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

WATERMASTER SERVICE IN NORTHERN CALIFORNIA

1977 Season

September 1978

FOREWORD

This report discusses the watermaster service provided by the Department of Water Resources to areas in Northern California during the 1977 watermaster season. Authority for its preparation is described in the California Water Code, Division 2, Part 4, Chapter 7.

Data are presented in two parts: the first contains general information about water rights, water supply, service areas, and watermaster duties. The second contains sections describing the 21 active service areas, 19 in the Department's Northern District and 2 in the Central District. Each of these 21 sections includes descriptions of the general area, the basis of watermaster service, water supply, method of distribution, 1977 distribution, and other significant information for each area.

Albert J. Dolcini, Chief
Northern District

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

NORTHERN DISTRICT

Albert J. Dolcini . . . . . Chief
Joseph H. Sherrard . . . . . Chief, Water Management Branch

Activities covered by this report were under the supervision
of

Thomas C. Mackey . . . . . Chief, Watermaster Service & Hydrology Section
Kenneth E. Morgan . . . . . Assistant Supervising Watermaster

assisted by

Linwood L. Bates . . . . . Watermaster
Eldon E. Rinehart . . . . . Watermaster
Seth K. Barrett . . . . . Deputy Watermaster
Virgil D. Buechler . . . . . Deputy Watermaster
Charles G. Hodge . . . . . Deputy Watermaster
Paul E. Lawler . . . . . Deputy Watermaster
Lester L. Lighthall . . . . . Deputy Watermaster
Mitchell Clogg . . . . . Research Writer
Clifford D. Maxwell . . . . . Senior Delineator
Lachi D. Morse . . . . . Mech.-Tech. Occupational Tr.

Report data and text on the Indian Creek and Middle Fork Feather
River Watermaster Service Areas were furnished by the
Central District

by

H. Joe Nessler . . . . . Supervising Watermaster
Earl Stower . . . . . Deputy Watermaster
Conrad Lahr . . . . . Deputy Watermaster

TABLE OF CONTENTS

INDEX TO WATER SOURCES

Watermaster Service Areas in Northern California

Source Name	Service Area	References: Text Page	Flow Data: Table	Flow Data: Page	Map: Figure	Map: Page
Ash Creek	Ash Creek	11,12	6	13	2	14
Barley Creek	Digger Creek				7	44
Bankhead Creek	Susan River	163			19,19b	169,173
Bear Creek	N.F. Pit River				14f	102
Bear Valley Creek	M.F. Feather River				12c	73
Beaughan Creek	Shasta River	111-113			16,a&c	119,121,123
Berry Creek	M.F. Feather River				12j	80
Bidwell Creek	Surprise Valley	139,141	42	143	18,18a	149-151
Big Sage Valley	Big Valley*					
Big Springs Lake	Shasta River	111-113			16,16e	119,125
Boles Creek	Shasta River	111-113			16,16a	119,121
Bowlan Creek	N.F. Pit River				14f	102
Brown Creek	Surprise Valley				18b	153
Burney Creek	Burney Creek	23	8	24	4	25
Butte Creek	Ash Creek	11,12			2	14
Butte Creek	Butte Creek	27	9,10	28,29	5	31
Campbell Lake	Shackleford Creek	107,108			15	109
Cantrall Creek	N.F. Pit River				14f	102
Carrick Creek	Shasta River	111-113			16,b&d	119,122,124
Cedar Creek	Cow Creek	34			6,6b	36,39
Cedar Creek	N.F. Pit River					
Cedar Creek	S.F. Pit River				17	133
Cedar Creek	Surprise Valley	139,141	42	143	18,18e	149,157
Center Canal	S.F. Pit River				17	133
Cleland Springs	Shasta River	113			16g	128
Cliff Lake	Shackleford Creek	107			15	109
Clover Creek	Cow Creek	33,34			6,6e	36,40
S. Clover Creek	Cow Creek				6c	40
Cold Stream	M.F. Feather River	67			12,12e	70,75

* Big Sage Reservoir serves Hot Springs Valley I.D., upstream of Big Valley, but has considerable effect on the water supply to Big Valley.

INDEX TO WATER SOURCES (Continued)

Watermaster Service Areas in Northern California

Source Name	Service Area	References				
		Text	Flow Data		Map	
		Page	Table	Page	Figure	Page
Cooks Creek	Indian Creek	60			10,10b	61,63
Cottonwood Creek	N.F. Cottonwood Cr.	85			13	85
N.F. Cottonwood	N.F. Cottonwood Cr.	83	19	84	13	85
Cottonwood Creek	N.F. Pit River	87,88	22	91	14,14a	96,97
Couch Creek	N.F. Pit River				14,14e	96,101
Cow Creek	Cow Creek	33,34			6	36
N. Cow Creek	Cow Creek	33	12	35	6	36
S. Cow Creek	Cow Creek				6	36
Dale Creek	Shasta River	111			16,16a	119,121
Davis Creek	N.F. Pit River	87,88	23	92	14,14b	96,98
DeSabla Reservoir	Butte Creek	27				
Deep Creek	Surprise Valley	139,141			18,18f	149,158
N.F. Deep Creek	Surprise Valley	141	48	146	18,18f	149,158
S.F. Deep Creek	Surprise Valley	141	49	147	18,18f	149,158
Deep Cut	Susan River				19b	173
Dicen Slough	M.F. Feather River				12,12b	70,72
Digger Creek	Digger Creek	41,42	13	43	7	44
Dill Slough	Susan River	163			19,19c	169,175
Doby Creek	N.F. Cottonwood Creek				13	85
Dorris Reservoir	S.F. Pit River				17a	134
Duck Lake Creek	French Creek	47	14	48	8	49
Dwinnell Reservoir	Shasta River	111-113	34	116		
Eagle Creek	N.F. Cottonwood Cr.				13	85
Eagle Creek	Surprise Valley	139,142	51	148	18,18i	149,161
Eagle Lake	Susan River				19	169
Eagle Lake Canal	Susan River				19d	176
E. Fork Soldier Cr.	Surprise Valley (See Soldier Creek)					
East Channel	M.F. Feather River (See Little Last Chance and Smithneck Creeks)					
East Creek	S.F. Pit River				17	133
East Juniper Creek	Big Valley	15				
Eastside Canal	S.F. Pit River				17,b,d	133,135,137

INDEX TO WATER SOURCES (Continued)

Watermaster Service Areas in Northern California

Source Name	Service Area	References: Text Page	Flow Data: Table	Flow Data: Page	Map: Figure	Map: Page
Eddy Creek	Shasta River	111			16,16a	119,121
Edgar Slough	Butte Creek				5	31
Elysian Creek	Susan River	163,166			19,19b	169,173
Emerson Creek	Surprise Valley	139,142	52	148	18,18a	149,162
Evans Creek	Shackleford Creek	107				
Eyster Slough	Surprise Valley				18a	161
Fall River	Fall River	45				
Feather River						
Middle Fork	M.F. Feather River	69,70	18	71	12,d,g&i	70,76,79,81
West Branch	Butte Creek (Import)	27				
Fitzhugh Creek	S.F. Pit River	129,130	39	132	17,17b	133,135
N.F. Fitzhugh Cr.	S.F. Pit River	129			17,17b	133,135
S.F. Fitzhugh Cr.	S.F. Pit River				17,17b	133,135
M.F. Fitzhugh Cr.	S.F. Pit River				17b	135
Fletcher Creek	M.F. Feather River	67,68			12k	81
Flood Channel	Susan River				19c	175
Franklin Creek	N.F. Pit River	87,88	25	93	14,14d	96,100
French Creek	French Creek	47,48	14	48	8	49
North Fork	French Creek	47,48			8	49
French Reservoir	S.F. Pit River	129			17,17b	133,135
Frenchman Reservoir	M.F. Feather River	67				
Gleason Creek	N.F. Pit River				14,14g	96,103
Gold Run Creek	Susan River	163-165	54	167	19,19a	169,171
Goose Valley Creek	Goose Valley	51				
Hahn Channel	Hat Creek				9	55
Hamlin Creek	M.F. Feather River	68			12,12j	70,80
Hamlin Slough	Butte Creek	27			5	31
Hartson Slough	Susan River	163			19,19c	169,175
Hat Creek	Hat Creek	53	15	54	9-9c	55-58
Hendricks Canal (Also known as Toadtown Canal, Import)	Butte Creek	27	11	29		

INDEX TO WATER SOURCES (Continued)

Watermaster Service Areas in Northern California

Source Name	Service Area	References				
		Text	Flow Data		Map	
		Page	Table	Page	Figure	Page
Meeks Meadow Creek	French Creek				8	49
Middle Channel	M.F. Feather River (See Smithneck Creek)				12d	74
M.F. Feather River	M.F. Feather River (See Feather River)					
M.F. Fitzhugh Creek	S.F. Pit River (See Fitzhugh Creek				17b	135
Mile Creek	N.F. Pit River				14f	102
Milkhouse Creek	M.F. Feather River				12j	80
Mill Creek	Cow Creek				6b	39
Mill Creek	Shackleford Creek	107			15	109
Mill Creek	S.F. Pit River	129			17	133
Mill Creek	Surprise Valley	139,141	43	143	18,18b	149,153
Miller Creek	M.F. Feather River	68			12,12j	70,80
Miners Creek	French Creek	47			8	49
Moon Creek	N.F. Cottonwood Cr.	85			13	85
Morris Slough	M.F. Feather River				12,12b	70,72
Murphy-Estep Branch	Cow Creek				6a	37
Negro Creek	N.F. Pit River				14h&i	105,106
New Pine Creek	N.F. Pit River	87	21		14,14a	96,97
North Canyon Creek	Indian Creek				10a	62
North Channel	N.F. Pit River (See Franklin Creek)				14d	100
North Channel	M.F. Feather River (See Little Last Chance Cr.)				12b&i	72,79
North Cow Creek	Cow Creek (See Cow Creek)				6	36
North Deep Creek	Surprise Valley (See Deep Creek)					
N.F. Cottonwood Cr.	N.F. Cottonwood Creek (See Cottonwood Creek)					
N.F. Davis Creek	N.F. Pit River (See Davis Creek)				14b	98
N.F. Feather River	Indian Creek	59,60			10	61
N.F. French Creek	French Creek (See French Creek)					
N.F. Pit River	N.F. Pit River (See Pit River)					
Oak Run Creek	Cow Creek	33,34			6,6a,c	36,37,40
Old Channel	Hat Creek				9c	58
Old Channel	Surprise Valley				18i	161
Old Channel	Susan River	163			19a	171
Onion Creek	M.F. Feather River	67			12e	77

Watermaster Service Areas in Northern California

Source Name	Service Area	References				
		Text	Flow Data		Map	
		Page	Table	Page	Figure	Page
Owl Creek	Surprise Valley	139,142	49	147	18,18g	149,159
Parker Creek	Susan River	163-165			19,19b	169,173
Parker Creek	N.F. Pit River	87	29	95	14,g,h&i	96,103-05-06
Parks Creek	Shasta River	111,112	33	115	16,16c	119,123
Payne Reservoir	S.F. Pit River	129			17,17b	133,135
Paynes Lake Creek	French Creek	47,48			8	49
Perry Creek	M.F. Feather River				12e,f	75,76
Peter Creek	Indian Creek				10,10b	61,63
Pine Creek	S.F. Pit River	129,130	41	132	17,17a	133,134
Pine Creek	Surprise Valley	139,141	45	144	18,18d	149,156
Pine Creek Res.	S.F. Pit River	129			17	133
Pine Creek, New	N.F. Pit River (See New Pine Creek)				14	96
Pit River	Big Valley	15,16	7	19	3	1
North Fork	N.F. Pit River	87,89	27	94	14,c,e,f&g	96,99, 01,2,3,6
South Fork	S.F. Pit River	129,130	37	131	17,c&d	133,36,37
Piute Creek	Susan River	163-165			19,19e	169,177
Plum Canyon Res.	N.F. Pit River				14h&i	105,106
Plum Creek	N.F. Pit River				14h&i	105,106
Porter Reservoir	N.F. Pit River				14h&i	105,106
Radar Creek	Surprise Valley	139,142	50	147	18,18h	149,160
Rainbow Lake	N.F. Cottonwood Cr.	83			13	85
Reservation Creek	Surprise Valley				18a	151
Rising River	Hat Creek	53			9a	56
Roberts Reservoir	Big Valley	15,16			3	21
Rock Creek	Digger Creek				7	44
Round Valley Res.	Indian Creek				10,10a	61,62
Rush Creek	Ash Creek	11,12			2	14
Rutherford Creek	Surprise Valley				18,18b	149,153
Shackleford Creek	Shackleford Creek	107			15	109
Shasta River	Shasta River	111-113	31,32,36	114-15-17	16,16a,d &f	119,21,24, 127

Watermaster Service Areas in Northern California

Watermaster Service Areas in Northern California

Source Name	Service Area	References: Text Page	Flow Data: Table	Flow Data: Page	Map: Figure	Map: Page
Turner Canyon	M.F. Feather River				12j	80
Turner Creek	M.F. Feather River	68			12j	80
Webber Creek	M.F. Feather River	67,68			12,12e	70,75
W. Br. Feather R.	Butte Creek, Import (See Feather River)					
W. Fork Parker Cr.	Susan River (See Parker Creek)					
W. Fork Soldier Cr.	Surprise Valley (See Soldier Creek)					
West Channel	M.F. Feather River (See Smithneck Creek)				12d	74
West Side Canal	M.F. Feather River	67,68			12,12h,i&j	70,78,79, 80
West Side Canal	S.F. Pit River				17,17d	133,137
West Valley Creek	S.F. Pit River	129	38	131	17c,17e	136,138
West Valley Res.	S.F. Pit River	129,130			17,17c	133,136
West Valley Res.	Big Valley	15,16				
Whitehead Slough	Susan River	163			19c	175
Wildcat Creek	Cow Creek				6c	40
Willow Creek	Ash Creek	11,12			2	14
Willow Creek	Susan River	163-165	56	168	19,19[illegible]	169,176
Willow Creek	Willow Creek	179			20	180
Wimer Branch	Surprise Valley				18b	153
Wolf Creek	Indian Creek	59,60			10,10a	61,62
Windham Creek	Cow Creek				6c	40

TABLE 1

CONVERSION FACTORS

English to Metric System of Measurement

Quantity	English unit	Multiply by	To get metric equivalent
Length	inches (in)	25.4	millimetres (mm)
		.0254	metres (m)
	feet (ft)	.3048	metres (m)
	miles (mi)	1.6093	kilometres (km)
Area	square inches (in^2)	6.4516×10^{-4}	square metres (m^2)
	square feet (ft^2)	.092903	square metres (m^2)
	acres	4046.9	square metres (m^2)
		.40469	hectares (ha)
		.40469	square hectometres (hm^2)
		.0040469	square kilometres (km^2)
	square miles (mi^2)	2.590	square kilometres (km^2)
Volume	gallons (gal)	3.7854	litres (l)
		.0037854	cubic metres (m^3)
	million gallons (10^6 gal)	3785.4	cubic metres (m^3)
	cubic feet (ft^3)	.028317	cubic metres (m^3)
	cubic yards (yd^3)	.76455	cubic metres (m^3)
	acre-feet (ac-ft)	1233.5	cubic metres (m^3)
		.0012335	cubic hectometres (hm^3)
		1.233×10^{-6}	cubic kilometres (km^3)
Volume/Time (Flow)	cubic feet per second (ft^3/s)	28.317	litres per second (l/s)
		.028317	cubic metres per second (m^3/s)
	gallons per minute (gal/min)	.06309	litres per second (l/s)
		6.309×10^{-5}	cubic metres per second (m^3/s)
	million gallons per day (mgd)	.043813	cubic metres per second (m^3/s)
Mass	pounds (lb)	.45359	kilograms (kg)
	tons (short, 2,000 lb)	.90718	tonne (t)
		907.18	kilograms (kg)
Power	horsepower (hp)	0.7460	kilowatts (kW)
Pressure	pounds per square inch (psi)	6894.8	pascal (Pa)
Temperature	Degrees Fahrenheit (°F)	$\frac{tF - 32}{1.8} = tC$	Degrees Celsius (°C)

DECREED WATER RIGHTS

	Service Area	Number of Decreed Water Users	Total Decreed Water Rights litres/sec.	cu.ft/sec.
1.	Ash Creek	60	3 501.40	123.65
2.	Big Valley	56	6 542.08	231.03
3.	Burney Creek	10	937.01	33.09
4.	Butte Creek	41	11 958.27	422.30
5.	Cow Creek	97	1 596.14	56.367
6.	Digger Creek	79	657.94	23.235
7.	Fall River	2 1/		
8.	French Creek	33	854.32	30.17
9.	Goose Creek	1 1/		
10.	Hat Creek	57	3 838.23	135.545
11.	Indian Creek	47	3 738.68	96.715
12.	Juniper Creek	3 1/		
13.	M. F. Feather River	103	10 536.16	372.079
14.	N. F. Cottonwood Creek	13	858.00	30.30
15.	N. F. Pit River	104	6 075.84	214.565
16.	Shackleford Creek	42	1 832.96	64.73
17.	Shasta River	126	17 055.10	602.292
18.	S. F. Pit River	38	9 938.42	350.97
19.	Surprise Valley	172	9 458.44	334.02
20.	Susan River	200	9 972.74	352.182
21.	Willow Creek	3		2/

1/ Does not include Pacific Gas & Electric Company, who is a participant

2/ Water based on percentage of flow in Willow Creek.

INTRODUCTION

Purpose and Benefits

The primary purpose of watermaster service is to distribute water in accordance with established water rights. This is accomplished by apportioning to the rightful users the available supplies in streams which have had water right determinations.

Distribution of water in watermaster service areas is a continuing statutory function of the Department of Water Resources as provided in Part 4 of Division 2 of the California Water Code.

A major benefit of watermaster service to water users and the State is that court litigation and physical violence, which in past years occurred quite frequently, are essentially eliminated.

Under watermaster service each water right owner is assured that his rights are being protected without his having to take legal action against other users. Another important benefit results from increased use of available supplies through reduction of waste.

Because both the water right owners and the State receive benefits from watermaster service, the costs of performing the service are shared. The State general tax fund pays half the cost of operating each service area. The water right owners in the service area pay the other half. Individual users' shares are determined in accordance with Article 3 of Chapter 7 of the above-mentioned Part 4 of Division 2 of the Water Code.

Determination of Water Rights

Almost all of the streams under State watermaster service have had their water rights defined by the courts under one of three adjudication procedures. These adjudications establish each owner's rights as to allowable rate of diversion, season of use, point of diversion, and place of use. They also establish priorities whereby each owner's rights are ranked in relation to the rights of all other decreed owners. Under this system all rights of any one priority must be fully satisfied before water can be diverted under any lower priority rights. The determinations of the courts are set forth by entering judgments, commonly called decrees.

Water rights determinations necessary for establishing watermaster service areas may be accomplished by "statutory adjudication", "court adjudication", "court reference", permit of license to appropriate, or agreement.

Statutory Adjudications

The California Water Code (Sections 2500-2900) prescribes a procedure whereby water users on any stream may petition the State Water Resources Control Board, Division of Water Rights, to make a legal determination of all water rights on that stream. If the Board finds that such a determination is in the best public interest, it proceeds with a statutory adjudication. This adjudication ultimately results in a court decree which defines all water rights on the stream.

Court Adjudications

A less extensive method of defining water rights is the "court adjudication" procedure. This type of adjudication results when two or more parties involved in a water rights dispute seek a solution to their problem under civil law. A decision handed down in such a civil action determines only the water rights of the

parties involved in the action and therefore does not necessarily define all water rights on the stream. As a result, serious conflicts sometimes arise between decreed water right owners and persons claiming riparian or appropriative rights which were not specified in the decree.

Court Reference

The "court reference" type of adjudication arises when a civil action as discussed, is referred to the State Water Resources Control Board for a determination under authority contained in Sections 2000-2076 of the Water Code. The Board's report becomes the basis of the court's decision. As in court adjudications, a court reference determines only the water rights of the parties involved in the action. The number of decreed owners and amounts of water rights for each service area are shown on page xv.

Watermaster Service Areas

Formation

Watermaster service is provided in areas where the rights have been defined by the Superior Court of the County, or by agreement, and where an unbiased qualified person is needed to properly apportion the available water according to the established rights. The Director of Water Resources creates watermaster service areas where these conditions exist, following either a request by the users or an order by the Superior Court.

The first watermaster service areas were created in September 1929. Prior to 1929, some watermaster service was provided in accordance with the Water Commission Act of 1913. There are now about 50 streams in Northern California which are under state watermaster service. The three newest service areas were created in 1975.

The counties and principal water sources of the various service areas in Northern California are listed in Table 5. Of these 21 areas, 19 are in the Department's Northern District, and two in the Central District. In 1977, two service areas in the Northern District, Seiad Creek in Siskiyou County and Pine Creek in Butte and Tehama Counties, were inactive.

Description of Region

The service areas are primarily in the mountainous northeastern part of the State where the growing season varies between about 100 and 140 days. Meadow hay and alfalfa are the principal crops under irrigation, although a considerable amount of land is used exclusively for pasturing livestock. Most irrigation is accomplished by gravity systems, with water users diverting directly from the streams at one or more diversion points. However, pumped diversions and sprinkler irrigation systems are becoming popular in some areas.

A map of this region showing the 21 service areas is presented in Figure 1.

Watermaster Responsibilities

Authority

To assure the proper distribution of water within his service area, each watermaster must ascertain the amount of water available and distribute it both by amount and priority in accordance with established water rights. To accomplish his responsibility, the watermaster is provided authority both by the Water Code and by provisions of pertinent court decrees or voluntary agreements to physically regulate the various streams in the service area. He is

further authorized to supervise the design, construction, operation, and maintenance of diversion dams, headgates, and measuring devices.

Each watermaster supervises water distribution at approximately 100 to 200 diversions in one or more service areas. The need for frequently checking and regulating these diversion points increases substantially in years of short water supply.

Control Devices

Permanent measurement and control devices, which the State requires (Water Code Sections 4100-4104) at each owner's main point of diversion, are constructed by the water users under supervision of the watermaster. Installation of accurate, easily set, and lockable structures is a continuing objective of watermaster service, since once they are built, conflicts among water users almost always stop. Also, the watermaster's ability to check and set each diversion regularly is greatly facilitated by good structures.

Interpretation of Decrees

The watermaster is often called upon to make immediate field or on-the-spot interpretations of various court decrees, agreements, etc. Since most of these documents were written more than 30 years ago, many situations have developed that were not initially considered. Therefore, the watermaster must use sound, careful, and practical judgment in attempting to reach workable solutions to water disputes. To accomplish this he must possess a good understanding of California water rights law.

Water Supply

Water supply in the watermaster service areas is derived principally from unregulated runoff of small streams. Peak runoff, snowmelt in most cases, occurs in the spring, with relatively small streamflow occurring in the summer and early fall. Additional supplies from storage reservoirs and ground water pumping are used in some areas to supplement natural streamflow. However, State watermasters do not supervise the use of ground water in this part of the State.

In some service areas the water supply must be predicted in advance to determine the date watermastering will begin and, to some extent, the manpower needed. The Department's Bulletin 120 series, "Water Conditions in California", is used to assist in these predictions.

Precipitation

The streamflow available for distribution is affected by total precipitation, amount of snowpack, air temperature, and the amount of rainfall received during the irrigation season. The latter is particularly important in the Upper Pit River-Surprise Valley areas, where about 25 to 30 percent of the annual precipitation occurs normally in April, May, and June. Spring storms, which are normally accompanied by relatively cool temperatures, materially affect both the water supply and the demand. 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 years of normal snowpack. A cold, wet spring can extend the supply well into the irrigation season, but cold temperatures retard the growth of crops and are not necessarily desirable.

Data collected at representative snow courses showing the snowpack as of April 1, 1977, on all courses and the snowpack on May 1 at selected courses, are presented in Table 3 . This information was obtained from the Department's basic data files.

Table 2 reports the quantity of precipitation at selected stations in the service areas during the 1976-77 water year. The seasonal precipitation gives an indication of the related water supply available for distribution, and provides a basis for comparing the current year's supply with a long-term average.

