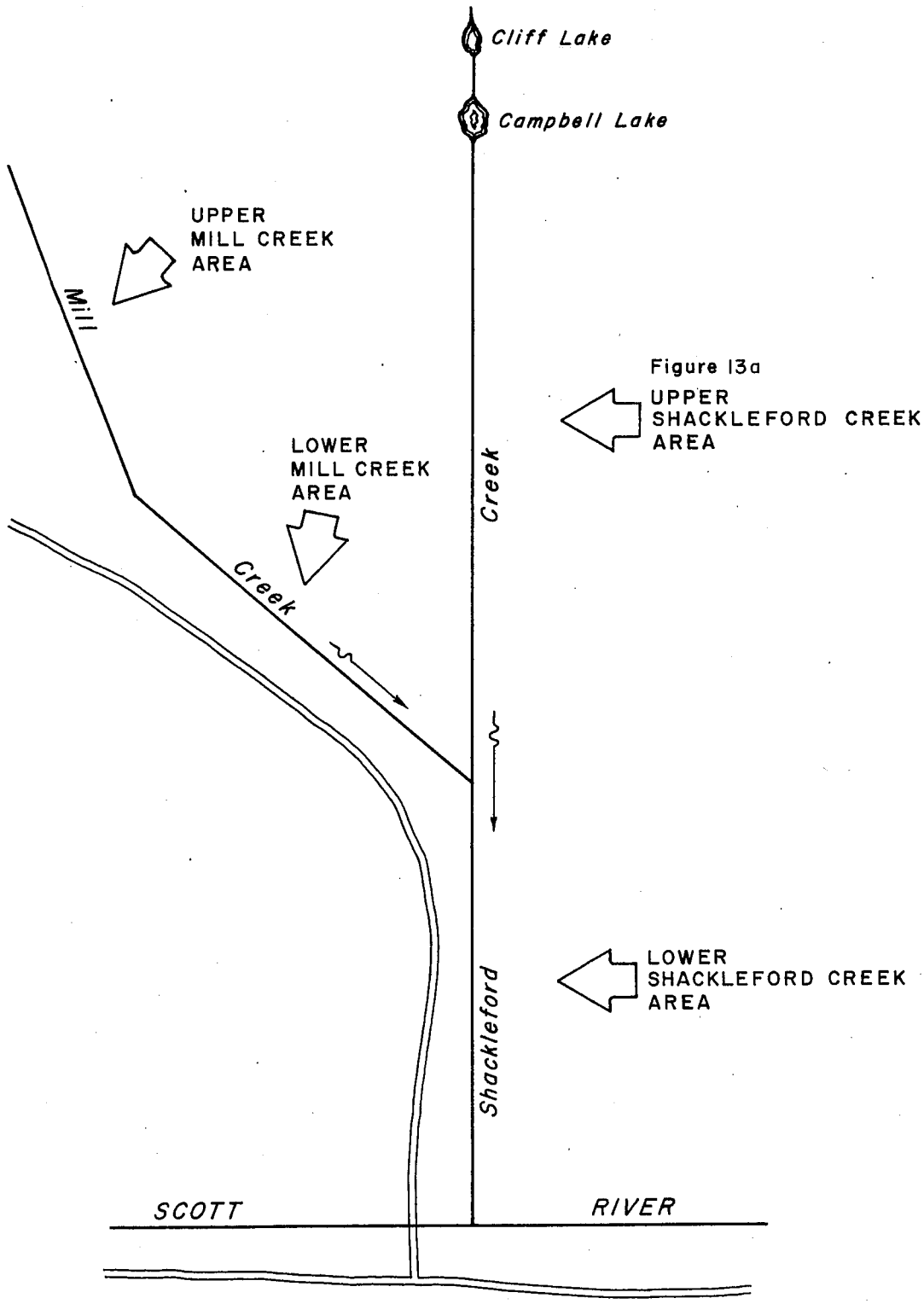
(4) (5a) (5) (6) (9) Schwartz allotment 1.20 cfs

(5) (12) Jensen allotment 2.70 cfs

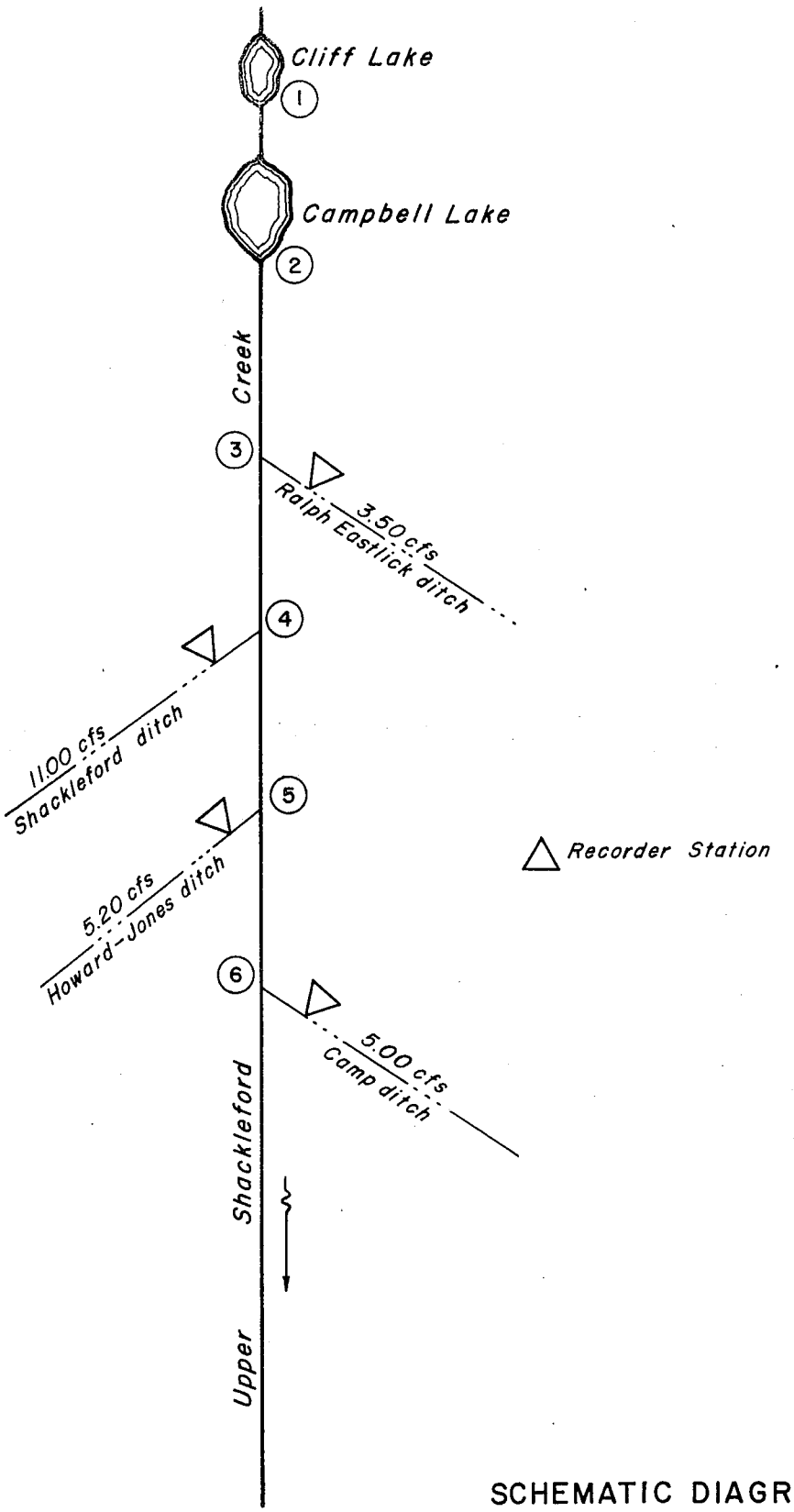
(9) (10) Leslie allotment 0.01 cfs
Malloy allotment 0.24 cfs
Simning allotment 0.04 cfs
Wigley allotment 0.31