Streamflow

The general water supply available for diversion within each watermaster area is determined from stream gaging stations placed at key locations in the main stream channels. Several major stations are installed and maintained by the United States Geological Survey

TABLE 2

PRECIPITATION AT SELECTED STATIONS - 1976-77 SEASON

(in millimetres and inches)

		October		November		December		January		February		March	
		(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
Fort Jones Ranger Station	Siskiyou	3.81	0.15	14.22	0.56	5.33	0.21	51.56	2.03	41.15	1.62	25.65	1.01
		41.15	1.62	76.71	3.02	111.00	4.37	116.84	4.60	64.26	2.53	44.45	1.75
Happy Camp Ranger Station	Siskiyou	16.76	0.66	35.56	1.40	12.19	0.48	82.04	3.23	101.60	4.00	95.25	3.75
		109.98	4.33	216.41	8.52	285.50	11.24	308.10	12.13	185.93	7.32	154.68	6.09
Yreka	Siskiyou	5.08	0.20	11.18	0.44	6.86	0.27	32.00	1.26	32.77	1.29	26.16	1.03
		37.59	1.48	60.45	2.38	99.57	3.92	89.41	3.52	52.58	2.07	36.32	1.43
Redding Fire Station No. 2	Shasta	0.76	0.03	27.43	1.08	9.65	0.38	76.20	3.00	45.72	1.80	63.75	2.51
		57.92	2.28	135.89	5.35	188.72	7.43	212.85	8.38	149.10	5.87	115.82	4.56
Hat Creek Power House No. 1	Shasta	2.29	0.09	10.16	0.40	2.54	0.10	43.94	1.73	32.77	1.29	26.67	1.05
		33.02	1.30	55.63	2.19	83.31	3.28	80.26	3.16	64.77	2.55	50.29	1.98
Lookout 3WSW	Lassen	4.83	0.19	13.46	0.53	5.59	0.22	23.88	0.94	31.24	1.23	42.42	1.67
		30.99	1.22	84.58	3.33	106.43	4.19	115.06	4.53	52.32	2.06	53.59	2.11
Lakeview, Oregon (So. Central Sec.)	Lake	12.19	0.48	4.57	0.18	0.25	0.01	18.29	0.72	-	-	12.45	0.49
		33.53	1.32	45.47	1.79	55.12	2.17	58.17	2.29	38.35	1.51	34.04	1.34
Alturas Ranger Station	Modoc	0.00	0.00	4.32	0.17	0.51	0.02	26.92	1.06	12.19	0.48	12.45	0.49
		27.67	1.09	38.61	1.52	41.91	1.65	43.43	1.71	31.75	1.25	30.23	1.19
Jess Valley	Modoc	39.37	1.55	10.41	0.41	3.81	0.15	29.97	1.18	14.99	0.59	32.51	1.28
		34.80	1.37	48.51	1.91	52.07	2.05	49.53	1.95	43.43	1.71	42.93	1.69
Cedarville	Modoc	24.38	0.96	7.37	0.29	1.52	0.06	27.43	1.08	8.64	0.34	22.35	0.88
		32.26	1.27	42.93	1.69	70.36	2.77	46.23	1.82	33.27	1.31	29.97	1.18
Susanville Airport	Lassen	0.25	0.01	6.86	0.27	3.81	0.15	31.75	1.25	34.80	1.37	17.78	0.70
		29.21	1.15	43.18	1.70	67.06	2.64	70.61	2.78	50.55	1.99	32.00	1.26
Greenville Ranger Station	Plumas	6.35	0.25	24.64	0.97	5.33	0.21	61.21	2.41	66.55	2.62	56.39	2.22
		65.28	2.57	128.02	5.04	167.39	6.59	190.50	7.50	150.11	5.91	131.06	5.16
Sierraville Ranger Station	Sierra	15.24	0.60	18.80	0.74	1.27	0.05	77.47	3.05	72.39	2.85	37.34	1.47
		54.36	2.14	91.95	3.62	124.21	4.89	134.87	5.31	97.28	3.83	72.39	2.85
Vinton	Plumas	19.05	0.75	9.14	0.36	T	T	37.59	1.48	33.02	1.30	17.27	0.68
		24.64	0.97	42.42	1.67	56.64	2.23	62.23	2.45	42.42	1.67	34.04	1.34

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

as part of a federal-state program for collection of year-round streamflow records. In addition, several stream gaging stations are installed and operated by the watermasters during the irrigation season to provide supplemental information. Also, water stage recorders are often installed by the watermaster in selected diversion ditches to further assist him in proper distribution of the various water right allotments.

Table 4 presents runoff data at selected stream gaging stations in or near the service areas.

April		May		June		July		August		September		Total		Percent of Mean
(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	
3.81	0.15	39.88	1.57	36.83	1.45	6.86	0.27	2.54	0.10	47.75	1.88	279.39	11.00	50
25.14	0.99	25.65	1.01	20.32	0.80	8.63	0.34	10.92	0.43	9.14	0.36	554.23	21.82	
13.46	0.53	43.18	1.70	20.07	0.79	4.32	0.17	25.15	0.99	152.65	6.01	602.23	23.71	42
73.91	2.91	50.80	2.00	23.36	0.92	10.92	0.43	8.89	0.35	17.52	0.69	1446.00	56.93	
3.56	0.14	45.72	1.80	30.23	1.19	6.10	0.24	4.32	0.17	32.77	1.29	236.75	9.32	50
22.09	0.87	24.89	0.98	22.86	0.90	7.87	0.31	14.22	0.56	10.41	0.41	478.26	18.83	
8.64	0.34	111.76	4.40	0.76	0.03	0.51	0.02	3.30	0.13	201.68	7.94	550.16	21.66	53
78.48	3.09	41.65	1.64	27.17	1.07	1.52	0.06	6.60	0.26	14.22	0.56	1029.94	40.5[illegible]	
14.99	0.59	41.15	1.62	19.56	0.77	0.00	0.00	6.86	0.27	39.12	1.54	240.05	9.45	50
34.54	1.36	31.75	1.25	25.65	1.01	5.84	0.23	6.85	0.27	10.16	0.40	482.07	18.99	
2.54	0.10	35.05	1.38	40.64	1.60	0.00	0.00	28.96	1.14	73.66	2.90	302.27	11.90	53
37.84	1.49	26.67	1.05	31.24	1.23	6.85	0.27	13.71	0.54	14.22	0.56	573.50	22.58	
7.37	0.29	57.40	2.26	12.19	0.48	2.54	0.10	19.56	0.77	25.65	1.01	172.46	6.79	42
27.94	1.10	43.94	1.73	43.18	1.70	4.82	0.19	9.39	0.37	12.70	0.50	406.65	16.01	
2.79	0.11	65.79	2.59	34.54	1.36	5.33	0.21	8.13	0.32	39.12	1.54	212.09	8.35	63
25.40	1.00	37.84	1.49	34.03	1.34	7.36	0.29	10.41	0.41	8.38	0.33	337.02	13.27	
10.67	0.42	110.24	4.34	36.07	1.42	17.02	0.67	39.62	1.56	40.39	1.59	385.07	15.16	85
41.91	1.65	57.15	2.25	49.02	1.93	8.63	0.34	11.93	0.47	13.97	0.55	453.88	17.87	
5.33	0.21	58.17	2.29	3.56	0.14	4.06	0.16	15.75	0.62	24.64	0.97	203.20	8.00	56
24.63	0.97	29.12	1.15	28.19	1.11	8.38	0.33	7.36	0.29	7.87	0.31	360.57	14.20	
1.78	0.07	28.45	1.12	47.75	1.88	0.00	0.00	1.02	0.04	7.37	0.29	181.62	7.15	49
18.54	0.73	19.55	0.77	19.55	0.77	5.84	0.23	3.81	0.15	8.12	0.32	368.02	14.49	
7.37	0.29	50.04	1.97	23.11	0.91	0.51	0.02	6.35	0.25	38.61	1.52	346.47	13.64	35
71.12	2.80	39.62	1.56	21.59	0.85	6.85	0.27	10.41	0.41	12.95	0.51	994.90	39.17	
5.84	0.23	47.50	1.87	16.26	0.64	0.25	0.01	4.06	0.16	1.52	0.06	297.94	11.73	43
43.18	1.70	34.29	1.35	17.01	0.67	7.36	0.29	6.35	0.25	9.90	0.39	693.15	27.29	
1.78	0.07	41.15	1.62	25.91	1.02	0.76	0.03	0.51	0.02	T	T	186.18	7.33	53
22.82	0.90	24.63	0.97	18.28	0.72	7.87	0.31	6.09	0.24	7.12	0.28	349.20	13.75	

* In Millimetres and Inches

TABLE 3

SNOWPACK AS OF APRIL 1 AND MAY 1, 1977 AT REPRESENTATIVE SNOW COURSES

Watermaster Service Areas (Grouped Geographically)**	Snow Courses** Relating to Each Group	Elevation (in metres)	Elevation (in feet)	WATER CONTENT OF SNOW April 1 Average (in mm*)	April 1 Average (in inches)	April 1, 1977*** In mm*	In inches	In Percent of April 1 Average	May 1, 1977 In mm*	In inches	In Percent of April 1 Average
French Creek	Parks Creek	2 042	6,700	914	36.0	297	11.7	32	0	0.0	0
Shackleford Creek	Middle Boulder No. 1	2 012	6,600	787	31.0	290	11.4	37	33	1.3	4
Shasta River	Little Shasta	1 890	6,200	508	20.0	239	9.4	47			
Ash Creek Big Valley	Blue Lake Ranch	2 073	6,800	305	12.0	127	5.0	42			
North Fork Pit River	Eagle Peak	2 195	7,200	381	15.0	178	7.0	47			
South Fork Pit River Surprise Valley	Cedar Pass	2 164	7,100	432	17.0	213	8.4	49	0	0.0	0
	Adin Mountain	1 935	6,350	330	13.0	130	5.1	39	0	0.0	0
Burney Creek	Thousand Lakes	1 981	6,500	965	38.0	264	10.4	27	28	1.1	3
Cow Creek	New Manzanita Lake	1 798	5,900	203	8.0	76	3.0	38	0	0.0	0
Digger Creek Hat Creek	Burney Springs	1 433	4,700	51	2.0	0	0.0	0			
Butte Creek	Humbug Summit	1 478	4,850	305	12.0	0	0.0	0	0	0.0	0
Susan River	Silver Lake Meadows	1 966	6,450	762	30.0	221	8.7	29	0	0.0	0
	Fredonyer Pass No. 1	1 753	5,750	203	8.0	0	0.0	0			
Indian Creek	Independence Lake	2 576	8,450	1 041	41.0	363	14.3	35	234	9.2	22
	Mount Dyer No. 1	2 164	7,100	635	25.0	150	5.9	24	0	0.0	0
Middle Fork Feather River	Rowland Creek	2 042	6,700	457	18.0	203	8.0	44	0	0.0	0
	Yuba Pass	2 042	6,700	787	31.0	208	8.2	26	0	0.0	0

* Millimetres
** Snow Courses are listed in order of elevation within each geographical group of watermaster service areas.
*** Data collected only at stations listed.

TABLE 4

RUNOFF AT SELECTED STATIONS - 1976-77 (CUBIC HECTOMETRES AND ACRE-FEET)

	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Total	1/ Average	Percent Average
Shasta River near Yreka	10.34 8,380	12.87 10,430	12.29 9,960	12.36 10,020	11.40 9,240	7.41 6,010	5.39 4,370	6.48 5,250	3.24 2,630	1.46 1,180	1.32 1,070	2.27 1,840	86.83 70,390	166.27 134,800	52
Hat Creek near Hat Creek	9.62 7,800	9.40 7,620	9.73 7,890	9.74 7,900	8.89 7,210	9.77 7,920	9.24 7,490	9.79 7,940	9.23 7,480	9.14 7,410	9.45 7,660	9.00 7,290	113.00 91,610	125.08 101,400	90
Pit River near Canby	5.45 4,420	5.76 4,670	6.02 4,880	4.32 3,500	6.69 5,420	5.38 4,360	1.31 1,060	10.94 8,870	5.37 4,350	1.33 1,080	1.60 1,300	2.29 1,850	56.46 45,770	219.93 178,300	26
South Fork Pit River near Likely	2.32 1,880	1.42 1,150	1.36 1,100	1.06 862	0.70 536	0.35 284	4.39 3,560	5.71 4,630	7.01 5,690	6.89 5,590	7.88 6,400	2.70 2,200	41.79 33,880	70.61 57,240	59
Susan River at Susanville	0.54 437	0.66 534	0.57 459	0.59 482	0.88 715	0.95 772	0.82 668	0.66 532	0.43 349	0.20 160	0.15 121	0.20 163	6.65 5,390	85.52 69,330	8
Indian Creek near Crescent Mills	3.96 3,210	3.91 3,170	2.48 2,010	4.75 3,850	5.76 4,670	6.17 5,000	3.18 2,580	4.64 3,760	1.79 1,450	0.31 248	0.12 92	0.26 206	37.33 30,260	486.12 394,100	8
Middle Fork Feather River near Clio	2.22 1,800	3.55 2,880	3.60 2,920	4.14 3,360	6.65 5,390	5.42 4,390	3.01 2,440	4.24 3,440	8.93 7,240	10.06 8,160	5.77 4,680	0.74 597	58.33 47,290	256.44 207,900	23
Butte Creek near Chico	6.44 5,220	6.92 5,610	7.33 5,940	8.78 7,120	7.83 6,350	9.34 7,570	8.39 6,800	10.16 8,240	5.83 4,730	4.12 3,340	3.84 3,110	4.98 4,040	83.96 68,070	359.20 291,200	23

1/ Long-term average

NOTE: Figures above line are in cubic hectometres; (below are acre-feet).

TABLE 5

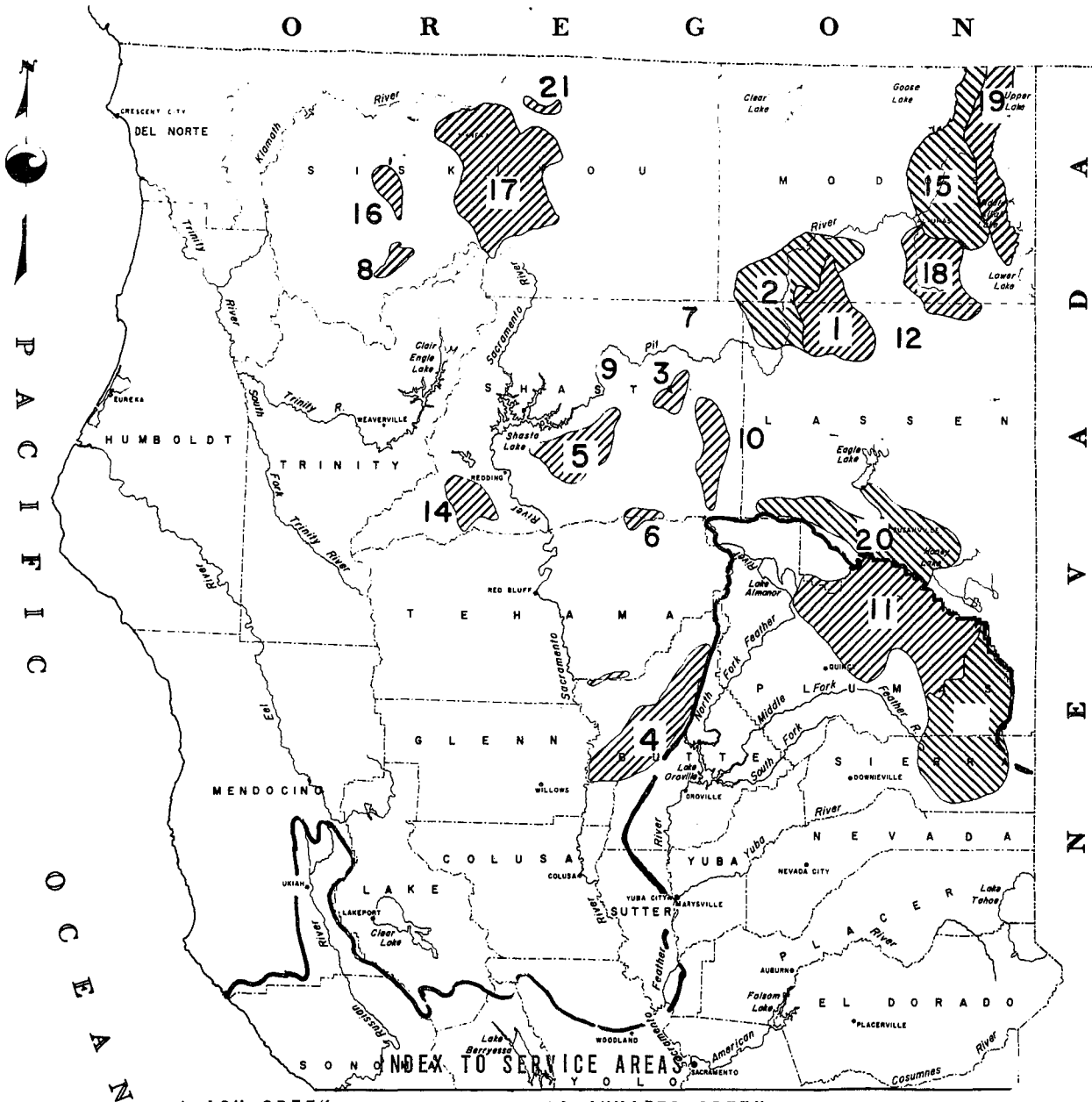
WATERMASTER SERVICE AREAS AND STREAM SYSTEMS

Service Area	County	Principal Water Sources: MAJOR STREAM and Tributaries[a]	Principal Water Sources: Reservoirs and Nontributary Streams
Ash Creek	Lassen, Modoc	ASH CREEK	
Big Valley	Lassen, Modoc	PIT RIVER	Roberts Reservoir
Burney Creek	Shasta	BURNEY CREEK	
Butte Creek	Butte	BUTTE CREEK	W. Branch Feather River
Cow Creek	Shasta	COW CREEK[b] N. Cow, Clover, Oak Run Creeks	
Digger Creek	Shasta, Tehama	DIGGER CREEK	
Fall River	Shasta	FALL RIVER	
French Creek	Siskiyou	FRENCH CREEK Miners Creek	Duck Lake, Paynes Lake
Goose Creek	Shasta	GOOSE CREEK	Lake Margaret
Hat Creek	Shasta	HAT CREEK	
Indian Creek	Plumas	INDIAN CREEK Lights Creek, Wolf Creek	
Juniper Creek	Lassen	JUNIPER CREEK	Iverson Reservoir
Middle Fork Feather River	Plumas, Sierra	M. FORK FEATHER RIVER Little Last Chance, Smithneck, Webber and Fletcher Creeks; Spring Channels, Westside Canal	Little Truckee River
N. Fork Cottonwood Creek	Shasta	N. FORK COTTONWOOD CREEK	Rainbow Lake
North Fork Pit River	Modoc	N. FORK PIT RIVER Parker Creek	Pine, Cottonwood, Davis Creeks
Shackleford Creek	Siskiyou	SHACKLEFORD CREEK Mill Creek	Campbell and Cliff Lakes
Shasta River	Siskiyou	SHASTA RIVER Little Shasta River	Dwinnell Reservoir (Lake Shastina)
South Fork Pit River	Modoc	S. FORK PIT RIVER Pine and Fitzhugh Creeks	West Valley Reservoir
Surprise Valley	Modoc	NONE (All creeks listed at right, are unconnected)	Bidwell, Mill, Soldier, Pine, Cedar, Deep, Owl, Rader, Eagle and Emerson Creeks
Susan River	Lassen	SUSAN RIVER Willow Creek	Lake Leavitt, Hog Flat, McCoy Flat Reservoirs; Baxter and Parker Creeks
Willow Creek	Siskiyou	WILLOW CREEK	

a/ Major tributaries only. A complete listing is given in "Index to Water Sources" page vi.

b/ Cow Creek proper not in service area.

Figure 1



INDEX TO SERVICE AREAS

1 ASH CREEK
2 BIG VALLEY
3 BURNEY CREEK
4 BUTTE CREEK
5 COW CREEK
6 DIGGER CREEK
7 FALL RIVER
8 FRENCH CREEK
9 GOOSE CREEK
10 HAT CREEK
11 INDIAN CREEK
12 JUNIPER CREEK
13 MIDDLE FORK FEATHER RIVER
14 NORTH FORK COTTONWOOD CREEK
15 NORTH FORK PIT RIVER
16 SHACKLEFORD CREEK
17 SHASTA RIVER
18 SOUTH FORK PIT RIVER
19 SURPRISE VALLEY
20 SUSAN RIVER
21 WILLOW CREEK

10 0 10 20 30 40
Miles

WATERMASTER SERVICE AREAS IN NORTHERN CALIFORNIA

SERVICE AREA DESCRIPTIONS AND 1977 NARRATIVES

This portion of the report consists of 21 sections, one for each service area active in 1977, presented in alphabetical order.

Each of these sections begins with a description of the particular service area, including location, geography, and general characteristics. Following this is a section entitled "Basis of Service". Under this heading are presented such data as the case number, date, and type of decrees; a brief summary of the decree or agreement which defines the water rights; the date the service area was created; and other related information.

These sections of the bulletin also present data on the water supply, methods of distribution, significant events of the watermaster season, and daily streamflow records. A map or schematic sketch of the stream system, including diversion locations, roads, etc., is also included for each service area.

A noticeable trend in recent years is the increasing number of water right owners in many areas, due to subdividing or "splitting" of property. For example, in the Ash Creek service area the number increased from 32 in 1967 to 60 in 1977, practically doubling in 10 years. This trend not only causes more work for the individual watermasters, but makes it difficult to maintain up-to-date records of all ownerships and their respective water rights. The water right ownerships are updated as of March 1 each year from County Assessors' records. Changes not on record by March 1 are therefore not reflected on the service area maps included in the various sections.

Since the purpose of this bulletin is to report the activities of the watermaster service, and because of the difficulty in keeping the data current, nothing herein should be construed as a determination of water rights. Furthermore, in some service areas there are diversions which may have been active but are not shown on the maps because they did not require the watermaster's attention during 1977.

As in previous years, watermaster service was begun on different dates in the various areas depending upon the streamflow conditions, the ranchers' needs for the water, or, as on some streams, the terms of the decree. Service was continued in all areas through the growing season and was concluded by October 15, 1977.

The date service was started in each service area and the name of the watermaster in charge are listed on the following page.

Service Area	Date Service Began in 1977	Watermaster
Ash Creek	May 1 Bates	~~Paul E. Lawler~~
Big Valley	May 1 scheler	Paul E. Lawler
Burney Creek	4/1 ~~May 1~~	Seth K. Barrett
Butte Creek	April 1	Kenneth E. Morgan
Cow Creek	May 1	Seth K. Barrett
Digger Creek	June 1 Barrett	Kenneth E. Morgan
Fall River	Mar. 15 to Oct. 15	~~Paul E. Lawler~~
French Creek	4/1 ~~March 28~~	Lester L. Lighthall
Goose Creek	Nov. 1 to June 1	Kenneth E. Morgan
Hat Creek	May 1	~~Seth K. Barrett~~
Indian Creek*	5/30 ~~April 15~~	Earl Stower ~~Joe Nessler~~
Juniper Creek	Nov. 1 to May 1	Kenneth E. Morgan
M. F. Feather River*	March 15	Conrad Lahr Joe Nessler
N. F. Cottonwood Creek	~~May~~ 1	Seth K. Barrett
N. F. Pit River	April 5	Eldon E. Rinehart
Shackleford Creek	March 17 4/1	Lester L. Lighthall
Shasta River	~~March~~ 1 4/1	Lester L. Lighthall
S. F. Pit River	March 14 17	L. L. Bates
Surprise Valley	March 19	Charles G. Hodge
Susan River	~~February 10~~ 4/11	Virgil D. Buechler
Willow Creek	April 1	Lester L. Lighthall

* Within Central District; all others in Northern District.

ASH CREEK WATERMASTER SERVICE AREA

The Ash Creek service area is situated in Modoc and Lassen Counties near the town of Adin, about 160 kilometres (100 miles) northeast of Redding via Highway 299. Figure 2, page 14, shows the Ash Creek stream system and diversions, plus the roads in the area.

The major sources of water for the service area are Ash Creek and three tributaries, Willow, Rush, and Butte Creeks. Ash Creek rises in Ash Valley in the southeastern part of the service area and flows northwesterly about 30 km (18 miles) to its confluence with Rush Creek, then southwesterly to the town of Adin, and then westerly to Ash Creek Swamp and the Pit River. Butte and Willow Creeks head in the mountains to the east and flow northwesterly into Big Valley. Butte Creek meets Ash Creek near the head of the valley at Adin and Willow Creek about 5 km (3 miles) farther west near the head of Ash Creek Swamp. The valley floor in this vicinity is at an elevation of approximately 1 280 metres (4,200 feet).

Basis of Service

The rights on this creek system were determined by a court reference and set forth in Decree No. 3670, Modoc County Superior Court, dated October 27, 1947. From 1949 through 1958 Ash Creek was included as a part of Big Valley watermaster service area. The Ash Creek watermaster service area was created April 3, 1958.

Approximately 85 percent of the water rights in the service area are in Big Valley, west of the town of Adin. The remaining water rights are along the upstream tributaries and in Ash Valley, east of the town of Adin. The portion of Big Valley served is approximately 16 km (10 miles) long by 10 km (6 miles) wide, extending from the town of Adin to the confluence of Ash Creek and the Pit River.

The Ash Creek decree establishes the number of priority classes on the individual streams within the service area as follows: Ash Creek - five; Willow Creek - four; Rush Creek - one; and Butte Creek - two. Each of these streams is independently regulated.

Water Supply

The water supply for Ash and Rush Creeks is derived primarily from snowmelt, since most of the watershed is between 1 524 and 1 828 m (5,000 and 6,000 feet) in elevation. Willow Creek and Butte Creek receive a substantial portion of their water from springs. These 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 receded to about 566 litres per second (20 cubic feet per second), and Butte Creek to less than 28 l/s (1 cfs). The flow of these creeks then remains nearly constant for the remainder of the season.

Method of Distribution

Irrigation from Ash Creek and its tributaries is accomplished by using numerous small dams to divert the flow into a system of ditches. The ditches deliver the water to the various fields for spreading. Wild flooding is the method most used; however, some ranchers have checks and borders and some use pumps to operate sprinklers or to lift water to higher spreader ditches. In some cases, runoff water is captured and reused before it returns to the stream.

1977 Distribution

Watermaster service began May 1 and continued until September 30. Paul E. Lawler, Assistant Engineer, Water Resources, was watermaster.

The available water supply for Ash Creek and tributaries at the start of the irrigation season was considerably below normal, as the dry 1976 conditions continued into early 1977. However, moderately heavy May and June rainfall resulted in above-average meadow hay crops, even though cold weather continued into early June. Light rains occurring in August and September aided additional growth.

Ash Creek. The available water supply for Ash Creek was sufficient to meet all demands (five priorities) until mid-July. Considerable water flowed into the Pit River during May and June, with estimated flows as high as 850 litres per second (30 cfs). From mid-July to early September, only stockwater was available in the lower reaches of the system. During the latter half of September, some water was available to begin filling duck ponds.

Rush Creek. The water supply in Rush Creek was sufficient to satisfy all allotments (one priority) during the periods of moderate rainfall in May and June. Flows were about 20 percent of normal through the rest of the season.

Willow Creek. The water supply in Willow Creek was somewhat below normal at the beginning of the irrigation season. The May and June rains increased the flows sporadically and helped greatly to satisfy all allotments (four priorities) during the wet periods. Otherwise, only about 25 to 50 percent of first and second priorities were available for the rest of the season as the flows at the diversion weir ranged from about 113 to 170 l/s (4 to 6 cfs). Sufficient water was available from the low winter flows to fill Myers' 344 156 cubic meters (279 acre-foot) reservoir to capacity during the five-month diversion period.

Butte Creek. The water supply in Butte Creek was sufficient to supply all allotments (two priorities) until mid-July. The much-needed rains in May and June went far toward sustaining ground moisture, with the August and September showers also helping. From mid-July until the end of September, the available flow was about 60 percent of first priority allotments, or about 42 l/s (1.5 cfs). Rush Creek was dry at Highway 299 beginning about June 1.

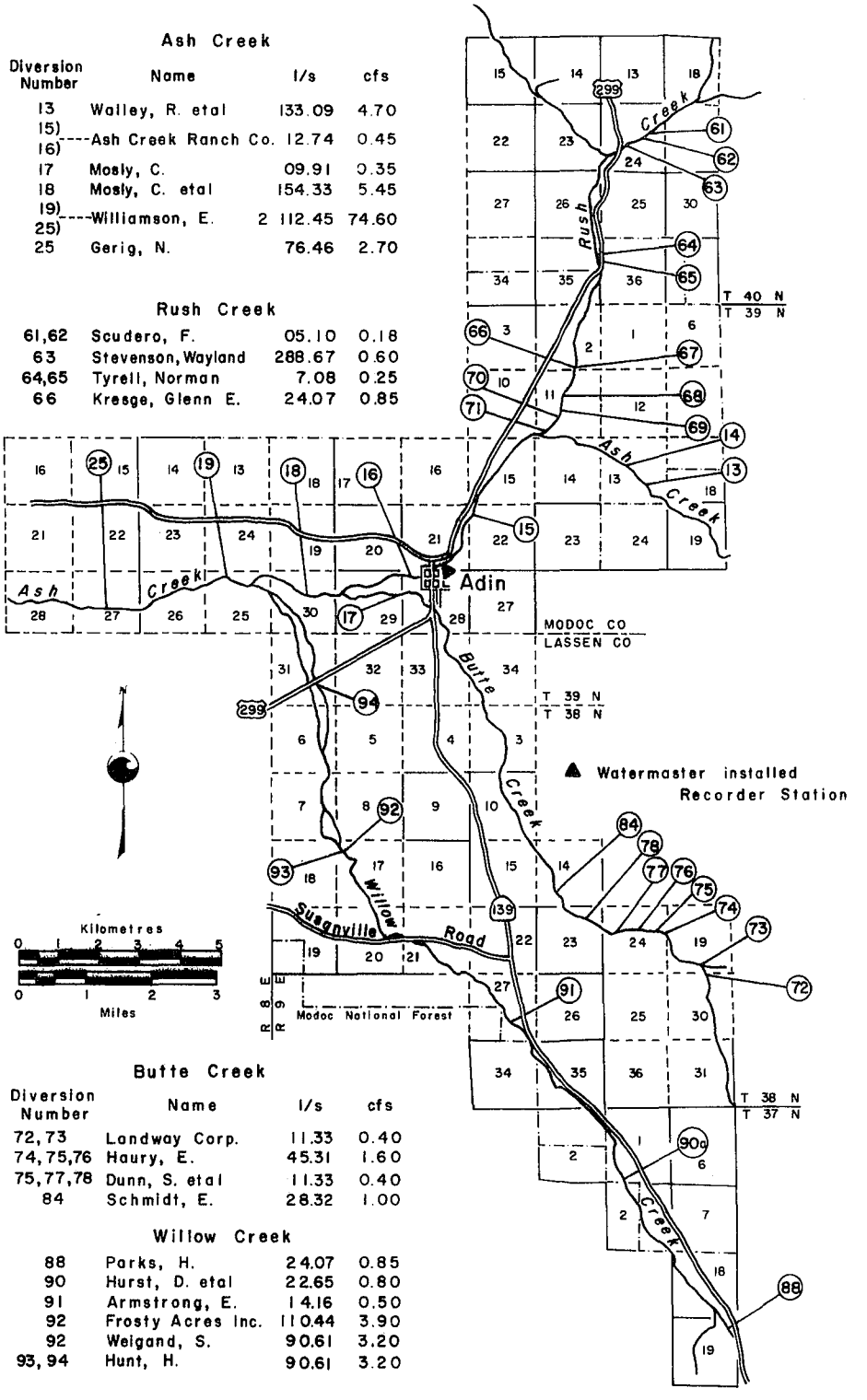
ASH CREEK WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 6

ASH CREEK AT ADIN

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1	991	35	878	31	793	28	566	20	538	19	368	13	312	11	1
2	963	34	878	31	793	28	481	17	566	20	312	11	396	14	2
3	1 020	36	850	30	793	28	453	16	623	22	340	12	312	11	3
4	1 020	36	850	30	793	28	481	17	623	22	312	11	147	5.2	4
5	1 050	37	821	29	793	28	453	16	595	21	340	12	173	6.1	5
6	1 100	39	765	27	850	30	425	15	595	21	368	13	187	6.6	6
7	1 050	37	708	25	878	31	538	19	566	20	425	15	312	11	7
8	1 080	38	935	33	850	30	680	24	566	20	396	14	312	11	8
9	1 300	46	991	35	878	31	651	23	566	20	368	13	312	11	9
10	1 130	40	906	32	1 700	60	708	25	595	21	425	15	312	11	10
11	1 080	38	821	29	1 420	50	651	23	595	21	396	14	340	12	11
12	1 100	39	793	28	1 250	44	595	21	566	20	340	12	396	14	12
13	1 190	42	765	27	935	33	538	19	595	21	368	13	425	15	13
14	1 130	40	765	27	850	30	538	19	595	21	425	15	425	15	14
15	1 130	40	765	27	821	29	538	19	623	22	396	14	481	17	15
16	1 250	44	708	25	906	32	538	19	623	22	396	14	765	27	16
17	1 390	49	708	25	1 130	40	935	33	623	22	396	14	793	28	17
18	1 190	42	680	24	1 190	42	1 100	39	623	22	453	16	651	23	18
19	1 160	41	708	25	1 130	40	1 160	41	595	21	425	15	821	29	19
20	1 190	42	680	24	1 050	37	1 840	65	651	23	396	14	821	29	20
21	1 100	39	595	21	878	31	1 080	38	708	25	425	15	736	26	21
22	1 050	37	481	17	850	30	765	27	651	23	396	14	708	25	22
23	1 050	37	566	20	1 020	36	680	24	963	34	425	15	935	33	23
24	1 100	39	623	22	963	34	708	25	708	25	623	22	821	29	24
25	1 130	40	623	22	906	32	680	24	680	24	736	26	765	27	25
26	1 050	37	651	23	878	31	538	19	651	23	680	24	736	26	26
27	1 050	37	623	22	878	31	453	16	651	23	510	18	765	27	27
28	963	34	623	22	793	28	425	15	765	27	481	17	906	32	28
29	935	33	595	21	736	26	396	14	850	30	595	21	1 840	65	29
30	963	34	680	24	708	25	481	17	595	21	623	22	1 330	47	30
31	935	33			680	24			340	12	425	15			31
Mean	1 090	38.5	735	25.9	938	33.1	669	23.6	629	22.2	438	15.5	608	21.5	Mean
Volume															Volume
hm	2.920		1.900		2.510		1.730		1.680		1.170		1.580		hm
AF		2370		1540		2040		1410		1360		949		1280	AF

Figure 2



DIVERSIONS FROM ASH CREEK WATERMASTER SERVICE AREA

BIG VALLEY WATERMASTER SERVICE AREA

The Big Valley service area is in Modoc and Lassen Counties in the vicinity of the towns of Lookout and Bieber, about 145 kilometres (90 miles) northeast of Redding via State Route 299.

The Pit River is the major source of water regulated by the watermaster. The river enters the valley north of the town of Lookout and flows southerly through the western part of the valley and out at the southern end. The major area of use is on approximately 21 km (13 miles) of valley floor, up to 10 km (6 miles) wide, along the Pit River at an approximate elevation of 1 280 metres (4,200 feet).

A map of the Big Valley stream system with towns, roads, and diversions is presented as Figure 3, pages 20 and 21.

Basis of Service

The Big Valley watermaster service area was created on November 13, 1934, and service began with the 1935 season, operating under an agreement to determine water rights recorded in 1934. The water rights in this service area were set forth in Decree No. 6395, Modoc County Superior Court, a statutory decree, dated February 17, 1959.

Distributing the water on a continuous-flow basis, as provided by the decree, has proven impracticable because of the wide variation of flow which frequently occurs. By mutual agreement, an alternative procedure has been established allowing each user a definite amount of water in acre-feet (AF) for each cubic foot per second (cfs) of right allotted by the decree. The watermaster estimates the amount of water available for the next 15 to 30 days and then chooses the appropriate AF/cfs ratio so that the rotation through the valley is completed in not more than 30 days.

Water Supply

The flow in the Pit River at the head of Big Valley is derived principally from direct runoff, mainly snowmelt, and return flow from irrigation water released from West Valley and Big Sage Reservoirs above South Fork Pit River and Hot Springs Valley, respectively.

The available water supply in the Pit River as it flows through Big Valley is ordinarily adequate to satisfy all demands until about June 1. The irrigation practices in Hot Springs Valley, about 32 km (20 miles) upstream from Big Valley, have a significant effect on the available water supply in Big Valley throughout the remainder of the irrigation season. Water users in Hot Springs Valley divert most of the flow of the Pit River for 2- or 3-week periods. Natural flow available for use in Big Valley during these periods is often less than 566 litres per second (20 cfs). Periodic releases from channel storage in the lower end of Hot Springs Valley sometimes increase the flow to as much as 5 663 to 8 495 l/s (200 to 300 cfs) for relatively short periods. Consequently, equitable water distribution in Big Valley is very difficult to attain.

Roberts Reservoir, which stores runoff of a minor tributary of the Pit River near the upper end of Big Valley above Lookout, serves as a supplemental source of water to those users in the area who are members of the Big Valley Mutual Water Company. Water from this reservoir is released into the Pit River and distributed to members of the water company along with the natural flow to which they are entitled.

Iverson Reservoir stores runoff of East Juniper Creek, a tributary to the Pit River at the lower end of Big Valley. This reservoir was completed in 1969 to provide a supplemental water supply for the McArthur and Britten Ranches.

Water from Iverson Reservoir is released into the Pit River and then rediverted to the users along with their decreed rights from natural flow of the Pit River.

The daily mean discharge of Pit River near Canby is presented in Table 7, page 19.

Method of Distribution

Most water users in the Big Valley service area irrigate on a rotation schedule either by wild flooding or by checks and borders. Large flashboard dams placed in the channel make it possible to use the large heads of water characteristic of the supply in the area. In addition, some pumps are used for diversion, both in ditches and directly into sprinkler systems. The ranches which irrigate by wild flooding must use large heads of water in order to cover unleveled or high ground. Much of the runoff is recaptured for use by downstream lands, resulting in a relatively high irrigation efficiency for the valley.

1977 Distribution

Watermaster service began in the Big Valley service area on May 1 and continued through September 30, with Paul E. Lawler, Assistant Engineer, Water Resources, as watermaster.

At the beginning of the season the outlook was bleak; an almost nonexistent snowpack and meager winter rainfall resulted in extremely low flows in the Pit River. In addition, storage in adjacent and upstream reservoirs was somewhat low. In view of this situation, a special meeting of the water users was held on May 3 in an attempt to plan ahead for an abnormally low water supply irrigation season. On May 9, a heavy rainfall came, resulting in a large increase in river flows. The pumpers were then allowed to irrigate and a rotation was begun on May 12 at 3-Corners Diversion. The river flows peaked at about 12 742 litres per second (450 cfs) on May 13; water was being used by then on a "take all you can use" basis and remained that way for the remainder of the month. Due to the limited storage capacity available, most of the water passed the lower end of the valley, although some flooders received several more heavy irrigations during May.

By June 3, river flows had dropped to about 113 l/s (4 cfs), but on June 11 a peak flow of 7 532 l/s (266 cfs) was recorded at Canby. The flows then receded slowly during the remainder of the month, allowing the water users several more heavy irrigations. Cold weather during May and June also tended to delay most haying operations by several weeks.

To use the available flows so that the water would not be lost, several rotations were in progress simultaneously in late June and early July. The river flows slowly receded to 57 l/s (2 cfs) at Canby on July 17, at which time ongoing rotations continued downstream. By July 15, all pumpers had been shut down. The only irrigation in progress during the latter half of July was on the C. Babcock property, using 57 l/s (2 cfs) flow diverted from storage behind Bieber Dam.

The river flows increased from about 142 l/s (5 cfs) on August 3 to a very short peak of about 2 123 l/s (75 cfs) on August 6; all available water was used to build channel storage. Coincidentally, with the increased flows, storage was raised behind Gerig Dam and Roberts Reservoir water was released from August 12 in the amount of 271 370 cubic metres (220 acre-feet).

On September 8, Roberts Reservoir was reopened, with a maximum flow of 142 l/s (5 cfs) and was left open to drain; about 122 350 m^3 (100 acre-feet) were then made available to irrigate a small portion of the O. Gerig and E. Williamson ranches, with a small portion sent down Watson Ditch.

Releases from Roberts Reservoir were delivered to shareholders in estimated quantities as follows:

User	Cubic Meters	Acre-feet
C. Mamath	12 335	10
E. Williamson	61 675	60
O. Gerig	148 020	120
N. Gerig	98 680	80
O. Babcock	61 675	50
C. Hawkins	12 335	10
Totals	394 720	320

A new diversion dam was constructed about 91 metres (300 feet) below Fulcher Pipe this season. The dam replaced a wooden structure that was washed away many years ago. The new dam will provide a higher river level at Fulcher Pipe of about .03 m (1 foot) for a higher irrigation head for the Kramer Ranch. It will also retain storage water that previously had been drawn down considerably when Gerig Dam was pulled prior to haying operations on the N. Gerig ranch. Thus, if and when water is available in July, diversions at Fulcher Pipe (which is also being fitted with a slide gate) can be made.

A number of new wells were drilled in the valley during this season. One, in the northeastern area of the valley, was rented by the Viso ranch to supplement its allotment of river flows. Pumping was initiated on July 25 and continued through September 18, with about 388 550 m^3 (315 acre-feet) of water measured at river point of diversion. The water had to traverse about 2.4 kilometres (1.5 miles) of ditch, resulting in some losses.

During August, 40 705 m^3 (33 acre-feet) of Kramer's stored water was released to provide stock water to the Johnson and N. Gerig ranches near Nubieber. The Oney ranch was then allowed to pump an equal amount from river storage by paying Kramer a predetermined price for his water.

Iverson Reservoir held only about 185 025 m^3 (150 acre-feet) of storage at the start of the season. Britton drained the available storage in August to supplement his river storage, of which a portion was used to sprinkle irrigate some nondecreed ranch property.

BIG VALLEY WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 7

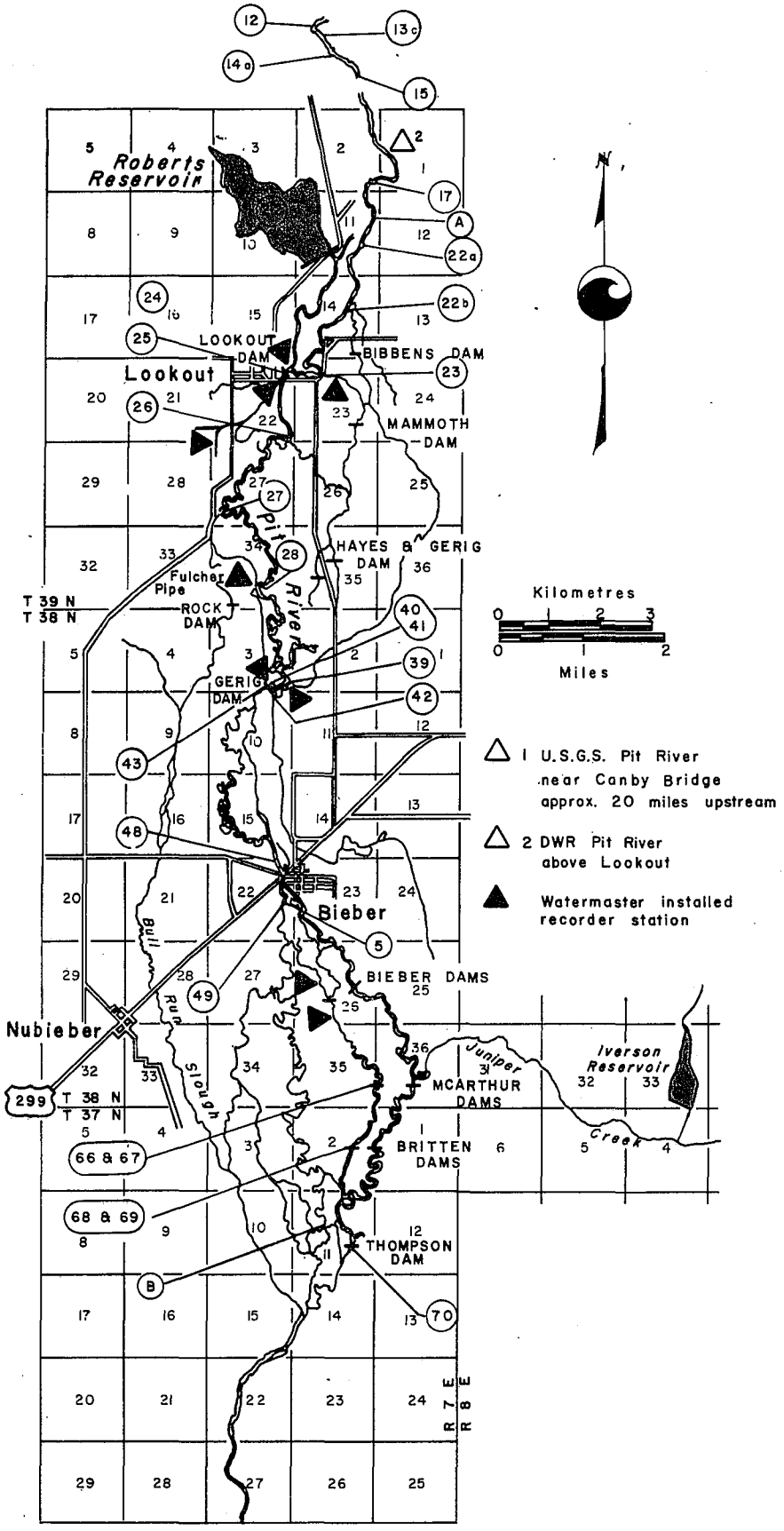
PIT RIVER NEAR CANBY

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1	2 320	82	1 130	40	630	24	1 130	40	453	16	850	30	453	16	1
2	2 270	80	1 100	39	510	18	510	18	396	14	340	12	481	17	2
3	2 410	85	991	35	425	15	340	12	1 100	39	232	8.2	481	17	3
4	2 320	82	935	33	566	20	991	35	1 810	64	278	9.8	368	13	4
5	2 350	83	623	22	708	25	566	20	1 560	55	538	19	425	15	5
6	2 150	76	510	18	850	30	425	15	1 500	53	878	31	595	21	6
7	2 180	77	566	20	765	27	425	15	1 360	48	793	28	1 220	43	7
8	2 380	84	283	10	736	26	708	25	1 080	38	878	31	963	34	8
9	2 440	86	227	8.0	1 640	58	2 750	97	680	24	1 020	36	481	17	9
10	2 460	87	190	6.7	4 050	143	3 850	136	793	28	1 130	40	340	12	10
11	2 610	92	176	6.2	4 470	158	6 800	240	821	29	1 190	42	396	14	11
12	2 550	90	122	4.3	10 990	388	6 370	225	680	24	1 190	42	623	22	12
13	2 380	84	93	3.3	12 690	448	5 720	202	566	20	1 100	39	708	25	13
14	2 240	79	127	4.5	9 010	318	4 420	156	566	20	878	31	623	22	14
15	2 120	75	85	3.0	5 640	199	3 060	108	453	16	736	26	566	20	15
16	2 070	73	70	2.5	5 320	188	2 520	89	312	11	708	25	1 160	41	16
17	2 010	71	51	1.8	4 590	162	2 240	79	184	6.5	566	20	878	31	17
18	1 930	68	53	1.9	4 250	150	2 150	76	156	5.5	396	14	991	35	18
19	1 930	68	39	1.4	6 630	234	2 150	76	133	4.7	198	7.0	1 470	52	19
20	1 810	64	425	15	6 030	213	2 240	79	116	4.1	204	7.2	1 560	55	20
21	1 700	60	651	23	5 470	193	2 120	75	73	2.6	229	8.1	1 440	51	21
22	1 640	58	736	26	5 210	184	1 640	58	59	2.1	266	9.4	1 190	42	22
23	1 610	57	878	31	4 930	174	1 390	49	51	1.8	340	12	1 100	39	23
24	1 700	60	736	26	4 790	169	708	25	45	1.6	368	13	1 100	39	24
25	1 730	61	595	21	4 620	163	261	9.2	25	0.9	368	13	991	35	25
26	1 670	59	566	20	4 900	173	1 840	65	45	1.6	312	11	878	31	26
27	1 560	55	1 440	51	4 220	149	2 350	83	34	1.2	255	9.0	821	29	27
28	1 530	54	396	14	3 620	128	1 160	41	28	1.0	312	11	1 250	44	28
29	1 640	58	595	21	3 650	129	736	26	25	0.9	765	27	1 220	43	29
30	1 390	49	680	24	2 800	99	538	19	19	0.7	651	23	1 610	57	30
31	1 220	43			1 840	65			340	12	623	22			31
Mean	2 010	71.0	502	17.7	4 080	144	2 070	73.1	499	17.6	600	21.2	879	31.1	Mean
Volume															Volume
hm	5.380		1.300		10.900		5.370		1.340		1.610		2.280		hm
AF		4360		1060		8860		4350		1080		1300		1850	AF

Diversion Number	Name		l/s	Cfs
	First priority for the entire river is to maintain channel storage and stock water.		424.75	15.00
2	Mohr, K. *		15.01	0.53
3	Bushey, R. *		61.45	2.17
13c	Duncan, J. *		80.99	2.86
14a	Gould, K. *		33.98	1.20
17	Vise, J. *		197.65	6.98
22	Roberts Reservoir - Total 6.784 hm^3 (5500 Ac. Ft.)			
	Gerig, N.	5 shares		
	Gerig, O.	3 shares		
	Babcock, D.	3 shares		
	Kramer, C.	2 shares		
	Williamson, E.	2 shares		
	Graham, W.	1 share		
	Mamath, C.	1 share		
	Hawkins, C.	1 share		
	Monchamp, L.	1 share		
	Amen, G. et al	1 share		
24	Joiner, W. *		31.43	1.11
24	Lennon, J. *		40.49	1.43
22a	Monchamp, L. *		48.99	1.73
22b	Bibbens, R.		116.10	4.10
23	Three Corners Diversion	Total	660.92	23.34
	Mamath, C.		246.36	8.70
	Williamson, E.		178.40	6.30
	Hayes, H.		95.43	3.37
	Gerig, O.		140.74	4.97
24	Lookout Dam			
25	Oilar Ditch	Total	504.04	17.80
	Amen, G. et al		321.11	11.34
	Leventon, D. **		182.93	6.46
26	Ash Valley Land & Investment Co., Inc.		215.78	7.62
27	Oney, T. *		127.43	4.50
28	Fulcher Pipe	Total	679.04	23.98
	Kramer, C.		259.10	9.15
	Johnson, C.		229.37	8.10
	Knox Ranch (Gerig, N.)		108.45	3.83
	Wing, E.		58.90	2.08
	Murphy, R.		5.95	0.21
	Babcock, A.		17.27	0.61
39	Ash Creek Pipe			
40	Gerig, N.		260.52	9.20
42	Watson Ditch	Total	172.17	6.08
	Babcock, D.		126.29	4.46
	Hawkins, C.		45.87	1.62
43	Gerig Dam			
48	Graham Pipe		13.31	0.47
49	Babcock Pipes	Total	824.02	29.10
	Cox, R.		77.59	2.74
	Weigand, S.		71.08	2.51
	McArthur, J.		129.13	4.56
	Babcock Brothers		423.34	14.95
	Thompson, W.		122.90	4.34
50	Drewry, W. *		77.02	2.72
50	Bieber Dam			
66 & 67	McArthur Dams		481.39	17.00
68 & 69	Britten Dams		353.96	12.50
70	Thompson Dam		325.65	11.50

* Pump
** Pump & Flooding

NOTE: Tabulation indicates currently active diversions only.