(10) Jensen allotment 0.90 cfs

SCHEMATIC DIAGRAM
OF SEIAD CREEK
WATERMASTER SERVICE AREA



SCHEMATIC DIAGRAM
OF SHACKLEFORD CREEK
WATERMASTER SERVICE AREA



SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
UPPER SHACKLEFORD CREEK

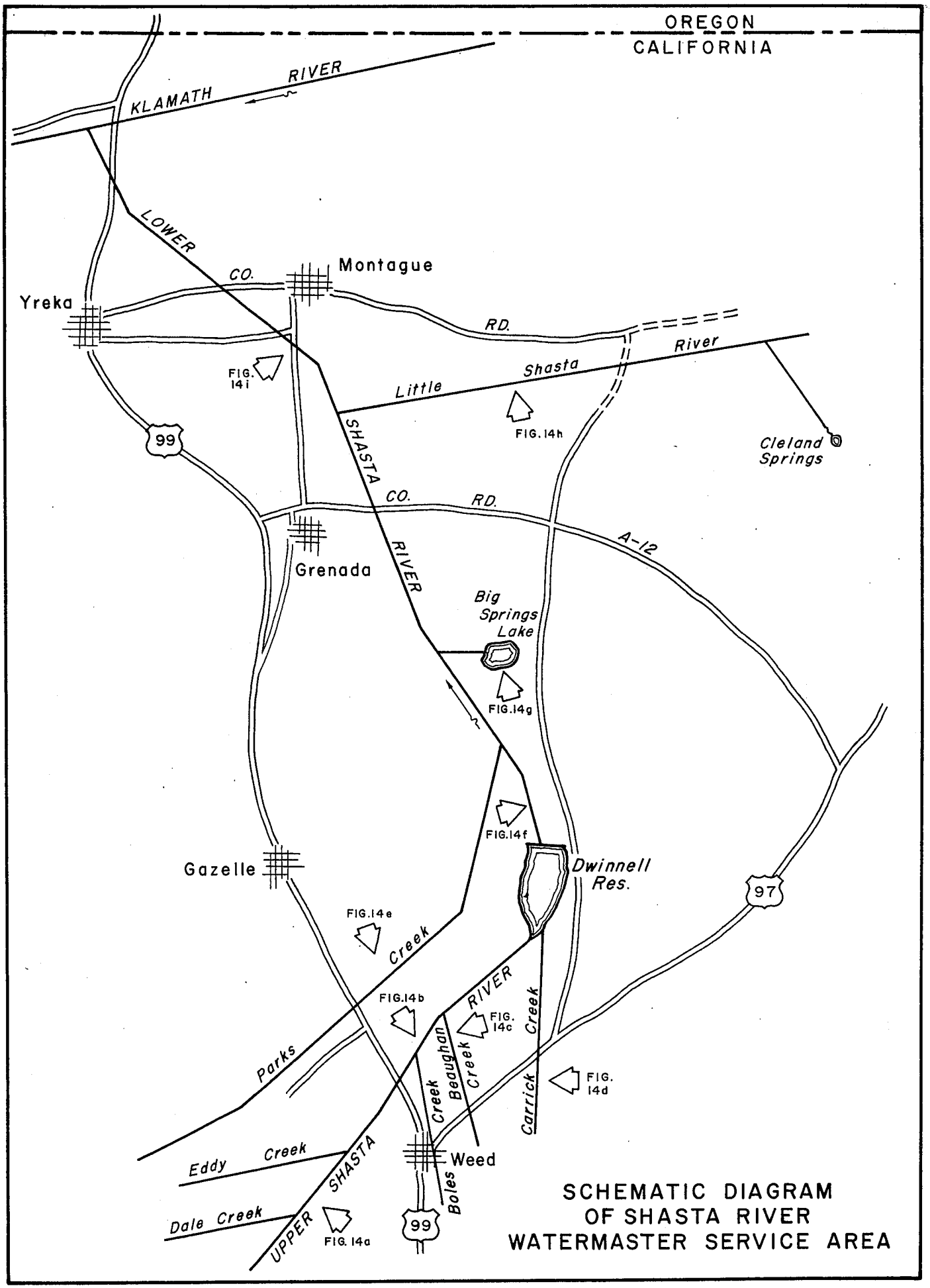
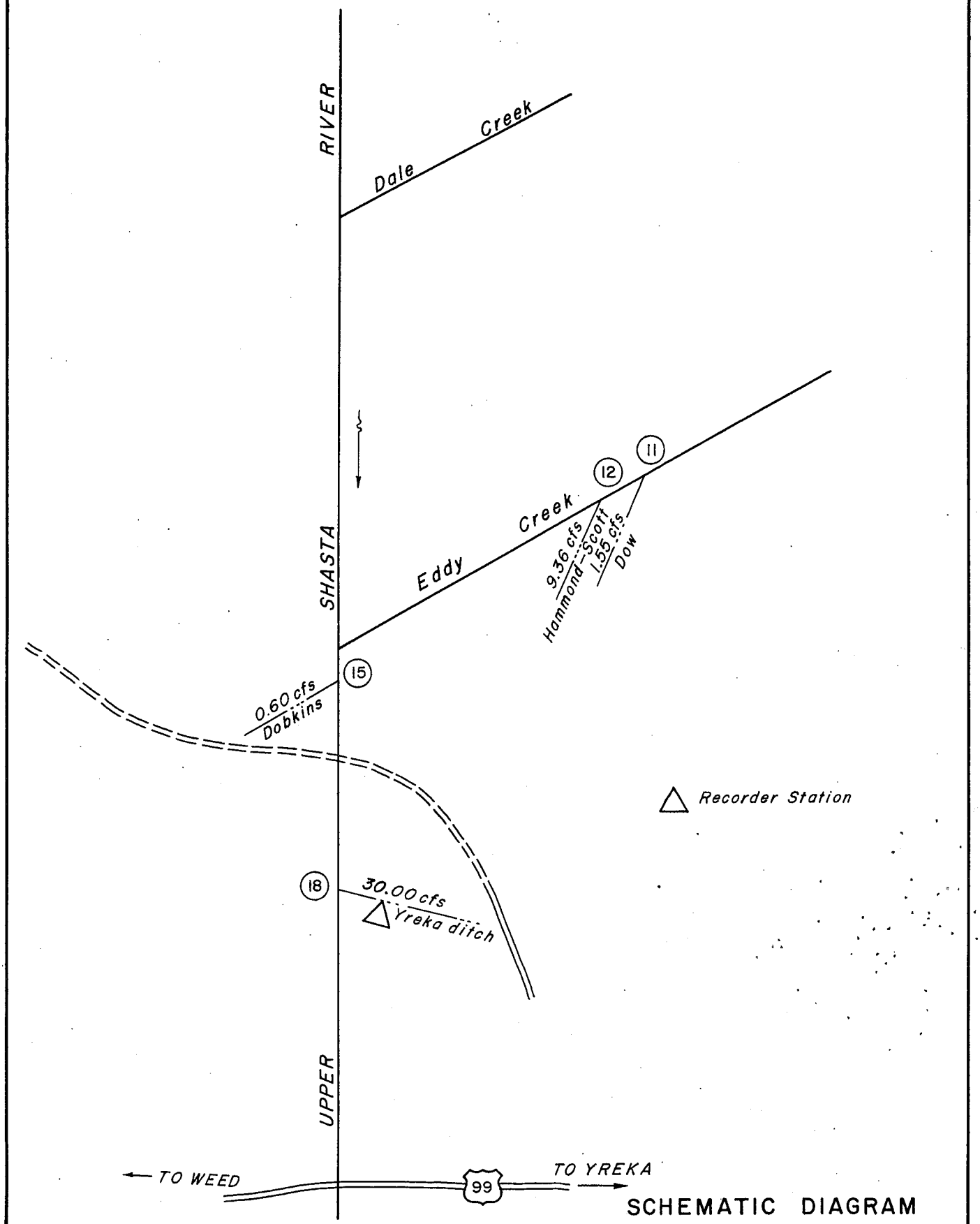
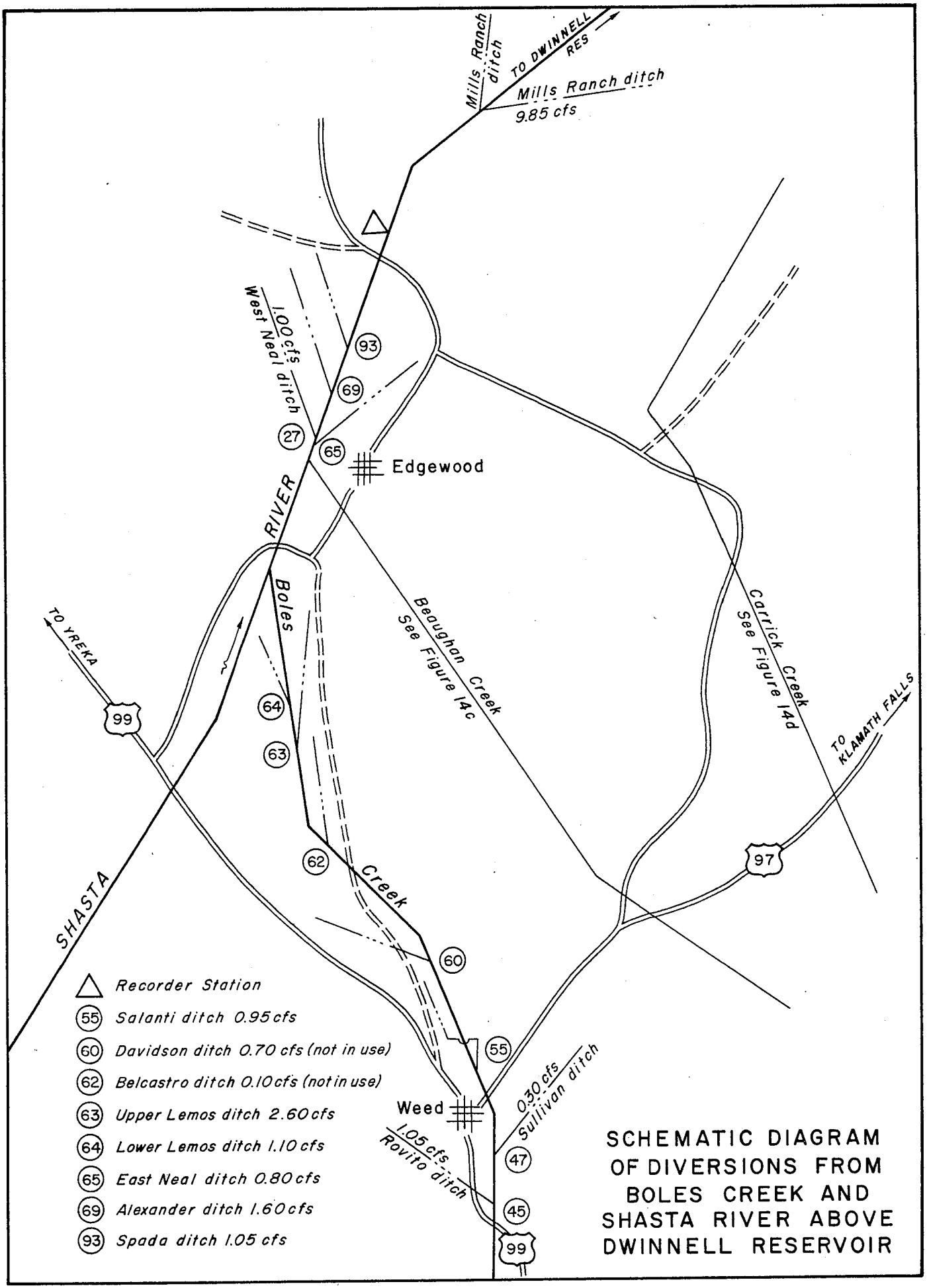

OREGON
CALIFORNIA
KLAMATH RIVER
LOWER
CO.
Montague
Yreka
RD.
River
Shasta
Little
FIG. 14i
FIG. 14h
99
SHASTA
CO.
RD.
A-12
Cleland Springs
Grenada
RIVER
Big Springs Lake
FIG. 14g
FIG. 14f
Gazelle
Dwinnell Res.
97
FIG. 14e
Creek
FIG. 14b
RIVER
FIG. 14c
Parks
Creek
Beaughan
Creek
Carrick
Creek
FIG. 14d
Eddy Creek
SHASTA
Weed
Boles
Dale Creek
UPPER
FIG. 14a
99
SCHEMATIC DIAGRAM
OF SHASTA RIVER
WATERMASTER SERVICE AREA

FIGURE 14a

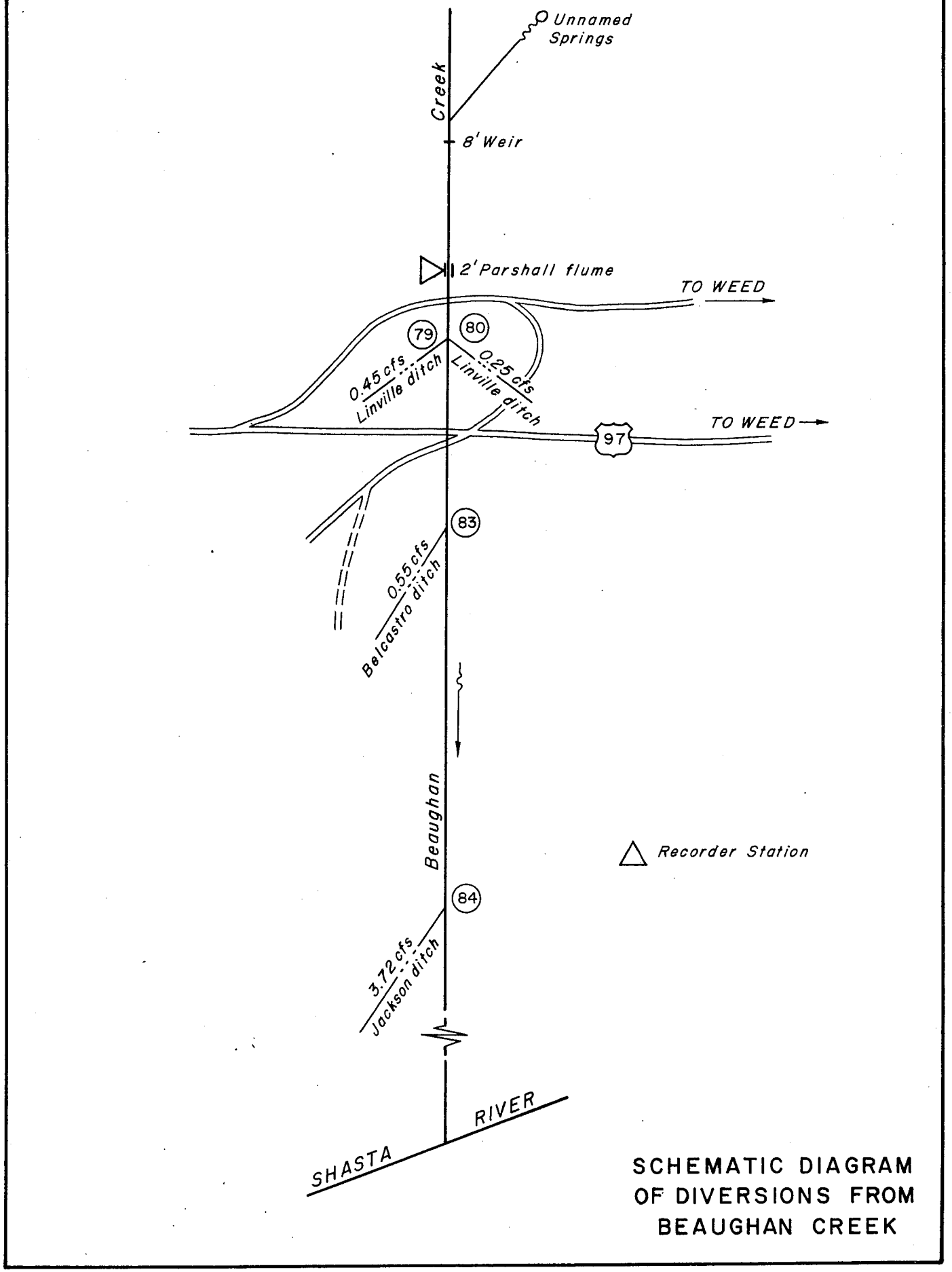


SCHEMATIC DIAGRAM OF DIVERSIONS FROM UPPER SHASTA RIVER

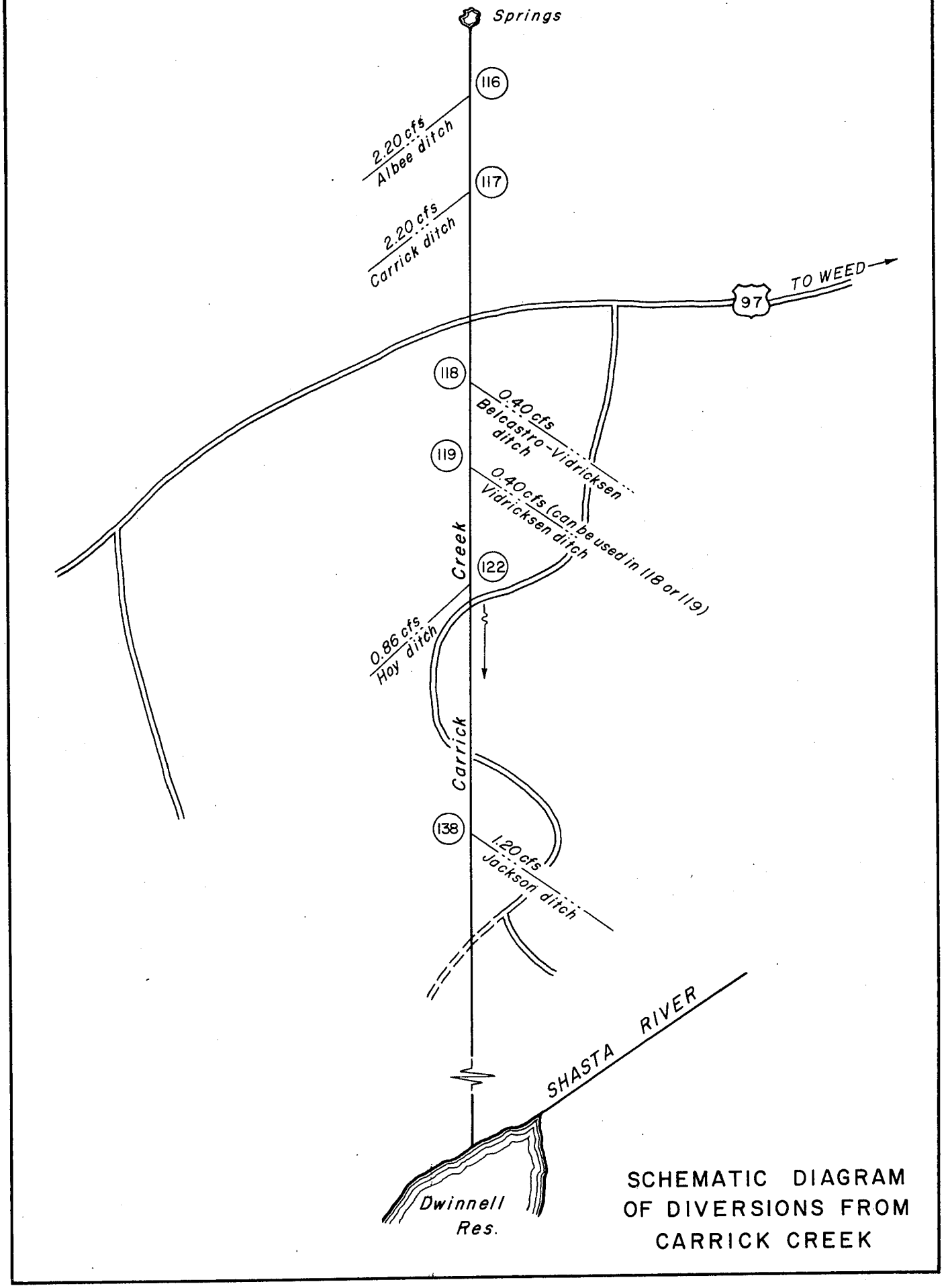
FIGURE 14 b



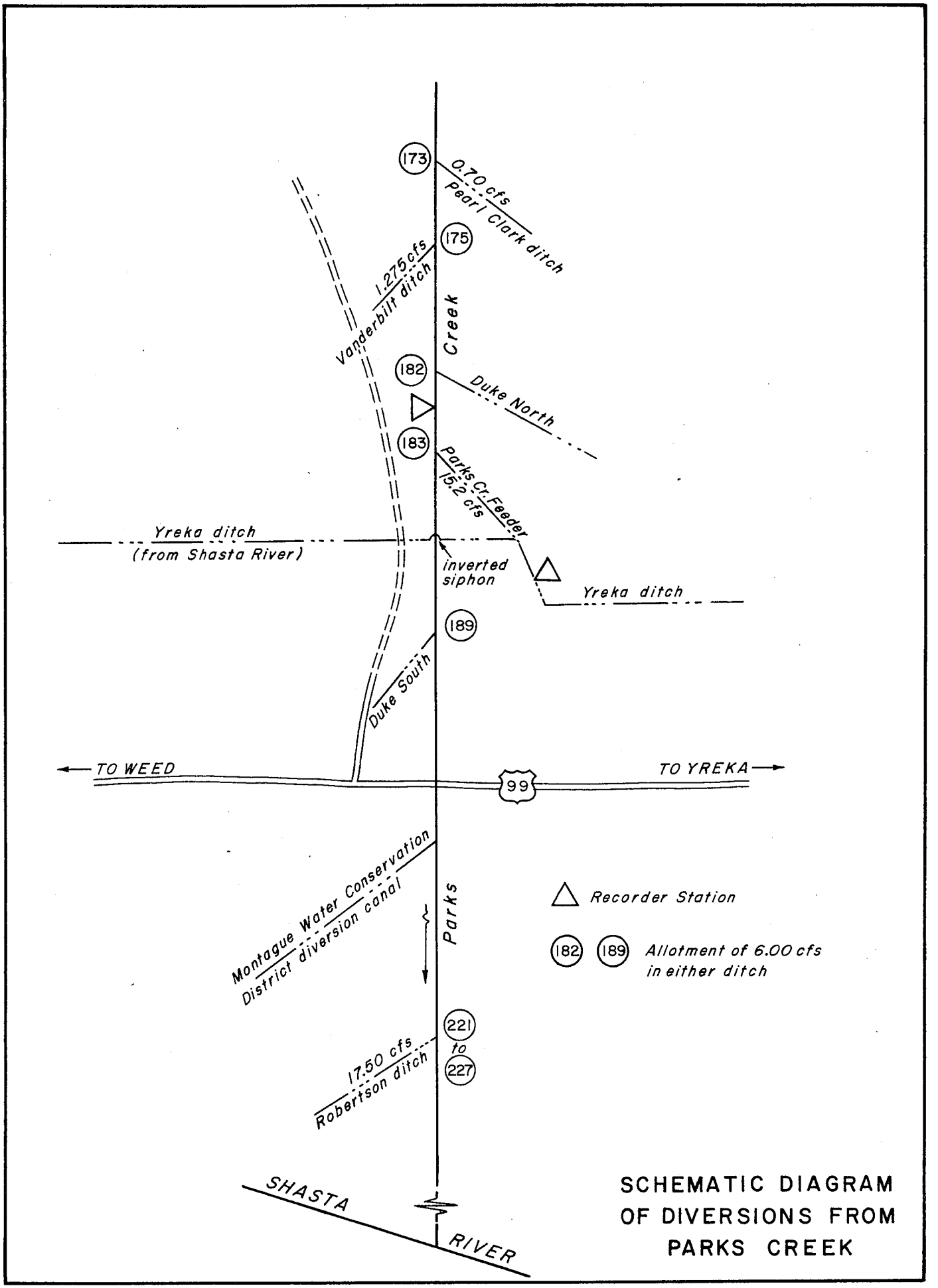
SCHEMATIC DIAGRAM OF DIVERSIONS FROM BOLES CREEK AND SHASTA RIVER ABOVE DWINNELL RESERVOIR