DIVERSIONS FROM PIT RIVER
BIG VALLEY WATERMASTER SERVICE AREA

BURNEY CREEK WATERMASTER SERVICE AREA

The Burney Creek service area is in eastern Shasta County above and below the town of Burney. Figure 4, page 25, shows the Burney Creek stream system including the diversions and roads.

The source of water supply for this service area is Burney Creek, which enters the southern part of the service area and flows through Burney in a northerly direction to the Pit River. The portion of the valley served by this stream is approximately 18 kilometres (11 miles) long and 3 km (2 miles) wide, and extends both north and south of Burney.

Basis of Service

The rights on this creek system were determined by a court reference and set forth in Decree No. 5111, Shasta County Superior Court, dated January 30, 1926. Watermaster service was provided on the creek from 1926 to 1929 under the old Water Commission Act. The service area was created, along with some others, on September 11, 1929, under a new law passed in that year.

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

Water Supply

The water supply for Burney Creek comes from springs and snowmelt. Most of the watershed lies between the elevations of 1 219 and 2 286 metres (4,000 and 7,500 feet) on the northeast 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. For the remainder of the irrigation season, runoff from perennial springs keeps the flow nearly constant at approximately 40 percent of allotments.

The daily mean discharge of Burney Creek near Burney is presented in Table 8, page 24. The stream gaging station on Burney Creek is downstream from four points of diversion; consequently, the records do not show all of the available water supply of the creek.

Method of Distribution

Water is diverted from Burney Creek, in most cases by means of low diversion dams, into ditches which convey it to the place of use. Lateral ditches are then used to irrigate the land.

1977 Distribution

Seth Barrett, Water Resources Technician II, was watermaster. Watermaster service began May 1 and ended September 30. The available supply on May 1 was only about 75 percent of water rights. This was adequate for May because of cold weather and some showers, and the fact that the Pierpont Ranch was not yet operating. It then rapidly declined in June to 40 percent during the first two weeks. Then in late June supply dropped to 30 percent, where it held until late July when it dropped to a low of 25 percent and then held between 25 to 35 percent for the balance of the watermaster season. Rain in September was of considerable benefit to the fields, but there was very little increase in the actual flow of Burney Creek.

BURNEY CREEK WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

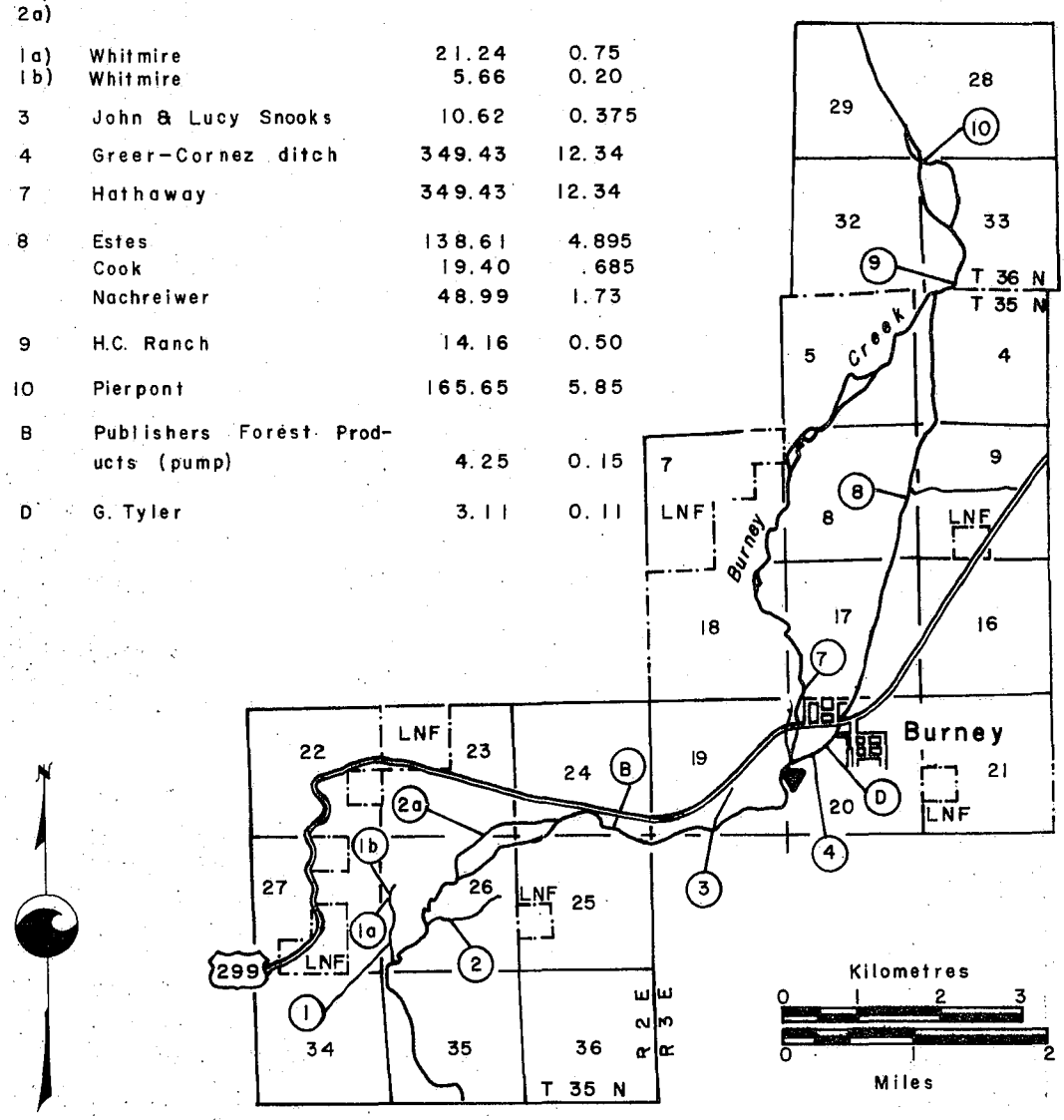
TABLE 8

BURNEY CREEK NEAR BURNEY

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1	510	18	510	18	481	17	396	14	224	7.9	201	7.1	218	7.7	1
2	481	17	510	18	538	19	368	13	218	7.7	207	7.3	215	7.6	2
3	481	17	510	18	538	19	368	13	204	7.2	207	7.3	212	7.5	3
4	481	17	510	18	566	20	368	13	201	7.1	215	7.6	210	7.4	4
5	481	17	510	18	623	22	368	13	201	7.1	201	7.1	210	7.4	5
6	481	17	510	18	651	23	368	13	204	7.2	210	7.4	204	7.2	6
7	481	17	510	18	623	22	368	13	207	7.3	212	7.5	198	7.0	7
8	481	17	510	18	595	21	340	12	210	7.4	212	7.5	198	7.0	8
9	651	23	510	18	651	23	340	12	221	7.8	204	7.2	198	7.0	9
10	566	20	510	18	651	23	340	12	218	7.7	204	7.2	198	7.0	10
11	538	19	510	18	510	18	340	12	212	7.5	204	7.2	198	7.0	11
12	538	19	510	18	510	18	340	12	187	6.6	207	7.3	201	7.1	12
13	538	19	481	17	566	20	340	12	193	6.8	212	7.5	204	7.2	13
14	538	19	481	17	566	20	312	11	195	6.9	212	7.5	207	7.3	14
15	538	19	481	17	566	20	312	11	198	7.0	218	7.7	258	9.1	15
16	538	19	481	17	566	20	283	10	201	7.1	212	7.5	340	12	16
17	538	19	481	17	566	20	283	10	198	7.0	193	6.8	312	11	17
18	538	19	453	16	566	20	283	10	204	7.2	198	7.0	340	12	18
19	538	19	453	16	595	21	272	9.6	204	7.2	204	7.2	481	17	19
20	538	19	453	16	566	20	252	8.9	204	7.2	224	7.9	340	12	20
21	538	19	425	15	538	19	229	8.1	195	6.9	244	8.6	312	11	21
22	538	19	425	15	538	19	229	8.1	187	6.6	229	8.1	312	11	22
23	538	19	425	15	538	19	221	7.8	181	6.4	156	5.5	283	10	23
24	566	20	425	15	510	18	221	7.8	173	6.1	207	7.3	283	10	24
25	566	20	425	15	481	17	218	7.7	167	5.9	266	9.4	283	10	25
26	566	20	425	15	510	18	224	7.9	161	5.7	283	10	283	10	26
27	538	19	425	15	510	18	224	7.9	153	5.4	280	9.9	368	13	27
28	538	19	425	15	453	16	224	7.9	187	6.6	263	9.3	396	14	28
29	538	19	396	14	453	16	221	7.8	212	7.5	235	8.3	340	12	29
30	538	19	425	15	425	15	224	7.9	207	7.3	224	7.9	312	11	30
31	510	18			396	14			204	7.2	218	7.7			31
Mean	531	18.7	470	16.6	543	19.2	296	10.4	198	7.0	218	7.7	270	9.6	Mean
Volume															Volume
hm	1.420		1.220		1.460		.770		.530		.580		.700		hm
AF		1150		987		1180		621		429		473		568	AF

Figure 4

Diversion Number	Name	l/s	cfs
1)			
2)	Whitmire	166.50	5.88
2a)			
1a)	Whitmire	21.24	0.75
1b)	Whitmire	5.66	0.20
3	John & Lucy Snooks	10.62	0.375
4	Greer-Cornez ditch	349.43	12.34
7	Hathaway	349.43	12.34
8	Estes	138.61	4.895
	Cook	19.40	.685
	Nachreiwer	48.99	1.73
9	H.C. Ranch	14.16	0.50
10	Pierpont	165.65	5.85
B	Publishers Forest Products (pump)	4.25	0.15
D	G. Tyler	3.11	0.11



▲ Permanent recorder station DWR Burney Creek near Burney

DIVERSIONS FROM BURNEY CREEK WATERMASTER SERVICE AREA

BUTTE CREEK WATERMASTER SERVICE AREA

The Butte Creek service area is situated in Butte County a few miles southeast of the City of Chico. The watermaster service area extends for about 18 kilometres (11 miles) along Butte Creek, commencing approximately 6 km (4 miles) east of Chico and extending downstream to the crossing of the Western Canal. It contains about 8 094 hectares (20,000 acres) of valley floor lands at an average elevation of 45 metres (150 feet).

A map of the Butte Creek stream system is presented in Figure 5, page 31.

Basis of Service

The rights on this stream system were determined by a statutory adjudication and set forth in Decree No. 18917, Butte County Superior Court, dated November 6, 1942. The Butte Creek watermaster service area was created on January 7, 1943.

The Butte Creek decree established three priority classes for summer use under Schedule 7, a surplus class inferior to the above rights, and a special class for Hamlin Slough. Schedule 3 of the decree defines the rights for rediversion (Diversion 50) of foreign water delivered into Butte Creek from the West Branch of Feather River.

The Water Resources Control Board, on September 18, 1969, granted permits for the following applications to appropriate water from Butte Creek: applications 22321, Gorrill Land Company; 22534, Garrison Patrick; and 22564, Louis C. Camenzind, Jr. These appropriative rights are also under control of the watermaster.

Water Supply

Butte Creek, the major source of water, drains approximately 388 square kilometres (150 square miles) of the western slope of the Sierra Nevada Mountains in the northeasterly portion of Butte County above the watermaster service area. The maximum elevation in the watershed is about 2 134 m (7,000 feet).

Normally, snowmelt produces sustained high flows in the creek until about the end of June, after which perennial springs continue to produce flows of more than 1 132 litres per second (40 cubic feet per second). Additional water is imported for distribution from the West Branch Feather River by means of the Hendricks (Toadtown) Canal through De Sabla Reservoir and Powerhouse into Butte Creek.

Records of the daily mean discharge at stream gaging stations in the Butte Creek service area are presented in Tables 9, 10 and 11, pages 28 and 29.

Method of Distribution

Water is diverted from Butte Creek by pumping and by gravity diversions. Parrott Investment Company, M & T Inc., Dayton Mutual Water Company, and Durham Mutual Water Company divert relatively large amounts of water by gravity into ditches leading to their individual distribution systems. Various methods of irrigation are in general practice, including contour checks, strip or border checks, basin checks, furrows, wild flooding, and sprinklers. The use of sprinklers has increased in the past few years, especially for orchards.

1977 Distribution

Watermaster service began April 1, 1977 in Butte Creek service area and continued until October 7, 1977, with Kenneth Morgan, Water Resources Engineering Associate as watermaster.

The water supply available from Butte Creek in the 1977 irrigation season was the lowest of record. Rice acreage planted in 1977 was reduced by about 25 percent at the Parrott Ranch, M & T

Incorporated, Newhall Farming Company, Gorrill Land Company, and Dayton Mutual Water Company, due to an insufficient water supply.

Due to insufficient flow in Butte Creek, the Gorrill Land Company did not receive any water at Diversion 61 in 1977. The appropriative water right of Newhall Land and Farming Company (Application 22039) did not receive any water this season. The Patrick Ranch irrigated in April but did not divert water thereafter, which enhanced the supply for the other first priority users.

Imported water from the West Branch Feather River, "Toadtown Canal Above Butte Canal" was the lowest of record.

First priority allotments were filled until the first week of June. The flow continued to decrease throughout June, and reached the seasonal low of approximately 50 percent of first priority in mid-July, which continued to near the end of September. With the rains at the end of September and a lesser demand for water, the available water supply then became a surplus.

BUTTE CREEK WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 9

BUTTE CREEK NEAR CHICO

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1	3 310	117	3 140	111	3 910	138	2 950	104	2 010	71	1 390	49	1 420	50	1
2	3 090	109	3 120	110	4 190	148	2 890	102	1 840	65	1 420	50	1 440	51	2
3	3 060	108	3 060	108	3 460	122	2 830	100	1 760	62	1 420	50	1 500	53	3
4	2 950	104	3 090	109	3 910	138	2 800	99	1 670	59	1 390	49	1 500	53	4
5	2 920	103	3 200	113	3 460	122	2 750	97	1 640	58	1 390	49	1 530	54	5
6	2 920	103	3 340	118	3 600	127	2 720	96	1 610	57	1 420	50	1 530	54	6
7	2 920	103	3 340	118	3 570	126	2 660	94	1 560	55	1 440	51	1 360	48	7
8	2 950	104	3 650	129	3 430	121	2 320	82	1 560	55	1 420	50	1 300	46	8
9	3 570	126	4 330	153	3 910	138	2 350	83	1 560	55	1 420	50	1 360	48	9
10	3 990	141	4 080	144	5 210	184	2 380	84	1 560	55	1 420	50	1 330	47	10
11	3 260	115	3 620	128	5 520	195	2 460	87	1 530	54	1 390	49	1 300	46	11
12	3 260	115	3 340	118	5 180	183	2 350	83	1 530	54	1 390	49	1 300	46	12
13	3 340	118	3 370	119	4 620	163	2 350	83	1 530	54	1 360	48	1 300	46	13
14	3 170	112	3 400	120	4 280	151	2 290	81	1 610	57	1 390	49	1 250	44	14
15	3 710	131	3 260	115	4 080	144	2 320	82	1 610	57	1 390	49	1 250	44	15
16	4 020	142	3 260	115	3 880	137	2 270	80	1 500	53	1 390	49	1 330	47	16
17	3 650	129	3 260	115	3 710	131	2 180	77	1 470	52	1 390	49	2 410	85	17
18	3 400	120	3 060	108	3 650	129	2 070	73	1 470	52	1 420	50	2 010	71	18
19	3 370	119	3 200	113	3 570	126	2 070	73	1 470	52	1 420	50	2 860	101	19
20	3 370	119	2 920	103	3 430	121	2 270	80	1 500	53	1 420	50	3 000	106	20
21	3 370	119	2 890	102	3 140	111	2 010	71	1 470	52	1 420	50	2 010	71	21
22	3 340	118	2 890	102	3 170	112	1 900	67	1 440	51	1 440	51	1 810	64	22
23	3 680	130	3 030	107	3 290	116	1 840	65	1 440	51	1 390	49	1 730	61	23
24	4 500	159	3 000	106	3 310	117	1 760	62	1 440	51	1 390	49	2 010	71	24
25	4 640	164	3 120	110	3 120	110	1 760	62	1 440	51	1 500	53	2 150	76	25
26	4 190	148	3 200	113	3 200	113	1 670	59	1 470	52	1 780	63	2 100	74	26
27	4 130	146	3 030	107	4 840	171	1 730	61	1 440	51	1 610	57	2 010	71	27
28	3 880	137	2 970	105	3 650	129	1 900	67	1 360	48	1 530	54	2 150	76	28
29	3 600	127	2 920	103	3 230	114	1 810	64	1 390	49	1 470	52	5 580	197	29
30	3 370	119	2 970	105	3 170	112	1 840	65	1 420	50	1 390	49	3 790	134	30
31	3 200	113			3 000	106			1 420	50	1 420	50			31
Mean	3 490	123	3 240	114	3 800	134	2 250	79.4	1 540	54.4	1 430	50.6	1 920	67.8	Mean
Volume hm	9.340		8.390		10.200		5.830		4.120		3.840		4.980		Volume hm
AF		7570		6790		8240		4730		3340		3110		4030	AF

BUTTE CREEK WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 10

BUTTE CREEK NEAR DURHAM

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1	1 760	62	680	24	765	27	275	9.7	167	5.9	65	2.3	159	5.6	1
2	1 610	57	623	22	1 130	40	340	12	201	7.1	59	2.1	130	4.6	2
3	1 590	56	595	21	566	20	312	11	261	9.2	51	1.8	133	4.7	3
4	1 530	54	396	14	623	22	453	16	258	9.1	51	1.8	144	5.1	4
5	1 420	50	159	5.6	566	20	623	22	150	5.3	56	2.0	142	5.0	5
6	1 420	50	159	5.6	765	27	510	18	125	4.4	73	2.6	125	4.4	6
7	1 420	50	246	8.7	935	33	453	16	133	4.7	90	3.2	93	3.3	7
8	1 530	54	1 560	55	708	25	340	12	116	4.1	79	2.8	85	3.0	8
9	1 870	66	1 250	44	991	35	246	8.7	116	4.1	73	2.6	96	3.4	9
10	2 440	86	1 470	52	2 070	73	252	8.9	116	4.1	73	2.6	99	3.5	10
11	1 590	56	1 050	37	2 440	86	255	9.0	93	3.3	70	2.5	102	3.6	11
12	1 360	48	878	31	2 100	74	227	8.0	36	1.3	65	2.3	99	3.5	12
13	1 530	54	821	29	1 420	50	105	3.7	42	1.5	65	2.3	102	3.6	13
14	1 390	49	651	23	1 100	39	96	3.4	51	1.8	76	2.7	99	3.5	14
15	1 590	56	510	18	935	33	102	3.6	45	1.6	181	6.4	99	3.5	15
16	2 410	85	453	16	765	27	56	2.0	79	2.8	204	7.2	110	3.9	16
17	2 920	103	566	20	595	21	11	0.4	90	3.2	68	2.4	278	9.8	17
18	2 860	101	538	19	510	18	8.5	0.3	42	1.5	65	2.3	252	8.9	18
19	2 720	96	425	15	510	18	62	2.2	19	0.7	65	2.3	595	21	19
20	2 720	96	212	7.5	425	15	65	2.3	5.6	0.2	70	2.5	935	33	20
21	2 660	94	90	3.2	566	20	14	0.5	68	2.4	76	2.7	312	11	21
22	2 040	72	65	2.3	595	21	42	1.5	79	2.8	73	2.6	275	9.7	22
23	1 220	43	96	3.4	340	12	42	1.5	85	3.0	70	2.5	266	9.4	23
24	1 760	62	159	5.6	283	10	79	2.8	85	3.0	73	2.6	193	6.8	24
25	1 980	70	190	6.7	229	8.1	130	4.6	96	3.4	70	2.5	238	8.4	25
26	1 560	55	312	11	269	9.5	79	2.8	167	5.9	79	2.8	252	8.9	26
27	1 470	52	368	13	1 100	39	70	2.5	93	3.3	127	4.5	263	9.3	27
28	1 250	44	396	14	538	19	102	3.6	82	2.9	93	3.3	396	14	28
29	906	32	396	14	368	13	119	4.2	76	2.7	255	9.0	2 150	76	29
30	793	28	425	15	269	9.5	110	3.9	59	2.1	167	5.9	1 390	49	30
31	708	25			164	5.8			59	2.1	159	5.6			31
Mean	1 740	61.5	525	18.5	795	28.1	186	6.6	100	3.5	92.0	3.2	320	11.3	Mean
Volume															Volume
hm	4.670		1.360		2.130		.480		.270		.250		.830		hm
AF		3780		1100		1720		391		217		200		673	AF

TABLE 11

TOADTOWN CANAL ABOVE BUTTE CANAL

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1			821	29*	1 560	55	1 130	40	481	17	198	7.0	227	8.0	1
2			821	29	1 420	50	1 100	39	453	16	198	7.0	227	8.0	2
3			821	29	1 220	43	1 050	37	425	15	227	8.0	227	8.0	3
4			878	31	1 330	47	1 050	37	425	15	198	7.0	227	8.0	4
5			963	34	1 250	44	991	35	425	15	227	8.0	227	8.0	5
6			1 020	36	1 300	46	935	33	425	15	255	9.0	00	0.0	6
7			1 080	38	1 190	42	935	33	396	14	255	9.0	00	0.0	7
8			1 330	47	1 130	40	935	33	396	14	255	9.0	00	0.0	8
9			1 330	47	1 420	50	906	32	396	14	227	8.0	00	0.0	9
10			1 130	40	1 980	70	906	32	396	14	227	8.0	00	0.0	10
11			1 100	39	1 670	59	878	31	396	14	227	8.0	00	0.0	11
12			1 050	37	1 610	57	878	31	368	13	227	8.0	00	0.0	12
13			1 130	40	1 590	56	850	30	368	13	227	8.0	00	0.0	13
14			1 160	41	1 640	58	821	29	368	13	227	8.0	00	0.0	14
15			1 050	37	1 590	56	821	29	368	13	227	8.0	00	0.0	15
16			1 100	39	1 440	51	793	28	255	9.0	227	8.0	00	0.0	16
17			1 100	39	1 360	48	623	22	255	9.0	227	8.0	00	0.0	17
18			906	32	1 300	46	623	22	255	9.0	255	9.0	00	0.0	18
19			991	35	1 330	47	566	20	255	9.0	255	9.0	00	0.0	19
20			991	35	1 220	43	538	19	255	9.0	227	8.0	00	0.0	20
21			991	35	1 190	42	651	23	255	9.0	227	8.0	00	0.0	21
22			1 130	40	1 190	42	481	17	227	8.0	227	8.0	00	0.0	22
23			1 160	41	1 250	44	481	17	227	8.0	227	8.0	00	0.0	23
24			1 190	42	1 130	40	453	16	227	8.0	227	8.0	566	20	24
25			1 220	43	1 080	38	425	15	255	9.0	261	9.2	566	20	25
26			1 130	40	1 270	45	425	15	255	9.0	312	11	538	19	26
27			1 130	40	1 730	61	793	28	244	8.6	283	10	283	10	27
28			1 100	39	1 300	46	708	25	227	8.0	255	9.0	510	18	28
29			1 080	38	1 190	42	651	23	227	8.0	255	9.0	1 670	59	29
30			1 130	40	1 190	42	651	23	227	8.0	227	8.0	1 020	36	30
31					1 020	36			227	8.0	227	8.0			31
Mean			1 070	37.7	1 360	47.9	768	27.1	321	11.3	236	8.3	210	7.4	Mean
Volume															Volume
hm			2.770		3.640		1.990		.860		.630		.540		hm
AF				2240		2950		1610		697		512		440	AF

* Beginning of Record

Diversion Number	Water Right Owner	Priority 1st l/s	1st cfs	2nd l/s	2nd cfs	3rd l/s	3rd cfs	Surplus l/s	Surplus cfs	Import l/s	Import cfs	Application Permit	
Butte Creek													
50	M. & T. Incorporated							707.92	25.00	1 510.15	53.33*		
	Parrott Ranch Company							707.92	25.00	1 510.15	53.33*		
	McClain et al	84.95	3.00										
	Dayton Mutual Water Co.	453.07	16.00							94.29	3.33*		
	*Water imported by PG&E from West Branch Feather River via Hendricks Canal and released into Butte Creek, less 5% for conveyance losses.												
53[2/]	U.S. Dept. of Agriculture	56.63	2.00										
54	Patrick	141.59	5.00									368.12	13.00[1/]
55	Camenzind et al	141.58	5.00									184.06	6.50[1/]
56	Durham Mutual Water Co.	1 265.77	44.70										
	Butte Creek Country Club	56.63	2.00										
	Geiger	13.59	0.48										
	Bell	11.04	0.39										
	Domom Brothers	18.97	0.67										
	Logan	0.28	0.01										
	Vernoga	40.97	1.447										
	Konyn - Amerio	11.33	0.40										
	Bebich	12.63	0.446										
	Jugum	12.66	0.447										
	Wheelock	7.36	0.26										
	Total	1 451.25	51.25										
57[2/]	Coats	110.15	3.89										
58[2/]	Wakefield	12.18	0.43										
58A[2/]	Hansen							70.79	2.50				
58B[2/]	Lewis	56.63	2.00										
59B[2/]	Brandt	11.04	0.39										
60	Newhall Land & Farming Co.			169.90	6.00	21.24	0.75	601.74	21.25			4 247.55	150.00[3/]
60A[2/]	Keeney et al	18.67	0.66										
61	Gorrill Land Company[4/]					28.32	1.00[5/]	586.16	20.70[5/]			2 123.77	75.00[3/]
62[2/]	White, Mead, McAlister, & Ryon					28.32	1.00	269.01	9.50				
Hamlin Slough													
	Newhall Land & Farming Co.	470.06	16.60										
	Gorrill Land Company	614.48	21.70[5/]										