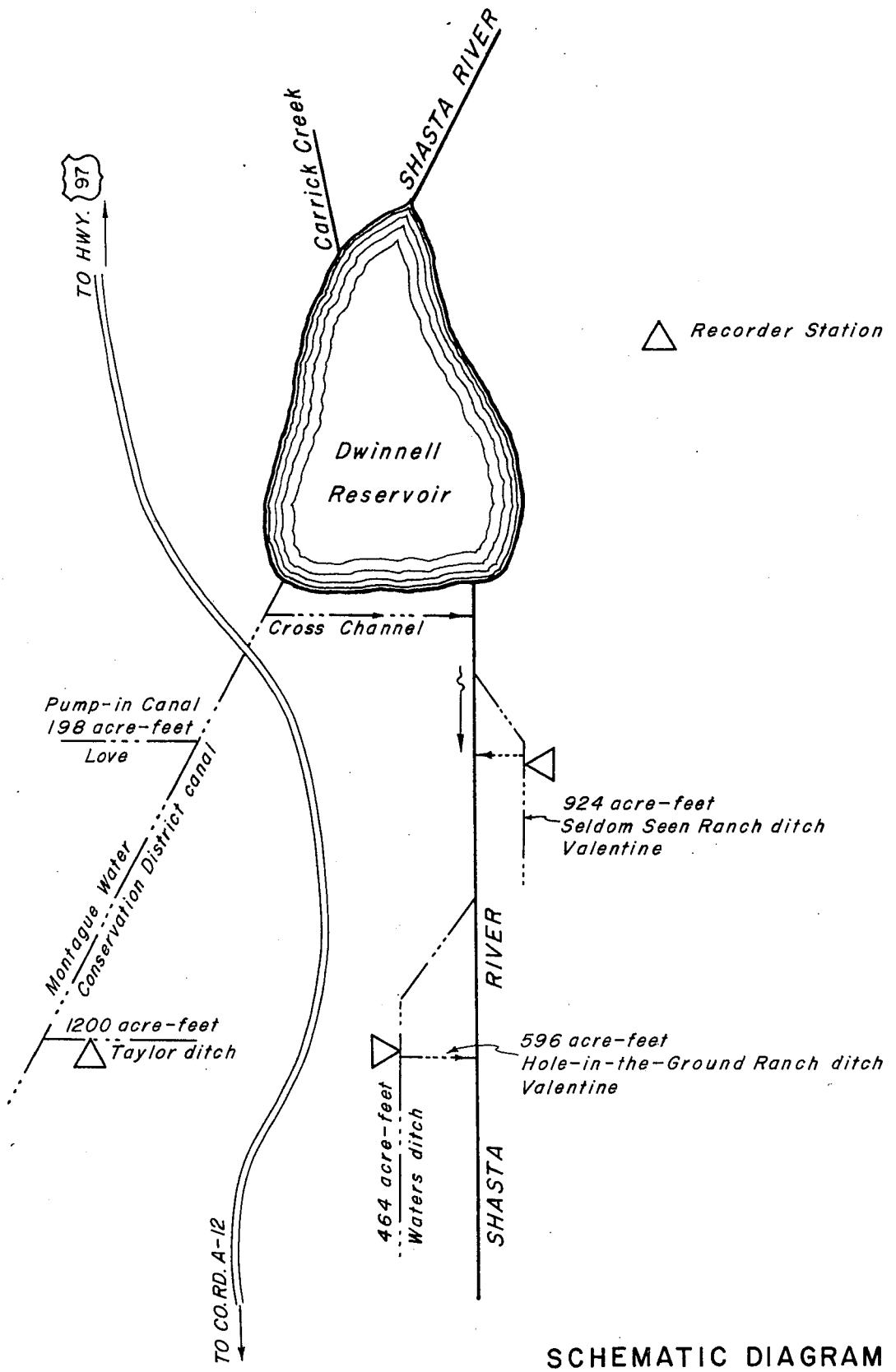
SCHEMATIC DIAGRAM OF DIVERSIONS FROM BEAUGHAN CREEK



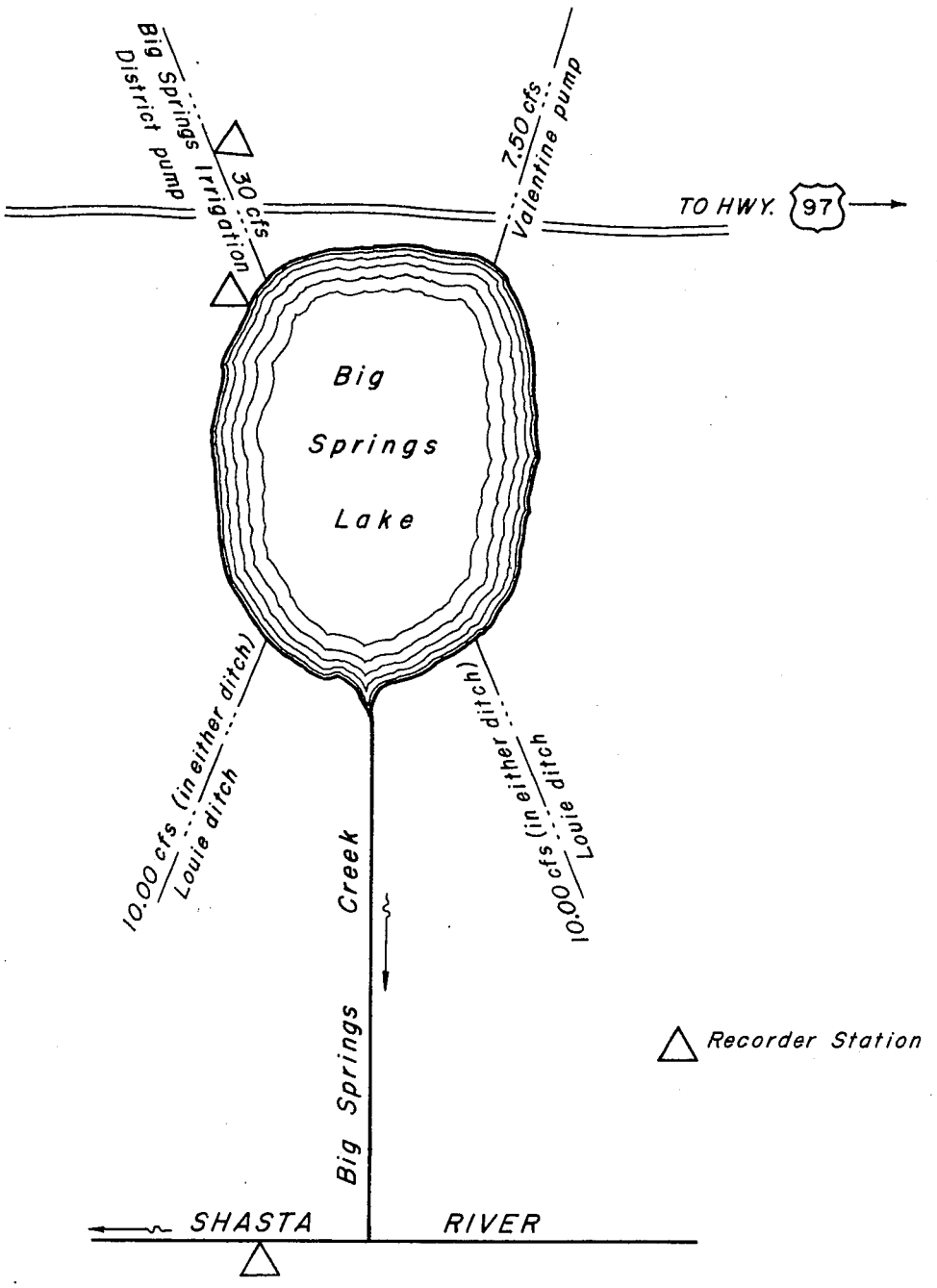
SCHEMATIC DIAGRAM OF DIVERSIONS FROM CARRICK CREEK



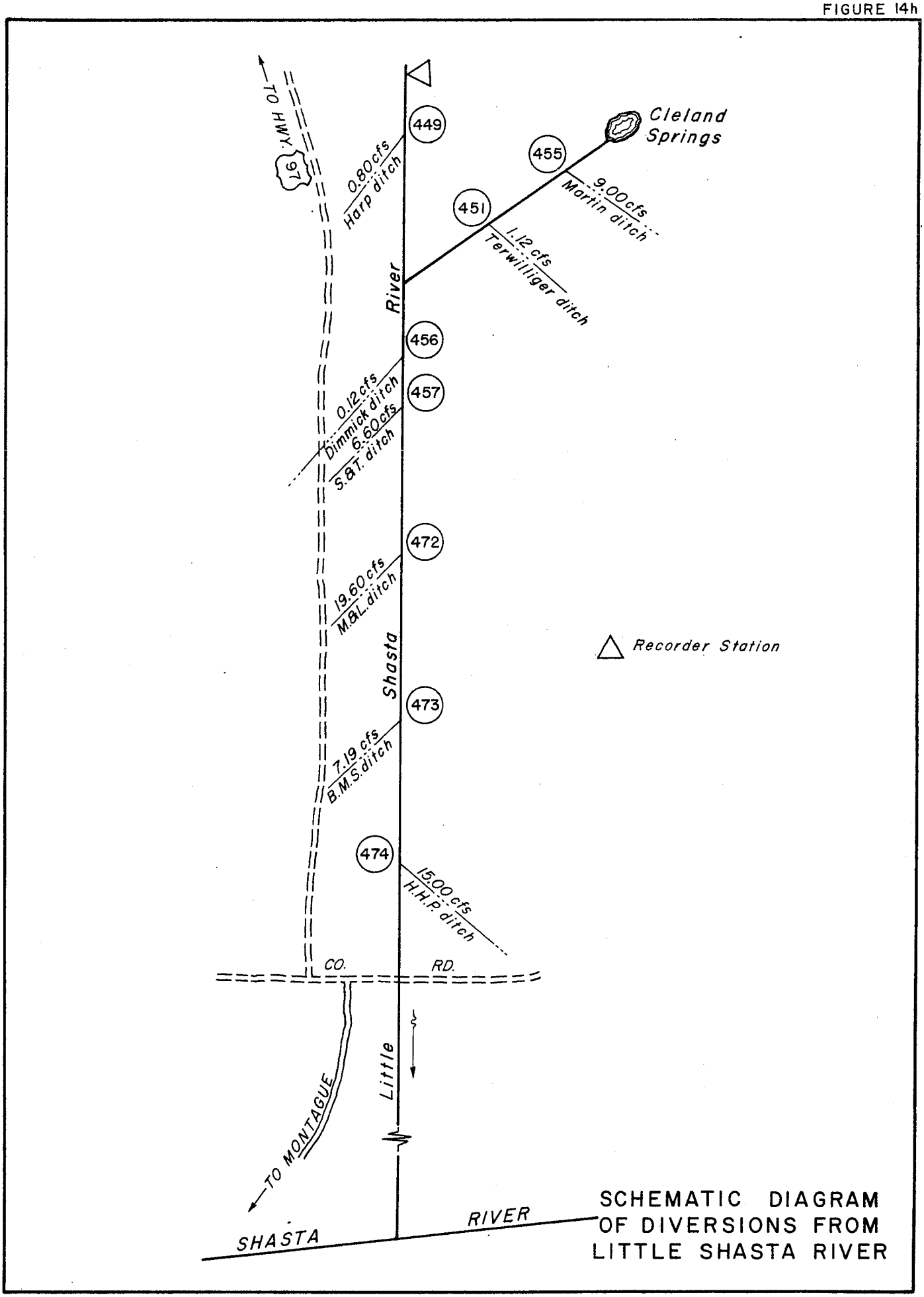
SCHEMATIC DIAGRAM OF DIVERSIONS FROM PARKS CREEK



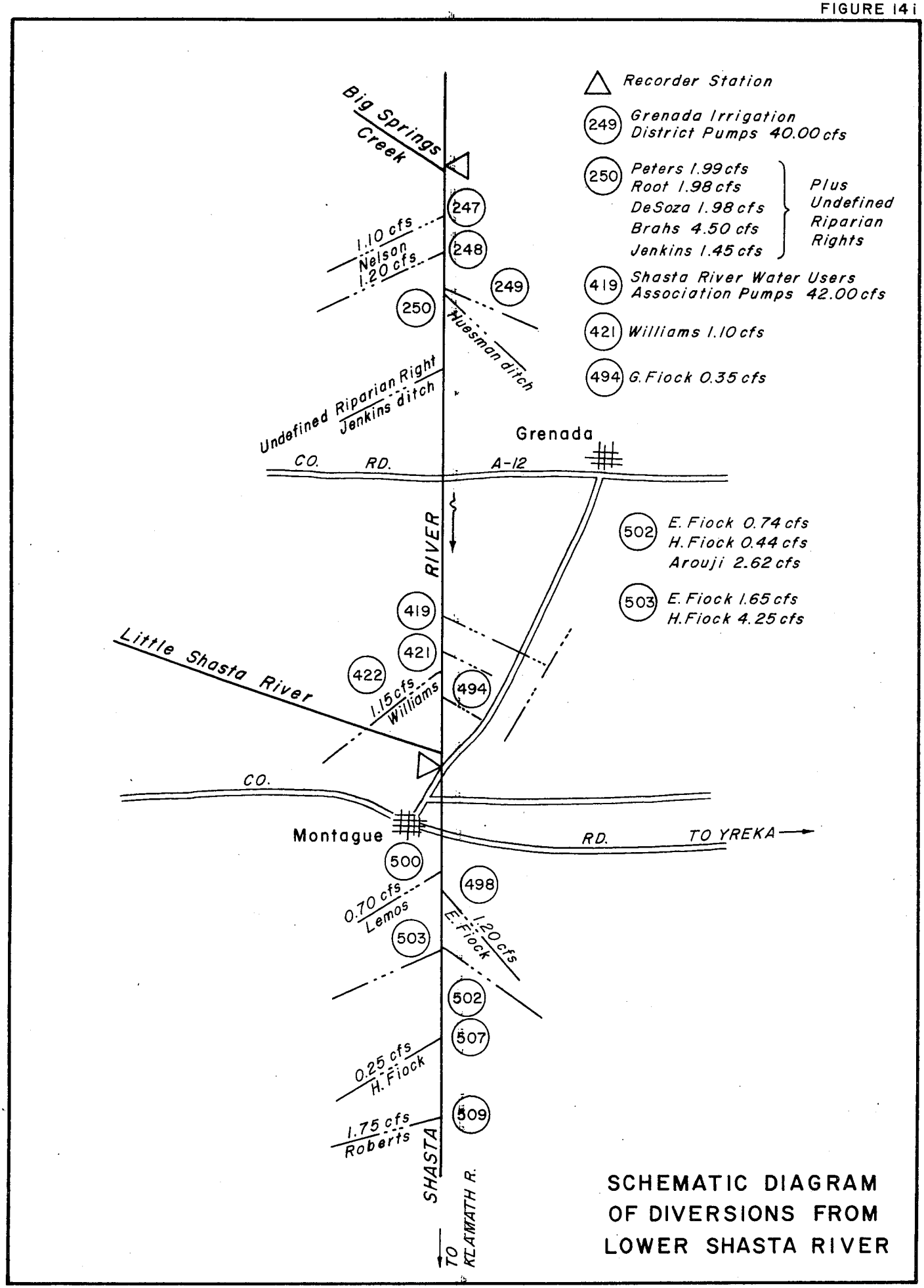
SCHEMATIC DIAGRAM
OF DIVERSIONS FROM
SHASTA RIVER PRIOR RIGHTS
BELOW DWINNELL RESERVOIR