1/ March 1 - June 30

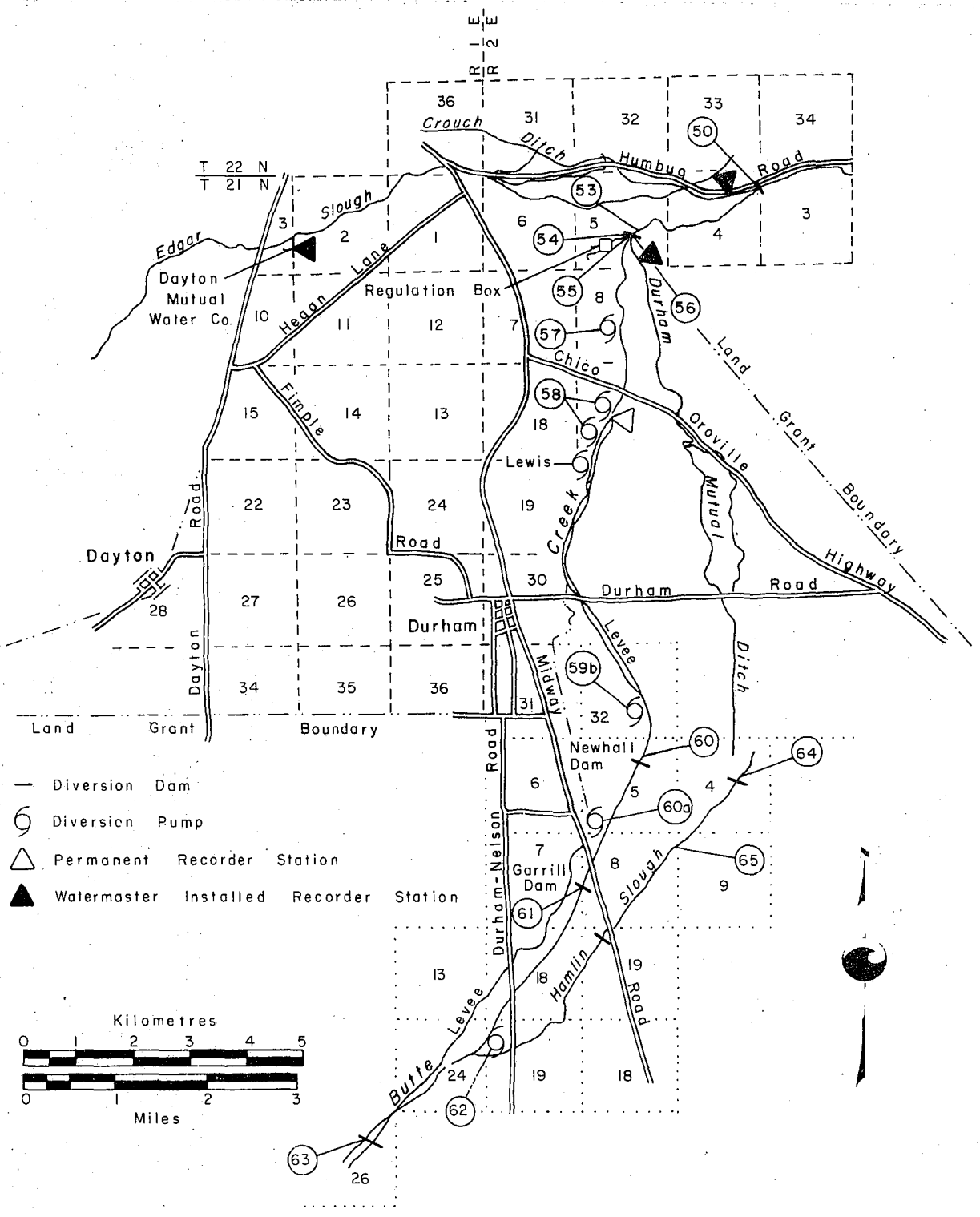
2/ Pumps

3/ March 15 - June 15

4/ See Hamlin Slough

5/ Total diversions from Butte Creek and Hamlin Slough not to exceed 614.98 l/s (21.70 cfs).

Figure 5



DIVERSIONS FROM BUTTE CREEK
BUTTE CREEK WATERMASTER SERVICE AREA

COW CREEK WATERMASTER SERVICE AREA

The Cow Creek service area is in central Shasta County in the foothills east of Redding. Figures 6 through 6c, pages 36 through 40, show the Cow Creek stream system, including the diversions and major access roads.

The source of water supply for this service area consists of three major creek systems. They are North Cow Creek (sometimes referred to as Little Cow Creek), Oak Run Creek, and Clover Creek. These creeks flow in a westerly direction to their confluence in the Millville-Palo Cedro area and thence south to the Sacramento River east of the City of Anderson. The service area is generally a narrow strip of land on both sides of each of these creeks. In some cases water is exported from one creek to the other.

Basis of Service

The water rights on each of these creek systems were determined by court references and set forth in separate decrees. Water rights for these creeks were set forth by Shasta County Superior Court decrees as follows:

Creek	Decree No.	Date
North Cow	5804	April 29, 1932
Oak Run	5701	July 22, 1932
Clover	6904	October 4, 1937

The North Cow Creek decree sets forth a rotation schedule of distribution. The water users, however, have found it more beneficial to irrigate on a continuous-flow basis which is now normal practice. Only one priority allotment was provided in each of the Cow Creek service area decrees except for the Oak Run Creek decree which contains a surplus allotment.

The Cow Creek watermaster service area was originally created on October 17, 1932, including North Cow Creek and Oak Run Creek water rights. On January 21, 1938, the service area was expanded to include the Clover Creek rights.

Water Supply

The water supply for this service area is derived mostly from springs and seepage, with some early snowmelt runoff. The watershed varies in elevation from 152 to 1 524 metres (500 to 5,000 feet) and consists primarily of low brushy hills which do not accumulate a heavy snowpack. Relatively large amounts of precipitation during the winter months normally produce substantial seepage and springs that flow through the irrigation season. The creeks normally have sufficient water to supply all demands until late July. The supply then gradually decreases to an average of about 60 to 70 percent of allotments by around mid-September.

The daily mean discharge of North Cow Creek near Ingot is presented in Table 12, page 35. The stream gaging station on North Cow Creek is downstream of many of the diversions and is used by the watermaster primarily to indicate changes in flow conditions rather than amounts of water available. Consequently, the records do not show all the available water supply of the creek.

Method of Distribution

Water is diverted from the creeks, in most cases by means of low diversion dams, into ditches which convey it to the place of use. Lateral ditches are then used to spread it over the land. Irrigation has been on a continuous-flow basis instead of by rotation since 1934.

1977 Distribution

Watermaster service began May 1 in the Cow Creek service area and continued until September 30, with Seth Barrett,

Water Resources Technician II as the watermaster.

Available water on May 1 was generally low. There were complaints of actual shortages to the lower diverters, but showers relieved the situation briefly.

Cedar Creek. Cedar Creek has the lowest ratio of water supply to water rights in the Cow Creek service area. This was generally adequate to serve those who wished to divert because less than half of the water rights were used. Adequate flow to supply 100 percent to the diverter below the Buzzard Roost Road Bridge was observed at all visits during the season.

North Cow Creek. Rain showers early in May disrupted haying operations, and there was enough available water for about 100 percent of water rights throughout the month of May; this held above 80 percent until the third week in June when extremely hot, dry, windy weather reduced the supply to 50 percent by the first of July, to 40 percent for a few days, then to 30 percent by the middle of the month. At this low point it was observed that no reasonable beneficial amount of water was passing the Cook and Butcher measuring device and that an estimated one cubic foot per second was leaking through their diversion structure and being wasted. This condition of waste was not corrected until late in September. During this time the water was put to beneficial use by the upstream diverters who generally finished the season with 35 percent of water rights.

Clover Creek. Complaints of short supply were received by the watermaster even before the watermaster season began on May 1. The early May rains relieved the condition briefly, then the supply dropped to 70 percent by the end of the month. The intermittent streams, which had been supplying most of the allotment for the Millville Ditch, stopped flowing in early June, causing a rapid decrease in allotments to 30 percent, where the base Clover Creek supply held for the balance of the season.

Oak Run Creek. The supply to the Oak Run Creek diverters was reasonably adequate with cautious and conservative application. A new automatic divide for the imported water from Mill Creek, which is rediverted from Oak Run Creek, was installed early in the season and worked well.

The Oak Run Creek allotments consumed all of the flow for most of the season and there was only a trickle discharged below the lowest diverter. The allotment to the adjudicated users was less than 100 percent; therefore very little water was available to downstream riparian users that are outside of the watermaster service area.

COW CREEK WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

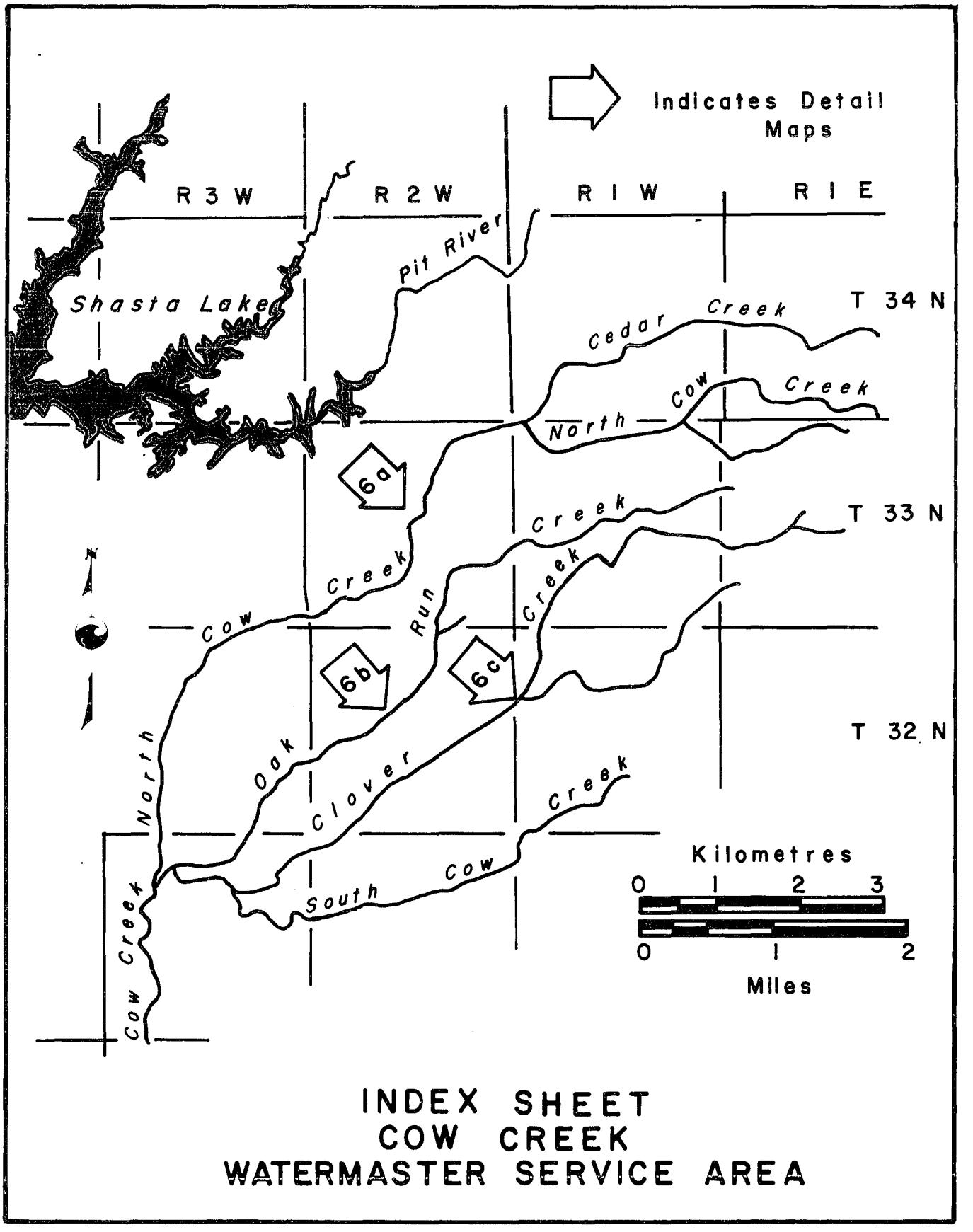
TABLE 12

NORTH COW CREEK NEAR INGOT

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1					368	13*	453	16	164	5.8	102	3.6	96	3.4	1
2					368	13	425	15	139	4.9	105	3.7	96	3.4	2
3					623	22	368	13	150	5.3	102	3.6	93	3.3	3
4					736	26	340	12	150	5.3	90	3.2	93	3.3	4
5					680	24	312	11	204	7.2	87	3.1	93	3.3	5
6					651	23	312	11	139	4.9	90	3.2	96	3.4	6
7					651	23	312	11	105	3.7	96	3.4	93	3.3	7
8					651	23	312	11	105	3.7	96	3.4	90	3.2	8
9					765	27	340	12	105	3.7	90	3.2	90	3.2	9
10					1 160	41	425	15	96	3.4	90	3.2	90	3.2	10
11					4 300	152	396	14	96	3.4	90	3.2	90	3.2	11
12					3 060	108	340	12	96	3.4	93	3.3	93	3.3	12
13					1 360	48	283	10	105	3.7	93	3.3	96	3.4	13
14					1 160	41	261	9.2	105	3.7	93	3.3	102	3.6	14
15					878	31	252	8.9	99	3.5	93	3.3	125	4.4	15
16					680	24	227	8.0	96	3.4	93	3.3	368	13	16
17					651	23	176	6.2	93	3.3	93	3.3	595	21	17
18					623	22	190	6.7	93	3.3	96	3.4	368	13	18
19					595	21	204	7.2	99	3.5	93	3.3	453	16	19
20					538	19	212	7.5	113	4.0	96	3.4	878	31	20
21					510	18	190	6.7	99	3.5	93	3.3	510	18	21
22					538	19	139	4.9	96	3.4	90	3.2	368	13	22
23					736	26	125	4.4	125	4.4	90	3.2	340	12	23
24					623	22	125	4.4	139	4.9	96	3.4	340	12	24
25					595	21	139	4.9	105	3.7	125	4.4	340	12	25
26					765	27	113	4.0	105	3.7	164	5.8	283	10	26
27					850	30	99	3.5	105	3.7	113	4.0	252	8.9	27
28					708	25	105	3.7	99	3.5	105	3.7	453	16	28
29					623	22	113	4.0	93	3.3	102	3.6	736	26	29
30					566	20	139	4.9	90	3.2	96	3.4	708	25	30
31					538	19			93	3.3	96	3.4			31
Mean					889	31.4	248	8.7	113	4.0	98.8	3.5	281	9.9	Mean
Volume															Volume
hm					2.380		.640		.300		.260		.730		hm
AF						1930		520		245		214		590	AF

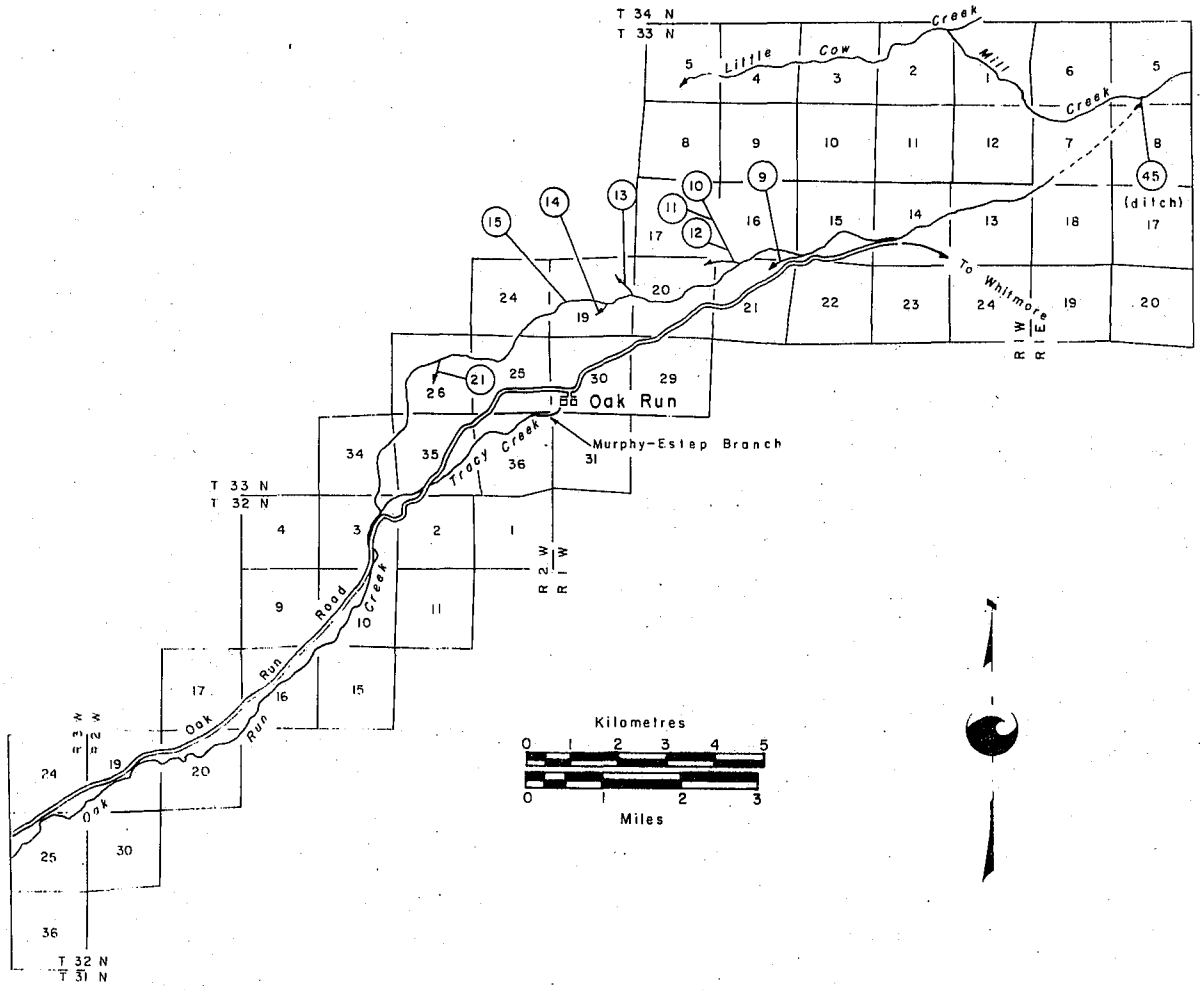
* Beginning of Record

Figure 6



INDEX SHEET
COW CREEK
WATERMASTER SERVICE AREA

Figure 6a



Diversion Number	Ditch	l/s	cfs
45	Welsh-Strayer ditch from Mill Creek to Oak Run Creek	141.59	5.00
9	Welsh-Strayer Rediversion	65.13	2.30*
10	Pedmore Upper)		
11	Pedmore Lower)-----	07.08	0.25
12	Pedmore South)		

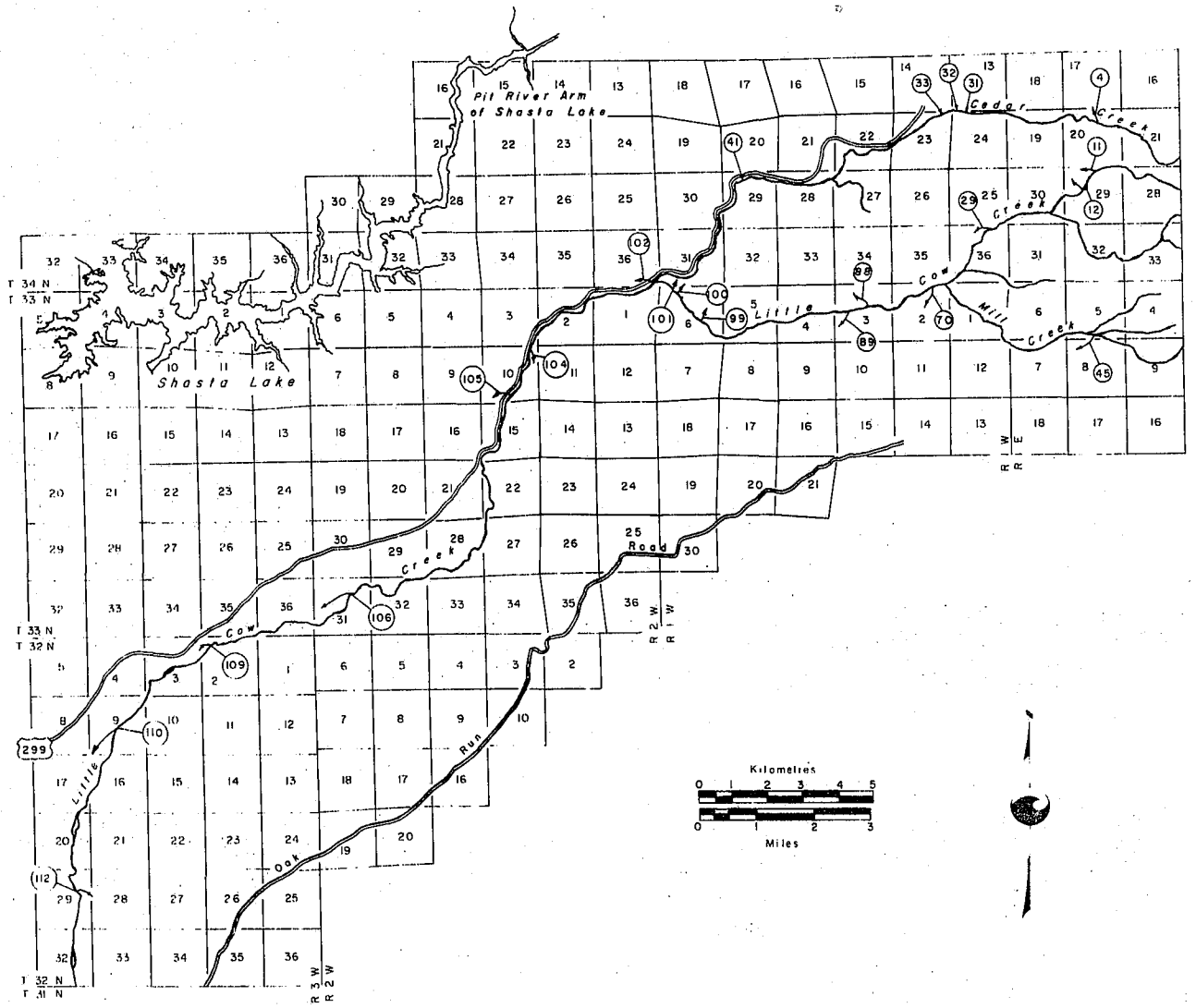
Diversion Number	Ditch	l/s	cfs
13	Alpaugh	18.41	0.65
14	Pedmore	18.41	0.65
15	Kerkendahl	18.41	0.65
21	Winters (Surplus)	11.19	0.395

* When flow of Oak Run Creek at diversion 9 is less than 152.91 l/s (5.40 cfs) including foreign water from Mill Creek, the flow at diversion 9 will be divided 43% into diversion 9 and 57% to Oak Run Creek.

DIVERSIONS FROM OAK RUN CREEK
COW CREEK WATERMASTER SERVICE AREA

Diversion Number	Name	l/s	Cfs
4	Bishop	14.15	0.50
11	McMillian	13.02	0.46
12	Benbow	17.83	0.63
29	Grant-Pherson-Jones	73.62	2.60
31	Spaulding-Haley	36.81	1.30
32	Halcomb	113.26	4.00
33	Roe	8.49	0.30
41	Hadley (pump)	22.65	0.80
45	Export Water to Oak Run Creek	141.58	5.00
70	Nichols	8.77	0.31
88	Ruthford	50.97	1.80
89	Bobich	13.30	0.47
99	Shaw	2.83	0.10
100	Emerald	7.07	0.25
101	Porteous	12.74	0.45
102	Hendrix	8.49	0.30
104	Artadel Mining Company	1.13	0.04
105	Artadel Mining Company	15.57	0.55
106	Rickert	123.17	4.35
109	Matthews (pump)	2.83	0.10
110	Cook & Butcher	127.42	4.50
112	Boyle (pump)	11.32	0.40

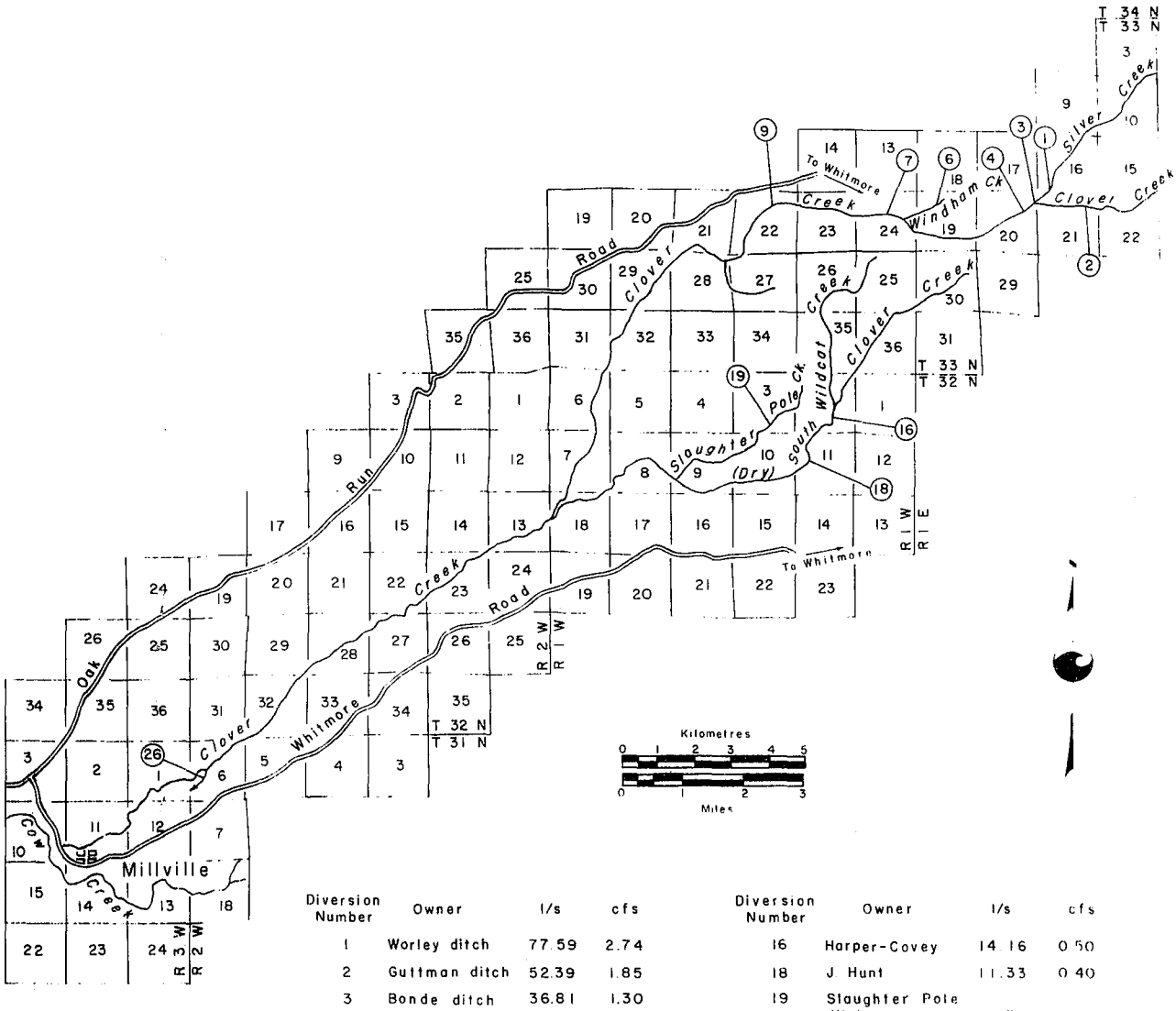
Figure 6b



DIVERSIONS FROM COW CREEK

COW CREEK WATERMASTER SERVICE AREA

Figure 6c



Diversion Number	Owner	l/s	cfs
1	Worley ditch	77.59	2.74
2	Guttman ditch	52.39	1.85
3	Bonde ditch	36.81	1.30
4	Mill ditch	154.33	5.45
6	Maxwell ditch	09.91	0.35
7) 9)	Welch and Nailer ditch	60.88	2.15

Diversion Number	Owner	l/s	cfs
16	Harper-Covey	14.16	0.50
18	J. Hunt	11.33	0.40
19	Slaughter Pole ditch	11.33	0.40
26	Millville ditch	184.06	6.50

DIVERSIONS FROM CLOVER CREEK

COW CREEK WATERMASTER SERVICE AREA

DIGGER CREEK WATERMASTER SERVICE AREA

The Digger Creek service area is situated in southeastern Shasta County and northeastern Tehama County.

Digger Creek forms a portion of the boundary line between Shasta and Tehama Counties. It drains an area of approximately 117 square kilometres (45 square miles) on the western slopes of mountains situated immediately west of Lassen National Park. The creek flows in a westerly direction through the town of Manton to its confluence with North Fork Battle Creek. Manton, the only community in the area, is located approximately 64 km (40 miles) northeast of Red Bluff.

A map of the Digger Creek stream system is presented as Figure 7, page 44.

Basis of Service

The rights to use of the waters of Digger Creek were determined by five court adjudications. The Crooker Ditch, now combined with the Harrison Ditch, may divert all the water in the creek at its point of diversion. Diversions below this point, though defined by decree, are not in the service area.

Four Tehama County Superior Court decrees define the rights included in the service area. These decrees are listed on page 42.

The four decrees have, in effect, divided the water rights on the creek into two groups, the upper users and the lower users. The three upper users irrigate land adjoining the stream so that all water not consumptively used returns to Digger Creek. The lower users are located within a 13 km (5-square mile) area. Very little runoff from the lower users returns to the creek.

The water rights of the three upper users are absolute and not correlative to the lower users; therefore, allotments are not cut proportionally as Digger Creek flows decrease. Since the lower users have to stand all deficiencies, the upper users, in effect, have first priority allotments, and the lower users have second and third priority allotments.

Water Supply

Precipitation, occurring principally in the winter months, is typical of Northern California foothill areas. Snowmelt contributes to the early runoff but the summer streamflow is primarily from springs. In average runoff years there is sufficient flow in Digger Creek, with careful regulation, to satisfy all decreed allotments throughout the entire irrigation season. However, serious deficiencies occur in dry years.

The estimated daily mean discharge of Digger Creek below the mouth of the South Fork is presented in Table 13, page 43.

Method of Distribution

Irrigation is accomplished principally by wild flooding, although border checks and sprinklers are used on a few fields. Small diversion dams are placed in the stream channel to divert water into ditches for conveyance to the fields.

1977 Distribution

Watermaster service began June 7 and continued until October 7 in the Digger Creek service area. Kenneth E. Morgan, Water Resources Engineering Associate, was watermaster during this period.

The available water supply for Digger Creek was the lowest of record, which began in 1964. The season began with the lower users' allotments reduced to about 60 percent. The flow in Digger

Creek continued to decrease during the season, reaching a seasonal low of only 40 percent of the lower users' allotments on August 2nd. Streamflow remained at this level until late September.

Scattered rainstorms and cooler weather resulted in an increase in the available water supply in late September.

Special Occurrences

An interpretation of the Digger Creek decrees was challenged by the Boole Ditch water users in July when the watermaster reduced the Boole Ditch flow by spilling water back from the Boole Ditch so that the Crooker Ditch had their proportionate share of water. In a normal streamflow year, the automatic divide in Digger Creek at the Boole Ditch diversion will proportionately divide the flow. However, when the streamflow is below normal, the automatic divide is not totally effective.

The Boole Ditch Water Users Association hired an attorney to challenge the watermaster in dividing the Digger Creek flow other than by the automatic divide in Digger Creek. The Department of Water Resources' attorney reviewed the Digger Creek decrees and confirmed the watermaster's method of distribution of water. No further action was taken by the Boole Ditch attorney.

The Boole Ditch Water Users Association installed 1 039 metres (3,410 feet) of .25 m (10") PVC from near Wilcox diversion at Forward Road, and 1 128 m (3,700 feet) of .20 m (8") PVC on the lower end of Boole Ditch, terminating at Robert Lee's diversion. The pipeline was completed in late 1977 and provides a pressure of 345 kP (50 PSI).

The Crooker-Harrison Ditch installed 244 m (800 feet) of .20 m (8") fiberglass pipe near the head of the ditch, then 1 158 m (3,800 feet) of .38 m (15") PVC down to the Harrison Ditch divide. From the Harrison Ditch 366 m (1,200 feet) of .30 m (12") PVC was installed in late 1977.

Before the pipeline, the Crooker-Harrison Ditch had numerous leaks which caused heavy water losses. During July, August, and September, the lowest users on the Crooker Ditch were without water for long periods of time.

Decrees Defining Digger Creek Water Rights

Case	Decree No.	Date Entered
Gransbury v. Edwards	2213	August 12, 1899
Wells v. Pritchard	2114	May 27, 1913
Harrison et al v. Kaler et al	3327	October 16, 1917
Herrick v. Forward	4570	February 24, 1927

DIGGER CREEK WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

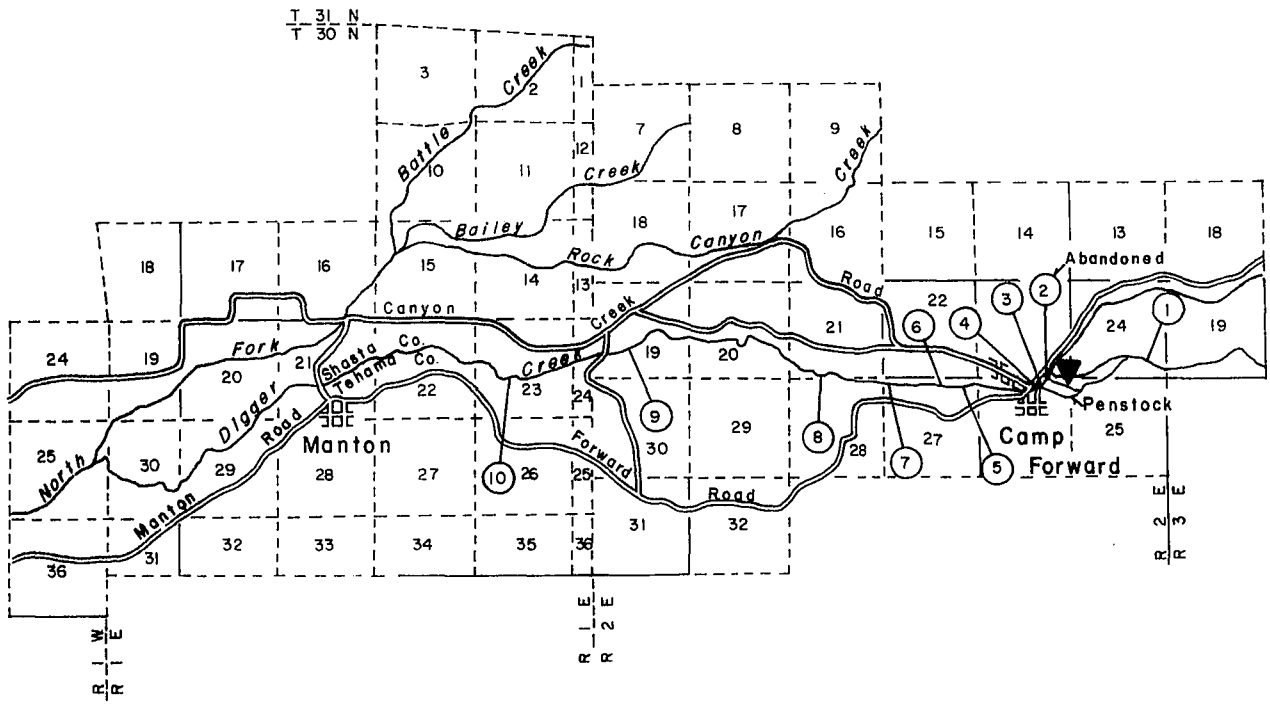
TABLE 13

DIGGER CREEK BELOW SOUTH FORK BRANCH

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1									283	10	238	8.4	201	7.1	1
2									283	10	232	8.2	201	7.1	2
3									278	9.8	232	8.2	201	7.1	3
4									263	9.3	232	8.2	201	7.1	4
5									263	9.3	227	8.0	201	7.1	5
6									263	9.3	193	6.8	201	7.1	6
7							340	12*	249	8.8	193	6.8	210	7.4	7
8							340	12	249	8.8	198	7.0	204	7.2	8
9							340	12	238	8.4	210	7.4	204	7.2	9
10							340	12	238	8.4	198	7.0	204	7.2	10
11							340	12	238	8.4	198	7.0	204	7.2	11
12							312	11	238	8.4	198	7.0	204	7.2	12
13							283	10	238	8.4	198	7.0	210	7.4	13
14							312	11	238	8.4	198	7.0	210	7.4	14
15							283	10	232	8.2	198	7.0	193	6.8	15
16							283	10	232	8.2	198	7.0	249	8.8	16
17							283	10	232	8.2	221	7.8	232	8.2	17
18							263	9.3	238	8.4	221	7.8	227	8.0	18
19							481	17	232	8.2	221	7.8	425	15	19
20							651	23	232	8.2	210	7.4	278	9.8	20
21							396	14	238	8.4	210	7.4	263	9.3	21
22							368	13	238	8.4	221	7.8	263	9.3	22
23							340	12	238	8.4	221	7.8	263	9.3	23
24							312	11	232	8.2	227	8.0	263	9.3	24
25							283	10	232	8.2	232	8.2	263	9.3	25
26							278	9.8	232	8.2	232	8.2	263	9.3	26
27							263	9.3	227	8.0	227	8.0	263	9.3	27
28							249	8.8	227	8.0	227	8.0	453	16	28
29							249	8.8	227	8.0	227	8.0	453	16	29
30							263	9.3	227	8.0	221	7.8	312	11	30
31									227	8.0	201	7.1			31
Mean							328	11.6	242	8.5	215	7.6	251	8.9	Mean
Volume															Volume
hm							.680		.650		.580		.650		hm
AF								550		525		466		526	AF

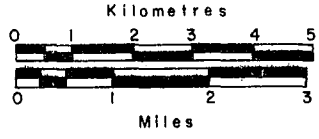
* Beginning of Record

Figure 7



Diversion Number	Name	l/s	cfs
1,3-5	Forward Brothers	216.63	7.65
6	Wright	14.16	0.50
	Pritchard E.	10.62	0.375
	Pritchard R.	63.71	2.25
7	Pritchard R.	12.74	0.45
8	Boole ditch	223.70	7.90
9	Williams ditch	31.15	1.10
10	Crooker-Harrison ditch	84.95	3.00

▲ Watermaster installed recorder station.



DIVERSIONS FROM DIGGER CREEK
DIGGER CREEK WATERMASTER SERVICE AREA

FALL RIVER WATERMASTER SERVICE AREA

The Fall River service area is in Shasta County in the vicinity of the towns of Fall River Mills and McArthur, about 112 kilometres (70 miles) northeast of Redding via State Route 299.

The Tule River originates at Big Lake and Horr Pond and flows for a distance of about 8 km (5 miles), where it enters Fall River. The McArthur diversion canal diverts water from the Tule River by gravity which flows for a distance of 8 km (5 miles) to near the town of McArthur where land is irrigated along the Pit River.

Two pumps are monitored in the service area, one located on the Tule River and the second on Fall River.

Basis of Service

The Fall River service area was created on January 14, 1976, and watermaster service began in 1976.

The water rights in this service area were set forth by the Shasta County Superior Court in a judgment dated April 26, 1928, modified by agreement dated March 15, 1976, between Kenneth McArthur and the Pacific Gas and Electric Company.

Watermaster service is provided annually from March 15 to October 15 in accordance with an agreement dated November 25, 1975 between John McArthur, Kenneth McArthur and the P. G. and E. Company.

1977 Distribution

The first season of watermaster service began on March 15 in the Fall River service area and continued until October 15, with Paul E. Lawler, Assistant Engineer, Water Resources, as watermaster.

The flow in McArthur Canal was regulated in accordance with water rights adjudicated to the McArthur family by the Shasta County Superior Court in a judgment dated April 26, 1928, modified by agreement dated March 15, 1976, between Kenneth McArthur and P. G. and E.

As provided in the letter of understanding dated October 13, 1975, between P. G. and E. and John R. McArthur, it was agreed that for all water used on nonriparian lands (presently comprising approximately 1 902 hectares (470 acres), corresponding flow reductions will be made in the diversions into the McArthur Canal. These reductions were made, if necessary, during the scheduled regulation changes to the McArthur Canal.

1977 MONTHLY SUMMARY OF McARTHUR DIVERSIONS

Period	McArthur Canal		Two Pumps Nonriparian Lands		Total McArthur Diversions		McArthur Water Rights	
	hm^3	A/F	hm^3	A/F	hm^3	A/F	hm^3	A/F
March 15[1/]	1.84	754	.00	0	1.84	754	1.00	807
April	1.99	1,614	.12	95	2.11	1,709	1.93	1,562
May	2.13	1,730	.37	300	2.50	2,030	2.51	2,037
June	2.16	1,753	.29	238	2.45	1,991	2.44	1,978
July	3.15	2,557	.38	305	3.53	2,862	3.57	2,897
Aug.	3.35	2,715	.35	287	3.70	3,002	3.57	2,897
Sept.	2.40	1,948	.21	171	2.61	2,119	2.20	1,784
Oct 15[2/]	.89	722	.00	0	.89	722	.86	697
Totals	17.91	13,793	1.72	1,396	19.63	15,189	18.08	14,659

1/ Beginning of watermaster season

2/ End of watermaster season.

FRENCH CREEK WATERMASTER SERVICE AREA

The French Creek service area is situated in Scott Valley, western Siskiyou County, near the town of Etna. The major sources of water supply are French, Miners, and North Fork French Creeks. French Creek flows in a northeasterly direction through the central part of the service area. Miners Creek begins east of the headwaters of French Creek and flows in a northerly direction, joining French Creek about 4.8 kilometres (3 miles) above its confluence with Scott River. North Fork French Creek begins north of the headwaters of French Creek and flows easterly, joining French Creek 1.6 km (1 mile) upstream from the confluence with Miners Creek.

The service area encompasses the entire agricultural area within the French Creek Basin, and some additional lands along the west side of the Scott River near the town of Etna. The service area is about 0.8 km (1/2 mile) wide and 8 km (5 miles) long, with the main axis and drainage running from south to north. Elevations of the agricultural area range from about 975 metres (3,200 feet) at the south to about 853 m (2,800 feet) at the confluence of French Creek and Scott River.

A map of the French Creek stream system with the diversions and roads is presented as Figure 8, page 49.

Basis of Service

The rights on this creek system were determined by a court reference and set forth in Decree No. 14478, Siskiyou County Superior Court, dated July 1, 1958.

Water is distributed according to three schedules: North Fork French Creek with three priorities; Miners Creek with three; and the French Creek, Horse Range Creek, Paynes Lake Creek, and Duck Lake Creek system with seven. These schedules are independent of each other with two exceptions: (1) Miners Creek users have the option of diverting from French Creek when water is not available from Miners Creek; and (2) maximum allowable flows are specified at given points, regardless of the source of the water.

One peculiarity of this decree is that it included two water rights that have a specified amount but are subject to the exclusive control of the other owners of the ditch.

The French Creek watermaster service area was created on November 19, 1968, and service was started on July 1, 1969.

Water Supply

The water supply is derived from snowmelt runoff, springs and seepage, and occasional summer thundershowers.

The watershed of French Creek contains about 82 km^2 (32 square miles) of heavily forested, steep, mountainous terrain of the easterly slopes of the Salmon Mountains. It varies in elevation from about 2 194 m (7,200 feet) along its west rim to about 975 m (3,200 feet) at the foot of the slopes bordering French Creek Valley. Snowmelt runoff is normally sufficient to supply all demands until about the middle of July. The daily mean discharge of Duck Lake Creek, a tributary, is presented in Table 14, page 48.

Method of Distribution

Irrigation is accomplished primarily by wild flooding, with permanent pasture and alfalfa fields comprising the major crops. Water is conveyed by ditches and laterals to the place of use.

1977 Distribution

Watermaster service began in the French Creek service area on March 28 and

continued until September 30. Lester L. Lighthall, Water Resources Technician II, was watermaster during this period.

Watermaster service was initiated in the 1969 season and data obtained since then showed that the available water supply was far below normal. Although showers in May helped, it was not enough to make up for the low runoff.

The upper priority allotments were closely regulated in decreasing quantities to satisfy the upper second priority rights until July 21, when only first priority and domestic water was available for the rest of the season.

Downstream first, second, and third priority allotments below the Milk House Ditch can rely on more dependable water supply than those of the upper users, due to return flows.

Water was released from Smith Lake (Siphon Lake) on July 29 for those on the North Fork French Creek Ditch with interest in Smith Lake Siphon. First and second priority water was available in Miners Creek. No water was diverted from Duck Lake Creek or French Creek to Miners Creek this season.

FRENCH CREEK WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 14

DUCK LAKE CREEK TRIBUTARY TO FRENCH CREEK

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1			68	2.4*	178	6.3	283	10	70	2.5	36	1.3	28	1.0	1
2			65	2.3	156	5.5	227	8.0	68	2.4	36	1.3	28	1.0	2
3			65	2.3	161	5.7	204	7.2	62	2.2	36	1.3	28	1.0	3
4			79	2.8	144	5.1	278	9.8	62	2.2	34	1.2	28	1.0	4
5			113	4.0	136	4.8	312	11	62	2.2	34	1.2	28	1.0	5
6			122	4.3	125	4.4	340	12	59	2.1	34	1.2	28	1.0	6
7			193	6.8	116	4.1	312	11	56	2.0	34	1.2	28	1.0	7
8			198	7.0	110	3.9	283	10	56	2.0	34	1.2	28	1.0	8
9			136	4.8	113	4.0	566	20	53	1.9	34	1.2	28	1.0	9
10			116	4.1	116	4.1	510	18	51	1.8	31	1.1	28	1.0	10
11			113	4.0	113	4.0	241	8.5	51	1.8	31	1.1	28	1.0	11
12			130	4.6	110	3.9	178	6.3	51	1.8	31	1.1	28	1.0	12
13			144	5.1	113	4.0	173	6.1	48	1.7	31	1.1	28	1.0	13
14			125	4.4	133	4.7	161	5.7	48	1.7	31	1.1	28	1.0	14
15			130	4.6	136	4.8	142	5.0	48	1.7	28	1.0	28	1.0	15
16			156	5.5	122	4.3	130	4.6	48	1.7	28	1.0	28	1.0	16
17			144	5.1	113	4.0	119	4.2	45	1.6	28	1.0	34	1.2	17
18			130	4.6	113	4.0	119	4.2	45	1.6	28	1.0	39	1.4	18
19			116	4.1	113	4.0	116	4.1	45	1.6	28	1.0	45	1.6	19
20			122	4.3	130	4.6	105	3.7	45	1.6	28	1.0	42	1.5	20
21			125	4.4	156	5.5	102	3.6	45	1.6	28	1.0	36	1.3	21
22			130	4.6	178	6.3	90	3.2	45	1.6	28	1.0	34	1.2	22
23			130	4.6	178	6.3	87	3.1	45	1.6	28	1.0	34	1.2	23
24			147	5.2	153	5.4	85	3.0	42	1.5	31	1.1	39	1.4	24
25			147	5.2	156	5.5	82	2.9	42	1.5	34	1.2	39	1.4	25
26			130	4.6	278	9.8	73	2.6	42	1.5	34	1.2	36	1.3	26
27			130	4.6	198	7.0	73	2.6	39	1.4	31	1.1	39	1.4	27
28			133	4.7	178	6.3	70	2.5	39	1.4	31	1.1	62	2.2	28
29			136	4.8	164	5.8	68	2.4	39	1.4	31	1.1	119	4.2	29
30			156	5.5	178	6.3	68	2.4	39	1.4	28	1.0	102	3.6	30
31					227	8.0			39	1.4	28	1.0			31
Mean			128	4.5	148	5.2	186	6.6	49.7	1.8	31.4	1.1	38.6	1.4	Mean
Volume hm			.330		.400		.481		.130		.080		.100		Volume hm
AF				268		322		391		108		68.2		81.1	AF

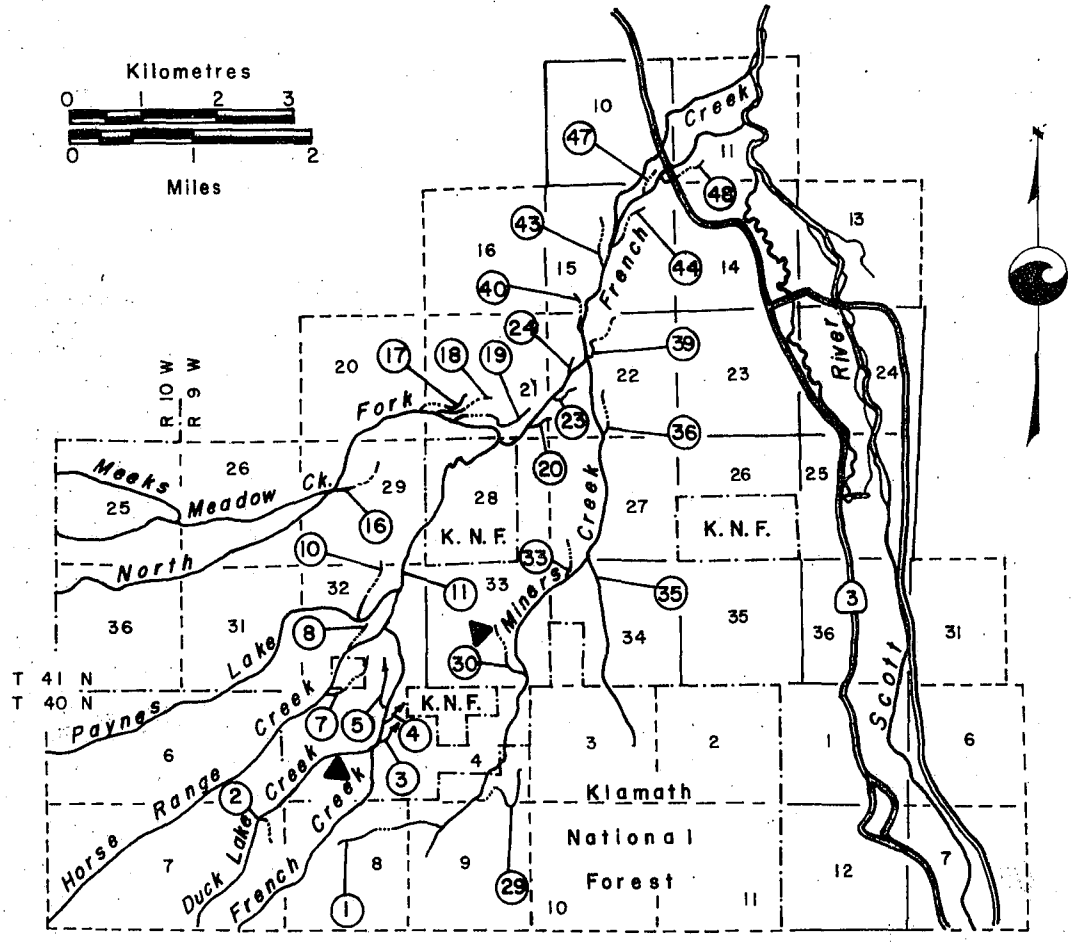
* Beginning of Record

Figure 8

Diversion Number	Owner	l/s	cfs
1, 2, 29	Fuglistaler	70.79	2.50
3, 30,	Danielson	58.90	2.08
4, 33, 35	Lewis	65.98	2.33
5, 7, 8, 10	J. H. Ranch Inc.	59.47	2.10
11	MacGowen, Byers	66.83	2.36
16	Intl. Paper Co., Thompson	01.70	0.06
17	Beckman, J.A.F.M. Co., Fowles	207.28	7.32
18	Wilson	13.88	0.49
19	S. P. Land Co.	03.96	0.14

Diverson Number	Owner	l/s	cfs
20	Oxley, Larsen, Jennings	06.51	0.23
23, 40	Jennings	46.72	1.65
24	Wilson	03.40	0.12
36	Larsen	07.08	0.25
43	Oxley, Beckman, Webster	128.28	4.53
44	Oxley, Beckman	59.18	2.09
47	Oxley, Beckman, Webster	21.52	0.76
48	Spencer	21.52	0.76

▲ Watermaster installed recorder station



DIVERSIONS FROM FRENCH CREEK WATERMASTER SERVICE AREA

GOOSE VALLEY CREEK WATERMASTER SERVICE AREA

The Goose Valley Creek service area is situated in the northeast part of Shasta County, 9.66 kilometres (6 miles) northwest of the town of Burney.