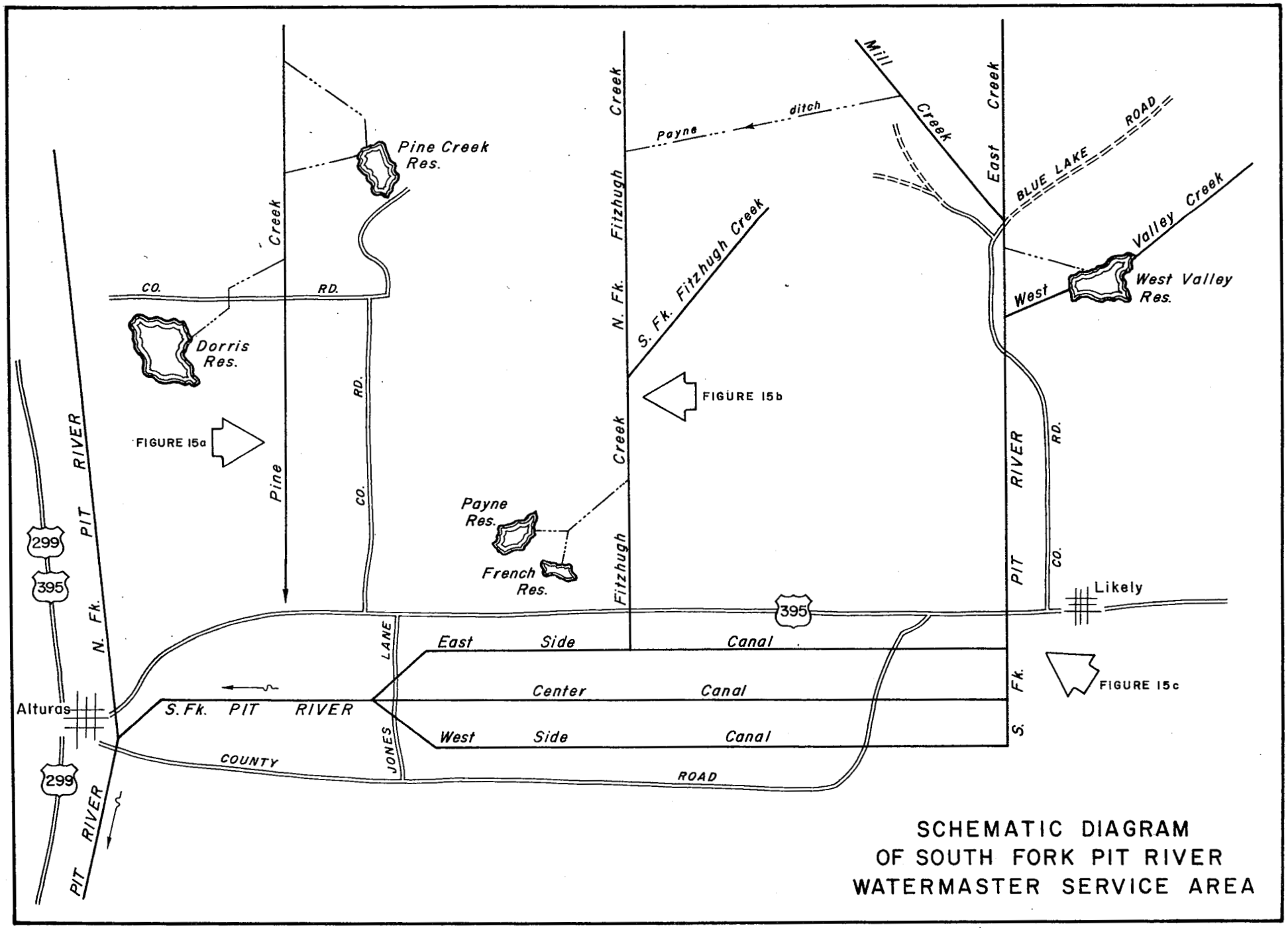
SCHEMATIC DIAGRAM OF DIVERSIONS FROM BIG SPRINGS LAKE



SCHEMATIC DIAGRAM OF DIVERSIONS FROM LITTLE SHASTA RIVER



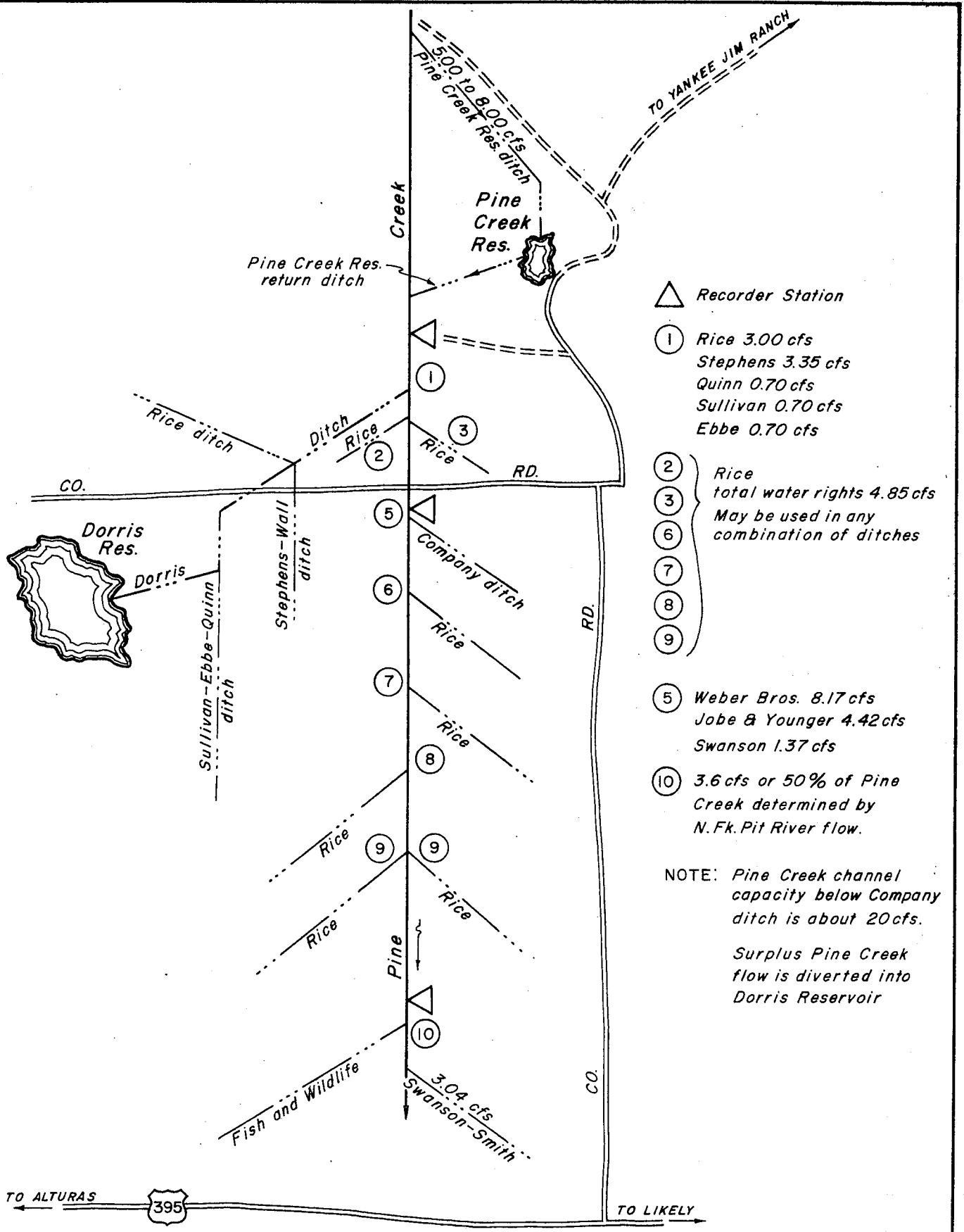
SCHEMATIC DIAGRAM OF DIVERSIONS FROM LOWER SHASTA RIVER



SCHEMATIC DIAGRAM
OF SOUTH FORK PIT RIVER
WATERMASTER SERVICE AREA

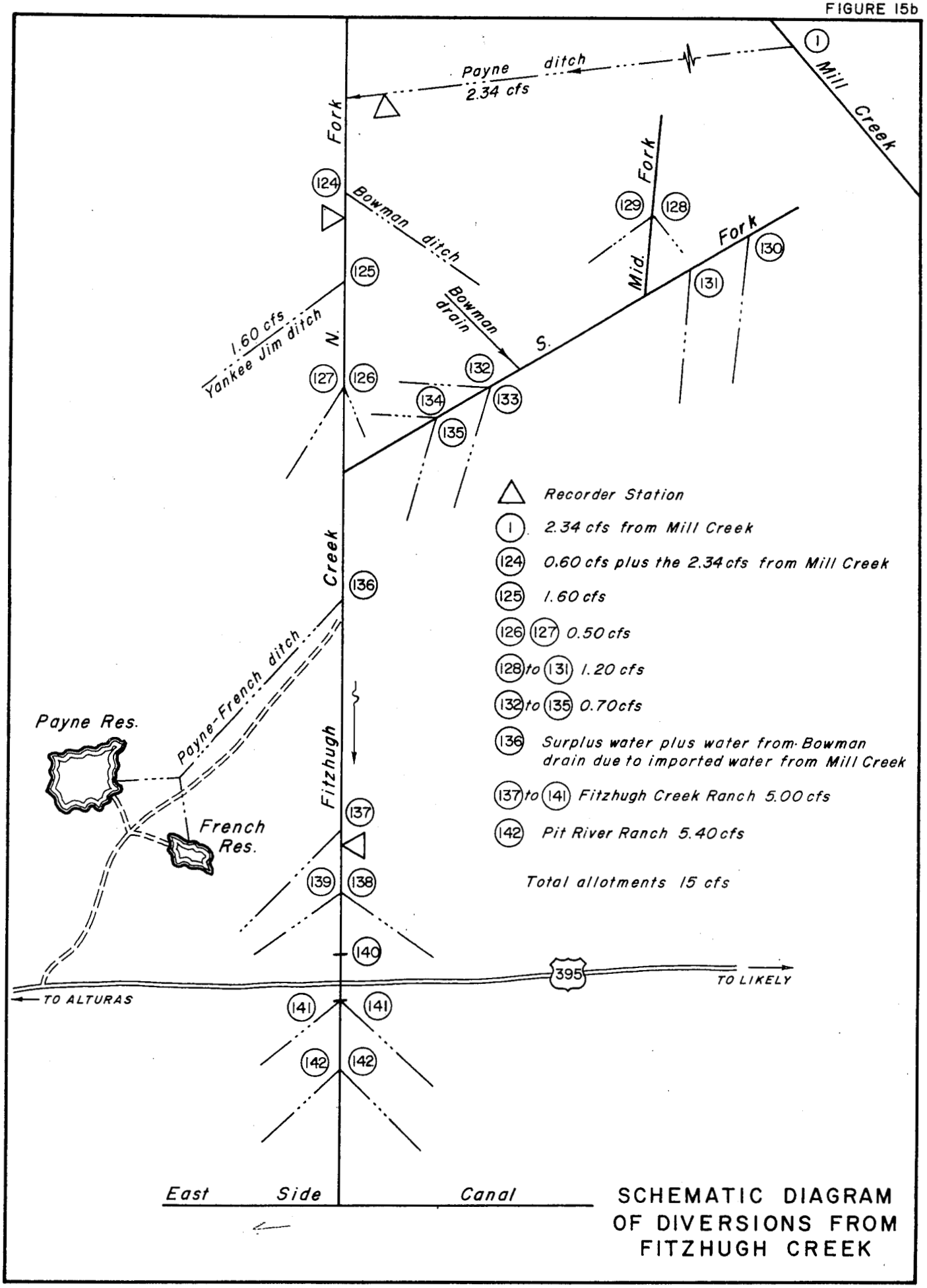