Basis of Service

The Goose Valley Creek watermaster service area, which consists of Lake Margaret (formerly known as Haynes Reservoir), was created on January 14, 1976.

The State Water Resources Control Board granted License 8943 to store 7.894 square hectometres (6,400 acre-feet) between about November 1 and April 1 of each year and a maximum withdrawal of 4.934 hm^3 (4,000 A/F) in any one year.

In the matter of License 8943 before the Water Resources Control Board, a stipulation and agreement, dated December 9, 1975, between Pacific Gas and Electric Company and John and Margaret Casey, owners of Lake Margaret, is the basis for watermaster service between November 1 and June 1 of each year.

1977 Distribution

Watermaster service began for Lake Margaret on November 1, 1976, with Kenneth E. Morgan, Water Resources Engineering Associate as watermaster.

The following is a summary of Lake Margaret operations from November 1, 1976 to December 31, 1977.

Lake Margaret Operations

Date	Actual Storage hm^3	Actual Storage A/F	Right to Store hm^3	Right to Store A/F
11/1/76	2.125	1,723	.000	0
11/30/76	2.178	1,766	.000	0
12/31/76	2.038	1,652	.000	0
1/31/77	2.123	1,794	.000	0
2/23/77[1/]	2.160	1,751	.141	114[1/]
3/23/77[1/]	2.300	1,865	.158	128[1/]
4/4/77	2.458	1,993		
Period of Releases for Irrigation				
11/1/77		325	.010	8
11/30/77		488	.023	19
12/31/77		719		

1/ Goose Valley Ranch, on February 23, 1977, requested to store for regulatory storage, a 30-day water supply for irrigation. The request was allowed, as it was considered to be reasonable and beneficial to irrigate under a riparian claim, especially with the drought conditions of 1976-1977.

HAT CREEK WATERMASTER SERVICE AREA

The Hat Creek service area is in the eastern part of Shasta County north of Lassen Volcanic National Park. The maps, Figures 9 through 9c, pages 55 through 58, show the Hat Creek service area and stream system, including locations of the diversions of the upper and lower user groups.

Hat Creek, which flows in a northerly direction through the area, is the only source of water supply in the service area. The place of use is Hat Creek Valley, which is approximately 32 kilometres (20 miles) long and 3.2 km (2 miles) wide, extending northward from about 4.8 km (3 miles) south of the town of Old Station to the confluence with Rising River. The irrigable lands, which consist primarily of volcanic ash, are interlaced with large outcroppings of volcanic rocks.

Basis of Service

Water from Hat Creek is distributed under provisions of court reference adjudications which resulted in Decree No. 5724, dated May 14, 1924, and Decree No. 7858, dated May 7, 1935, Shasta County Superior Court. Decree No. 5724 established irrigation and nonirrigation allotments for 18 periods of rotation between "upper" and "lower" user groups for the period of May 1 to October 28 annually. Decree No. 7858 established three allotments for continuous irrigation, May 1 through October 28, and allotments for the period October 28 to May 1 annually for all users. These latter rights are not normally supervised by the watermaster.

Watermaster service in the Hat Creek area has been provided in accordance with the decree since 1924. The existing service area was created on September 11, 1929.

Decree No. 5724 defines the allotments in the separate schedules: upper and lower users, requiring 10-day rotations beginning at 6 a.m., May 1, and terminating at 6 a.m., October 28. All water rights are of the same priority, with the surplus flows distributed according to the users that are on rotation. The upper users' water rights require 4 380 litres per second (154.7 cubic feet per second) and lower users require 4 715 l/s (166.5 cfs). The lower users require more because of additional channel loss. When the upper users are being served, the lower users receive a minimum flow for stock water.

Water Supply

The water supply of Hat Creek is derived from snowmelt runoff from Lassen Peak and from large springs. Snowmelt normally creates a high flow during May and June, but the substantial portion of the summer supply comes from large springs which decrease only slightly in output. Only after a series of dry years does the flow of these springs fall much below 75 percent of total allotments.

A record of the daily mean discharge of Hat Creek near the town of Hat Creek is presented in Table 15, page 4.

Method of Distribution

Most irrigation in the area is accomplished by wild flooding. Large heads of water are used to cover the land rapidly, thereby preventing 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 ditches or from laterals. A few domestic rights are met by pumping directly from Hat Creek.

1977 Distribution

The watermaster in the Hat Creek service area was Seth Barrett, Water Resources

Technician II. Watermaster service was provided from May 1 until October 18.

On May 1 the available water supply was 90 percent for the upper users' water rights. Rains in May helped the soil moisture, but did not increase the streamflow.

Lower users began their first rotation period on May 11 with only 80 percent, and their next period on May 31 with 75 percent. The supply held fairly steady with only a 10 percent decline in June, and then leveled off to a June 30 allotment of 65 percent for lower users (75 percent for the upper users) for the rest of the season.

This season some of the upper users' water rights were not diverted and were divided among the other upper users, amounting to 5 percent more to each upper diverter. There is also another 5 percent differential between the upper and lower user demands; therefore 10 percent more of each water right was available to the upper diverters than was available to the lower diverters.

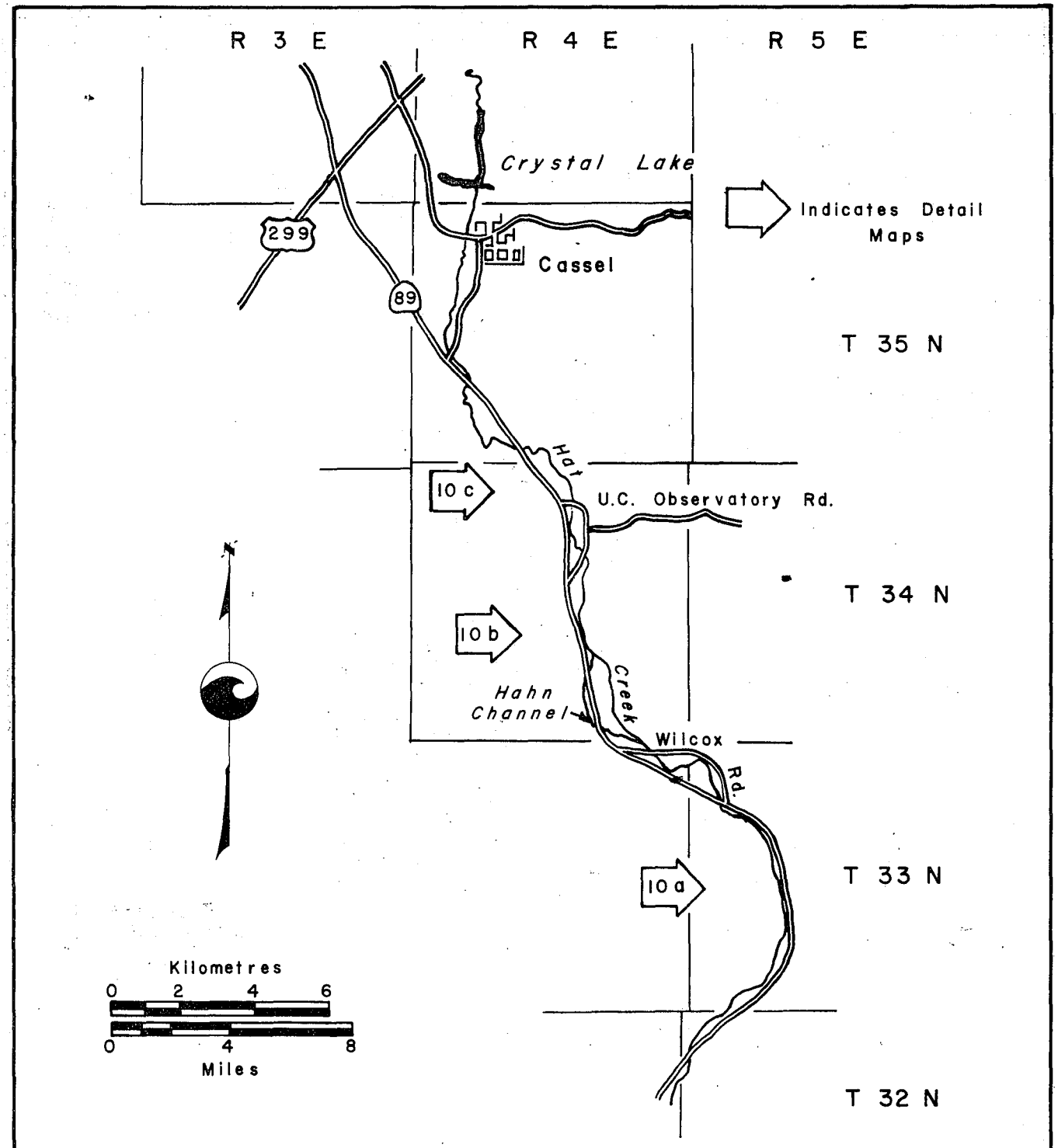
HAT CREEK WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 15

HAT CREEK NEAR HAT CREEK

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1	3 650	129	3 570	126	3 600	127	3 850	136	3 310	117	3 680	130	3 430	121	1
2	3 650	129	3 570	126	3 540	125	3 850	136	3 260	115	3 680	130	3 400	120	2
3	3 650	129	3 540	125	3 570	126	3 790	134	3 260	115	3 650	129	3 310	117	3
4	3 650	129	3 570	126	3 540	125	3 790	134	3 260	115	3 650	129	3 310	117	4
5	3 650	129	3 570	126	3 600	127	3 770	133	3 230	114	3 680	130	3 290	116	5
6	3 710	131	3 600	127	3 620	128	3 850	136	3 260	115	3 650	129	3 290	116	6
7	3 650	129	3 620	128	3 570	126	4 020	142	3 260	115	3 650	129	3 310	117	7
8	3 650	129	3 710	131	3 600	127	3 820	135	3 310	117	3 650	129	3 570	126	8
9	3 710	131	3 680	130	3 650	129	3 770	133	3 310	117	3 480	123	3 650	129	9
10	3 650	129	3 600	127	3 680	130	3 540	125	3 510	124	3 340	118	3 650	129	10
11	3 650	129	3 600	127	3 770	133	3 400	120	3 620	128	3 340	118	3 650	129	11
12	3 710	131	3 600	127	3 740	132	3 370	119	3 620	128	3 310	117	3 620	128	12
13	3 680	130	3 620	128	3 740	132	3 310	117	3 620	128	3 310	117	3 620	128	13
14	3 650	129	3 620	128	3 740	132	3 260	115	3 600	127	3 310	117	3 620	128	14
15	3 650	129	3 620	128	3 770	133	3 200	113	3 600	127	3 310	117	3 620	128	15
16	3 680	130	3 650	129	3 770	133	3 200	113	3 600	127	3 310	117	3 650	129	16
17	3 650	129	3 570	126	3 770	133	3 170	112	3 600	127	3 310	117	3 600	127	17
18	3 650	129	3 460	122	3 770	133	3 230	114	3 650	129	3 370	119	3 460	122	18
19	3 650	129	3 430	121	3 770	133	3 310	117	3 650	129	3 570	126	3 400	120	19
20	3 650	129	3 460	122	3 740	132	3 540	125	3 430	121	3 650	129	3 400	120	20
21	3 650	129	3 480	123	3 620	128	3 570	126	3 310	117	3 680	130	3 290	116	21
22	3 650	129	3 480	123	3 620	128	3 600	127	3 290	116	3 650	129	3 290	116	22
23	3 710	131	3 540	125	3 650	129	3 600	127	3 290	116	3 650	129	3 310	117	23
24	3 620	128	3 540	125	3 600	127	3 600	127	3 260	115	3 680	130	3 290	116	24
25	3 620	128	3 570	126	3 600	127	3 600	127	3 290	116	3 680	130	3 260	115	25
26	3 620	128	3 510	124	3 620	128	3 620	128	3 290	116	3 680	130	3 260	115	26
27	3 650	129	3 510	124	3 620	128	3 620	128	3 290	116	3 650	129	3 310	117	27
28	3 600	127	3 510	124	3 570	126	3 600	127	3 290	116	3 650	129	3 650	129	28
29	3 540	125	3 540	125	3 600	127	3 600	127	3 340	118	3 460	122	3 910	138	29
30	3 540	125	3 570	126	3 600	127	3 400	120	3 570	126	3 340	118	3 650	129	30
31	3 540	125			3 770	133			3 680	130	3 340	118			31
Mean	3 640	129	3 560	126	3 660	129	3 560	126	3 410	121	3 530	125	3 470	122	Mean
Volume hm	9.760		9.240		9.800		9.230		9.150		9.450		8.990		Volume hm
AF		7910		7480		7940		7480		7410		7660		7280	AF

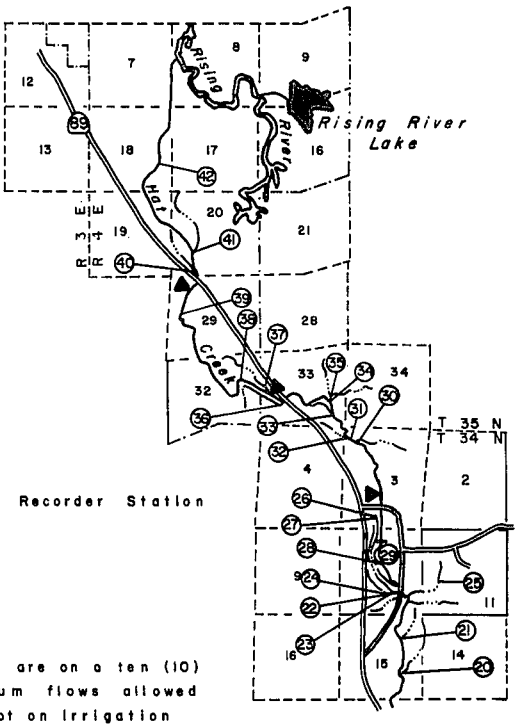
Figure 9



INDEX SHEET FOR HAT CREEK WATERMASTER SERVICE AREA

Diversion Number	Ditch	l/s	cfs
20	H. & F. Lonquist Upper	127.43	4.50***
21	H. & F. Lonquist Lower		
22	Reiger	198.22	7.00**
23	Harry Lonquist	70.79	2.50**
24	Morris Upper	382.28	13.50*
25	Morris Lower	630.05	22.25*
26	H. Lonquist–Reynolds–Bidwell	424.76	15,00**
27	H. Lonquist–Reynolds–East Side	99.11	3.50**
28	H. Lonquist–Reynolds Middle	14.16	0.50
29	Reynolds Diversion	113.27	4.00**
30	Jeff Bone Upper (Indian, not in WSA)	14.16	0.50
31	Jeff Bone Lower (Indian, not in WSA)	14.16	0.50
32	Lee Bone (Indian, not in WSA)	28.32	1.00
33	Julia Wilson (Indian, not in WSA)	155.74	5.50
34	Sam Williams (Indians, not in WSA)	21.24	0.75
35	Joe Wilson (Indian, not in WSA)	77.87	2.75
36	Ellen Brown Upper	84.95	3.00
37	W.W. Brown–Ellen Brown	325.65	11.50
38	Ellen Brown Lower	92.03	3.25
39	Charlie Snook	14.16	0.50
40	Doyel	566.34	20.00
41	Bertha Giessner	290.25	10.25
42	Otto Giessner	226.54	8.00

Diversion Number	Direct Diversions from Hat Creek	l/s	cfs
37a	Hat Creek	70.79	2.50
40a	Hat Creek	176.98	6.25
42a	Hat Creek	226.54	8.00



* Upper User

** Upper and Lower User

*** Total Water Right

▲ Watermaster Installed Recorder Station

Upper and Lower Users are on a ten (10) day rotation. Minimum flows allowed in each ditch when not on irrigation schedule.

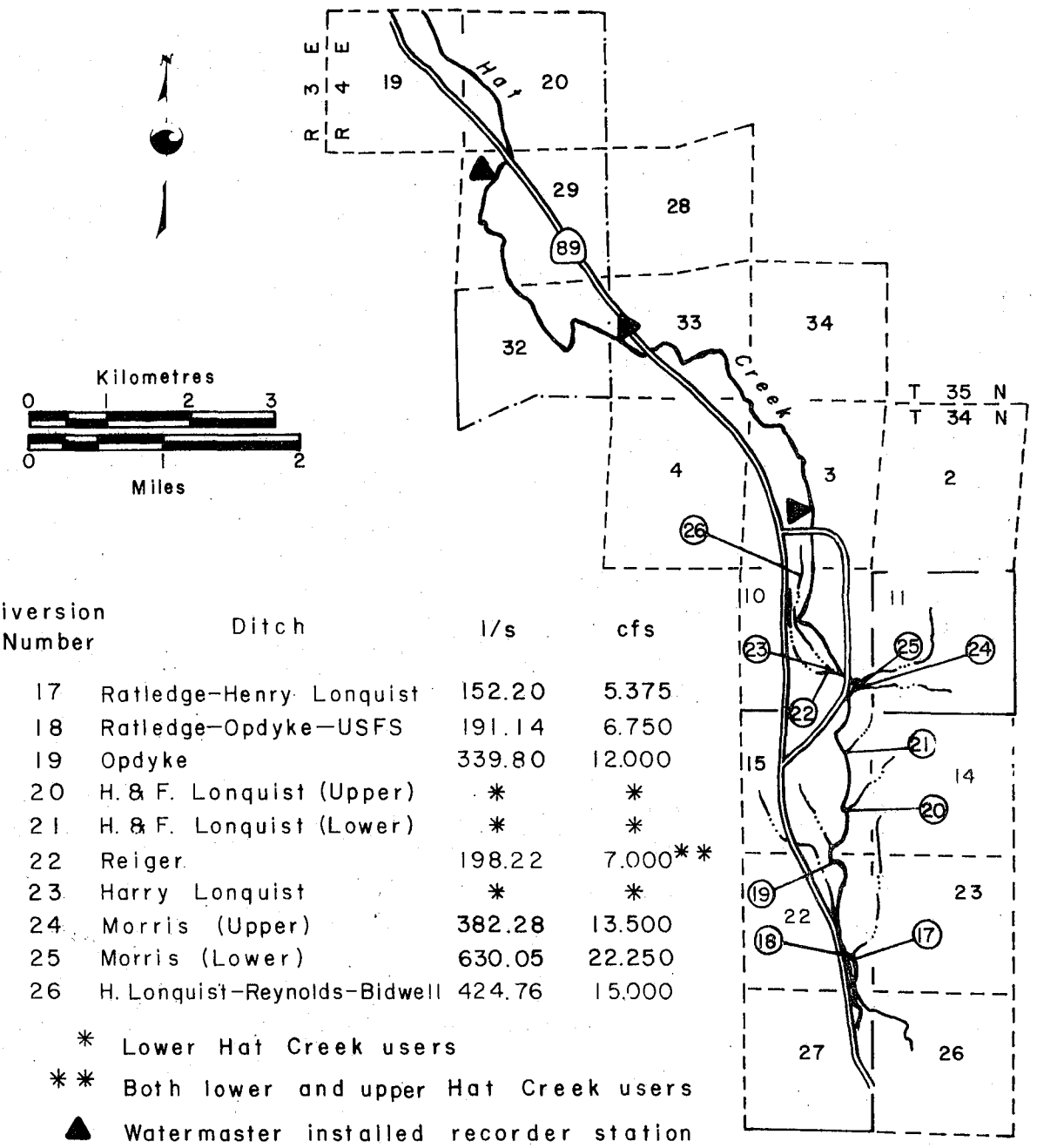
Kilometres 0 1 2 3 4 5

Miles 0 1 2 3

The above water rights do not include the mud flow right defined in paragrahs 21 and 22 of the Hat Creek Decree.

DIVERSIONS FROM LOWER HAT CREEK
HAT CREEK WATERMASTER SERVICE AREA

Figure 9b



Diversion Number	Ditch	l/s	cfs
17	Ratledge-Henry Lonquist	152.20	5.375
18	Ratledge-Opdyke-USFS	191.14	6.750
19	Opdyke	339.80	12.000
20	H. & F. Lonquist (Upper)	*	*
21	H. & F. Lonquist (Lower)	*	*
22	Reiger	198.22	7.000**
23	Harry Lonquist	*	*
24	Morris (Upper)	382.28	13.500
25	Morris (Lower)	630.05	22.250
26	H. Lonquist-Reynolds-Bidwell	424.76	15.000

* Lower Hat Creek users

** Both lower and upper Hat Creek users

▲ Watermaster installed recorder station

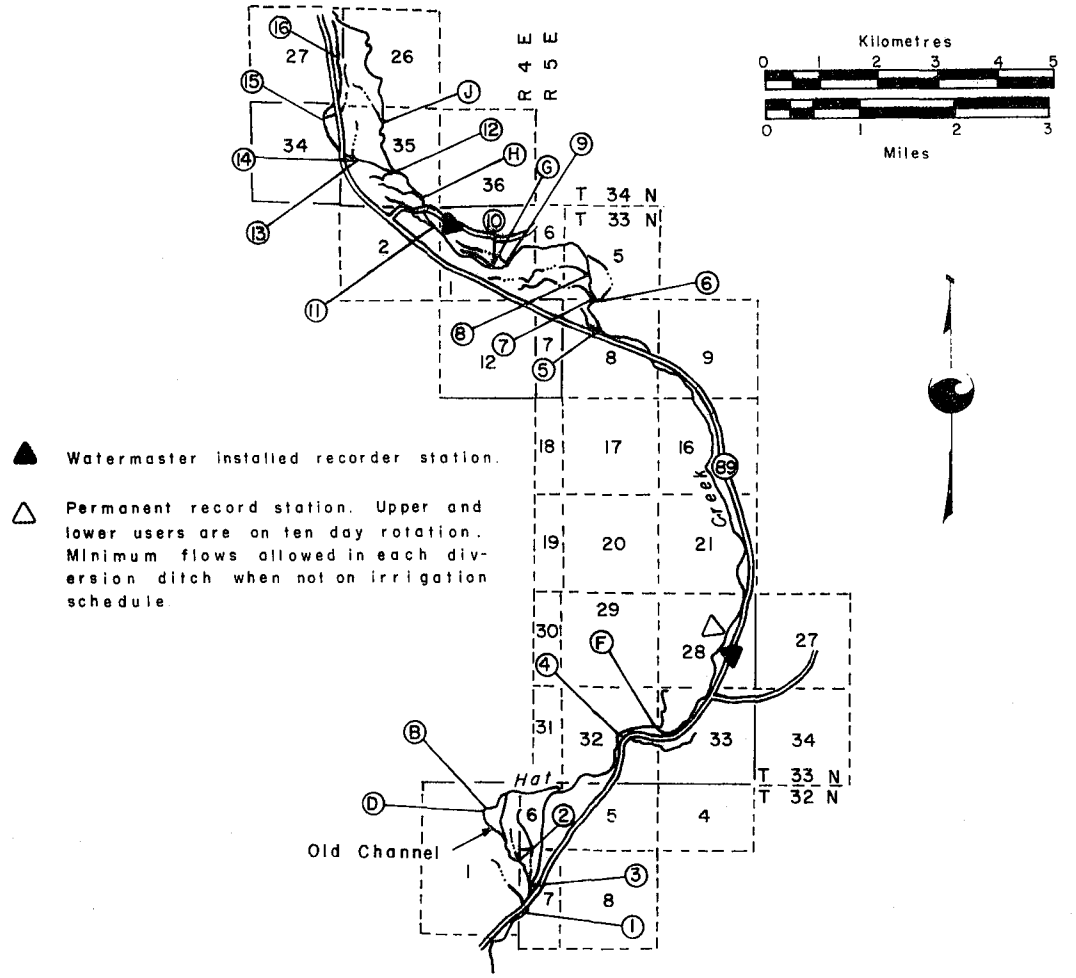
The above water rights do not include the mud flow right defined in paragrahs 21 and 22 of the Hat Creek Decree.