FIGURE 15

FIGURE 15a

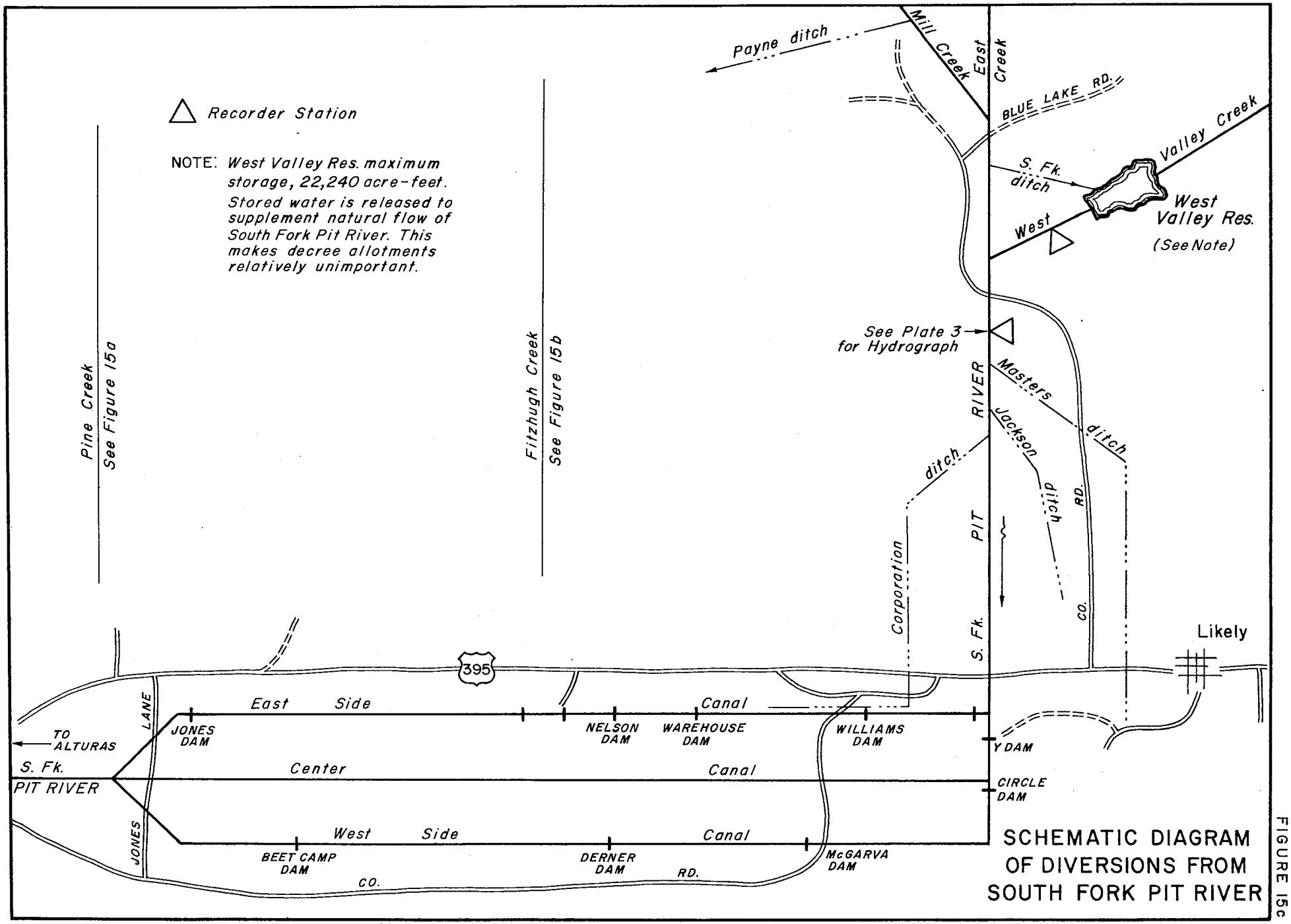


SCHEMATIC DIAGRAM OF DIVERSIONS FROM PINE CREEK

FIGURE 15b



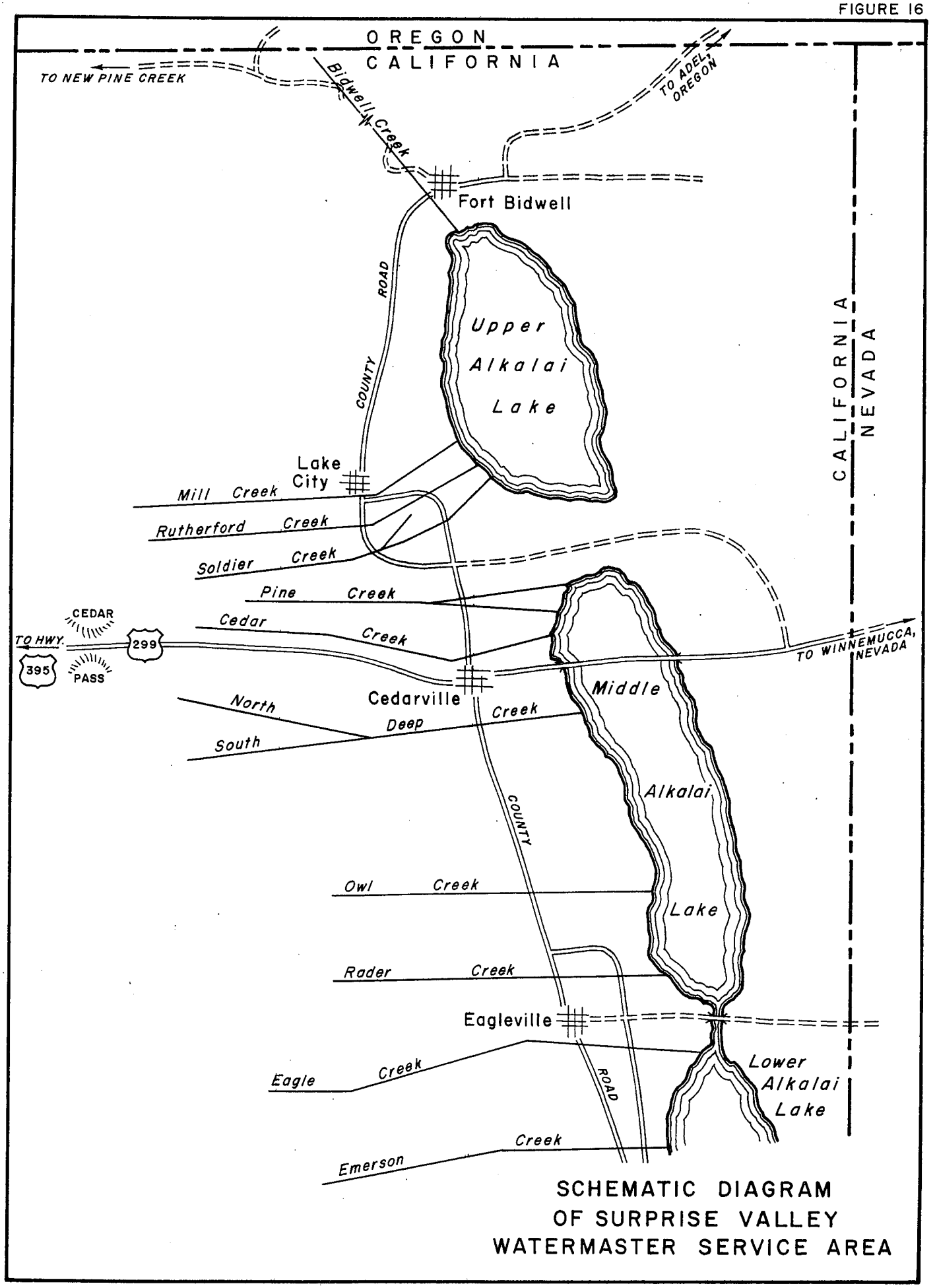
SCHEMATIC DIAGRAM OF DIVERSIONS FROM FITZHUGH CREEK



SCHEMATIC DIAGRAM OF DIVERSIONS FROM SOUTH FORK PIT RIVER

FIGURE 15c

FIGURE 16



SCHEMATIC DIAGRAM
OF SURPRISE VALLEY
WATERMASTER SERVICE AREA