DIVERSIONS FROM LOWER UPPER HAT CREEK
HAT CREEK WATERMASTER SERVICE AREA

Figure 9c

Diversion Number	Ditch	l/s	cfs	Diversion Number	Ditch	l/s	cfs
1	Harvey Wilcox Upper	60.17	2.125	9	Rube Wilcox-Davis	141.59	5.000
2	Harvey Wilcox Lower			10	Harry Wilcox Lower	28.32	1.000
3	Stevenson	67.25	2.375	11	Valentine Upper	14.16	0.500
4	Hall	77.87	2.750	12	Valentine Lower	42.48	1.500
5	Aleck Brown	14.16	0.500	13	Heryford Upper	14.16	0.500
6	Hawkins	63.71	2.250	14	Heryford Middle	42.48	1.500
7	Harry Wilcox Upper	201.76	7.125	15	Heryford Lower	14.16	0.500
8	Harry Wilcox Middle	633.59	22.375	16	Edith Snook	152.20	5.375
B	Consterdine	15.86	0.560	F	Shearon	27.18	0.960
D	Stevenson	220.33	7.781	G,H	Grant Lower	14.16	0.500
D,3	Total Allotment	293.25	10.356	J	Domestic	14.16	0.500

The above water rights do not include the mud flow right defined in paragrahs 21 and 22 of the Hat Creek Decree.



DIVERSIONS FROM UPPER HAT CREEK
HAT CREEK WATERMASTER SERVICE AREA

INDIAN CREEK WATERMASTER SERVICE AREA

The Indian Creek service area is located in the north central part of Plumas County in the vicinity of the town of Greenville.

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 rise in the mountains east of the service area. It then flows through Genesee 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 on the north by Lights Creek in the southeast part of Indian Valley and by Wolf Creek in the northwest part of the valley. The major place of use is in Indian Valley, an irregular-shaped area of about 52 square kilometres (20 square miles). The average elevation is about 1 067 metres (3,500 feet).

Maps of the whole area and of each major stream system within the Indian Creek service area are presented as Figures 10 through 10c, pages 61 through 64.

Basis of Service

The Indian Creek watermaster service area was created on February 19, 1951, to include, with certain exceptions, the water rights set forth in Decree No. 4185, entered December 19, 1950, by the Superior Court of Plumas County, and the rights under Permit 7665 issued in approval of Application 12642 subsequent to entry of the decree. The statutory proceeding leading to the decree was entitled "In the Matter of the Determination of the Rights of the Various Claimants to the Water of Indian Creek Stream System in Plumas County, California".

The service area has been amended twice. Watermaster service has been provided during each irrigation season since the service area was created, and annual reports have been prepared to show the work accomplished.

The Indian Creek decree establishes three priority classes for each of the major stream systems within the service area.

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 flows. The flow of Wolf Creek is normally sufficient to supply all allotments until June 1. 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 portion of allotments is available.

A record of the daily mean discharge of Indian Creek near Taylorsville, where Indian Creek enters the valley, is presented in Table 16, page 60.

Method of Distribution

The basic method of irrigation in Indian Valley is wild flooding. Small diversion dams are constructed in the stream channels to divert 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. A few sprinkler systems are also in use.

1977 Distribution

Watermaster service began in the Indian Creek service area on April 15, and continued until October 5, with Earl F. Stower, Water Resources Technician II, as watermaster. The available supply in the service area was much below average during the season.

Wolf Creek. The available water supply of Wolf Creek was sufficient only to satisfy all of first and 50 percent of second priorities by April 20. The streamflow gradually decreased until rain in May and June prolonged the flow, but by June 28, it was sufficient for only first priority. There was no water available for diversion by September 1.

Lights Creek and Tributaries. The available water supply of Lights Creek was sufficient to satisfy all allotments (three priorities) until early June. Surface flow at the County Road stopped by the end of May, and flow at Diversion No. 88 ceased by July 22. On Cooks Creek, the surface flow at Diversion No. 81 had stopped by the end of June.

Indian Creek. The available water supply of Indian Creek was sufficient to satisfy all allotments (three priorities) until June 2. The supply gradually dropped to a low of 69 percent of first priority on August 22. From April 26 to June 7, water was passed through the Mill Race Diversion Dam to meet portions of third priority allotment for Diversion No. 55. Accretions below Diversion No. 55 were sufficient to meet other downstream allotments.

Special Occurrences

Antelope Lake did not fill after being drained in 1976. Releases during the 1977 irrigation season were made equal only to lake inflow, and routing of State Water Project water was not required.

Instead of using flashboards this year, the Mill Race water users placed an earthfill dam upstream of the diversion dam to direct the water into the Mill Race Ditch. This system worked well and did not require maintenance.

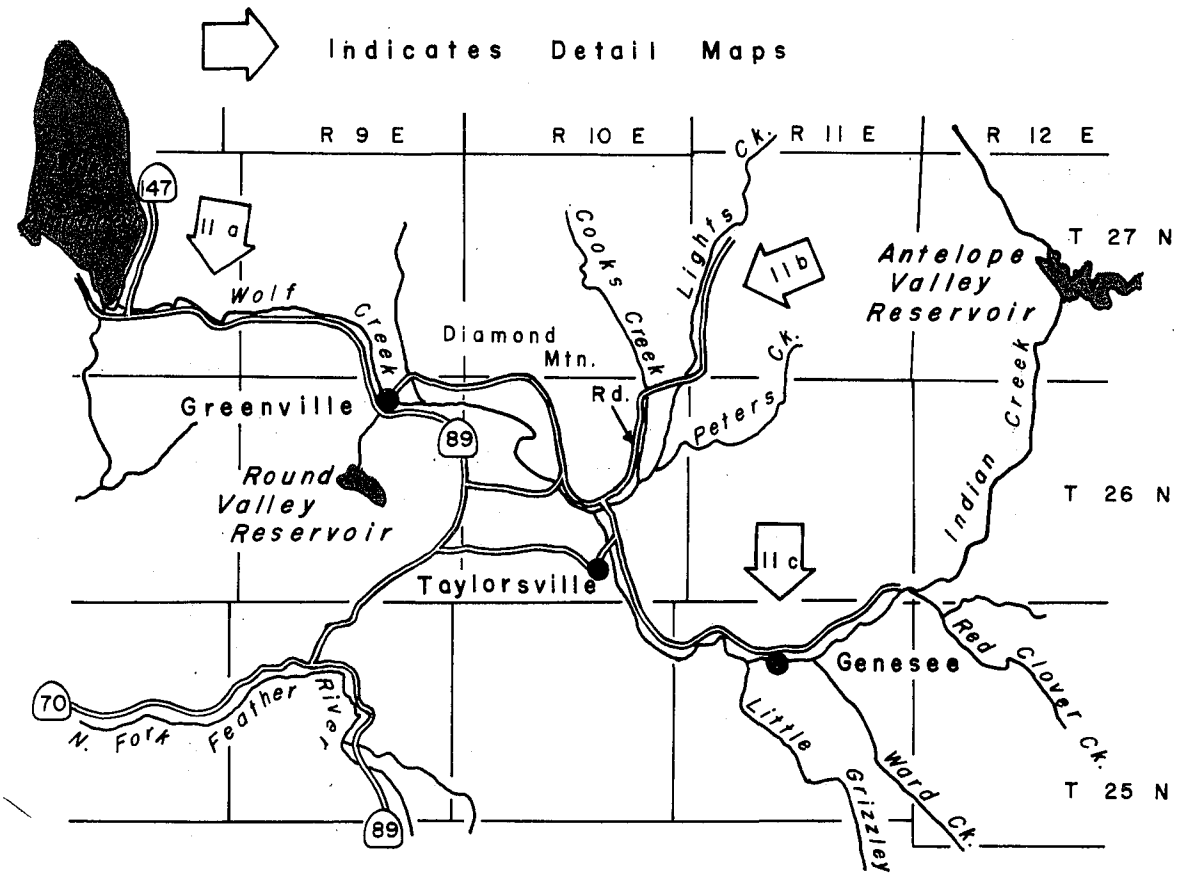
INDIAN CREEK WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 16

INDIAN CREEK NEAR TAYLORSVILLE

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1	1 500	53	1 470	52	1 730	61	1 500	53	623	22	312	11	368	13	1
2	1 470	52	1 470	52	1 700	60	1 420	50	765	27	368	13	368	13	2
3	1 560	55	1 530	54	1 670	59	1 300	46	765	27	340	12	368	13	3
4	1 470	52	1 640	58	1 610	57	1 190	42	680	24	283	10	368	13	4
5	1 390	49	1 900	67	1 590	56	1 100	39	651	23	312	11	340	12	5
6	1 470	52	2 180	77	1 670	59	1 020	36	623	22	312	11	340	12	6
7	1 530	54	2 270	80	1 730	61	1 160	41	595	21	312	11	396	14	7
8	1 640	58	2 380	84	1 730	61	1 050	37	595	21	312	11	453	16	8
9	2 120	75	2 210	78	1 900	67	1 270	45	566	20	396	14	368	13	9
10	2 210	78	2 070	73	2 070	73	1 330	47	481	17	453	16	312	11	10
11	1 870	66	2 010	71	2 070	73	1 330	47	510	18	453	16	396	14	11
12	1 780	63	1 950	69	2 040	72	1 270	45	566	20	396	14	396	14	12
13	1 810	64	1 980	70	1 980	70	1 080	38	566	20	368	13	368	13	13
14	1 640	58	1 950	69	2 010	71	1 130	40	595	21	340	12	396	14	14
15	1 640	58	1 930	68	1 950	69	1 080	38	623	22	312	11	425	15	15
16	1 610	57	1 900	67	1 980	70	963	34	595	21	312	11	453	16	16
17	1 610	57	1 950	69	1 980	70	935	33	566	20	312	11	510	18	17
18	1 590	56	1 870	66	2 040	72	906	32	566	20	368	13	510	18	18
19	1 590	56	1 780	63	2 070	73	906	32	566	20	396	14	510	18	19
20	1 610	57	1 700	60	1 980	70	1 050	37	566	20	396	14	595	21	20
21	1 730	61	1 670	59	1 900	67	1 020	36	566	20	368	13	566	20	21
22	1 870	66	1 590	56	1 810	64	991	35	566	20	340	12	538	19	22
23	2 180	77	1 530	54	1 780	63	963	34	566	20	340	12	538	19	23
24	2 150	76	1 470	52	1 780	63	935	33	566	20	340	12	510	18	24
25	1 980	70	1 500	53	1 780	63	850	30	566	20	425	15	510	18	25
26	1 840	65	1 470	52	1 900	67	850	30	538	19	396	14	538	19	26
27	1 870	66	1 420	50	2 120	75	793	28	396	14	340	12	538	19	27
28	1 900	67	1 420	50	1 980	70	736	26	312	11	340	12	566	20	28
29	1 810	64	1 440	51	1 870	66	623	22	283	10	340	12	708	25	29
30	1 670	59	1 470	52	1 780	63	566	20	283	10	368	13	651	23	30
31	1 560	55			1 670	59			283	10	396	14			31
Mean	1 730	61.1	1 770	62.5	1 870	65.9	1 040	36.9	548	19.4	356	12.6	463	16.4	Mean
Volume															Volume
hm	4.640		4.590		5.000		2.710		1.470		.950		1.200		hm
AF		3760		3720		4050		2190		1190		773		973	AF

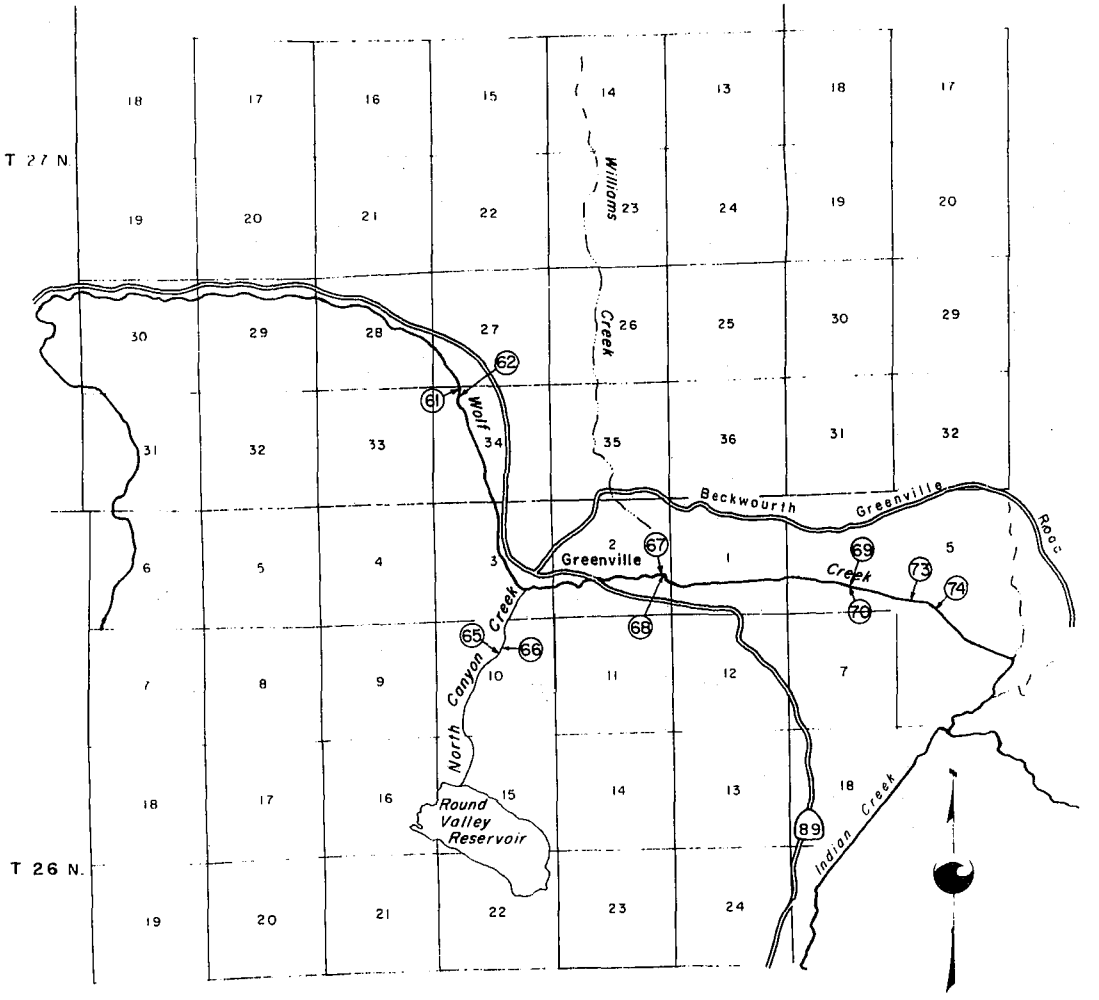
Figure 10



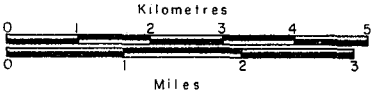
(Served by: Department Water Resources—Central District, Watermaster Service.)

INDEX MAP
DIVERSIONS FROM INDIAN CREEK
WATERMASTER SERVICE AREA

Figure 10a



DIVERSION NUMBER	Name	l/s	cfs
61	McMullen	2.83	0.10
62	Wattenberg	7.93	0.28
	Hollingsworth	19.82	0.70
65	Bidwell	5.66	0.20
66	Embree	5.10	0.18
	Riley	1.98	0.07
	Buchanan	0.57	0.02
	Lanning	0.37	0.013
	Trombly	0.96	0.034
	Santoni	5.18	0.183
67	Leininger	19.82	0.70
67 (cont.)	Duensing	25.49	0.90
	Posch	76.46	2.70
	Meyer	19.82	0.70
	Thompson	22.80	0.805
	Meyer	5.18	0.183
	Micheal	1.13	0.04
	Hatch	0.62	0.022
68	Frederickson	63.71	2.25
69	Sheehan	49.55	1.75
70	Guidici	109.02	3.85
73	Wheelock	28.32	1.00
74	Rogers	39.64	1.40

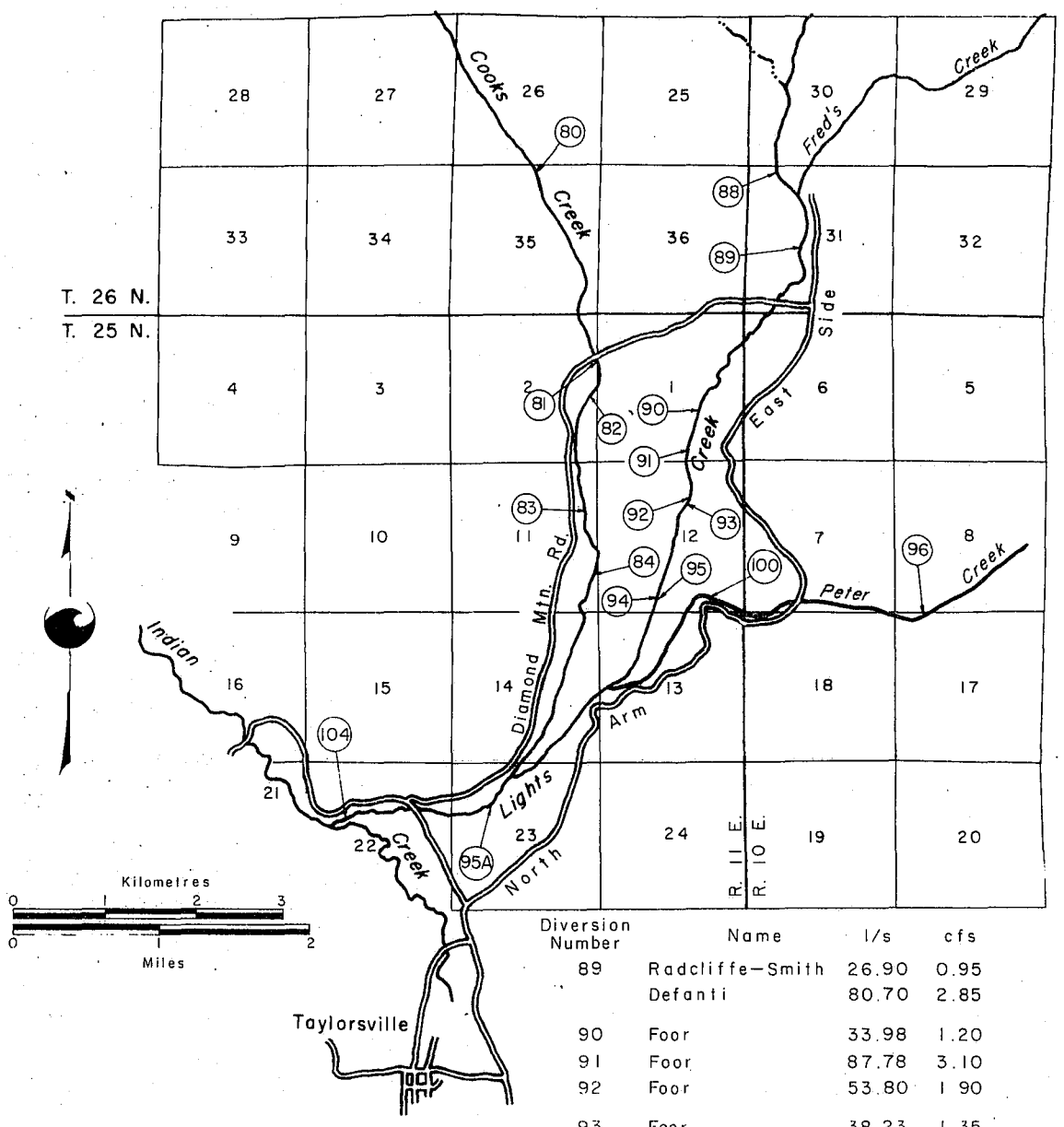


(Served by Department Water Resources-Central District, Watermaster Service.)

DIVERSIONS FROM WOLF CREEK INDIAN CREEK WATERMASTER SERVICE AREA

Figure 10b

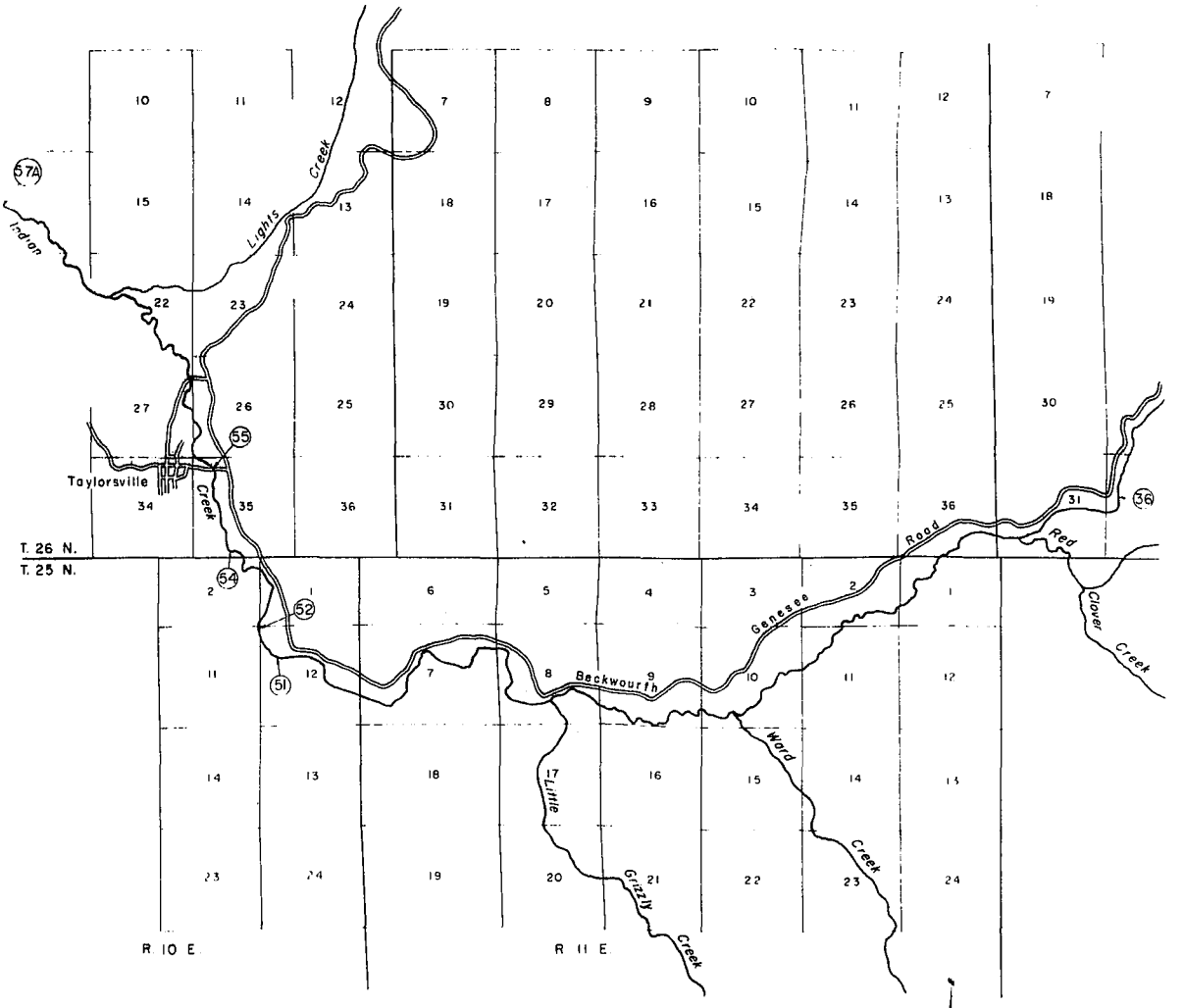
(Served by Department Water Resources—Central District, Watermaster Service)



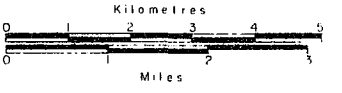
Diversion Number	Name	l/s	cfs
80	American Exploratory Co.	42.48	1.50
81	Radcliffe-Smith	28.32	1.00
82	Foor	12.74	0.45
83	Foor	8.50	0.30
84	Foor	12.74	0.45
88	Foor	82.12	2.90
89	Radcliffe-Smith	26.90	0.95
	Defanti	80.70	2.85
90	Foor	33.98	1.20
91	Foor	87.78	3.10
92	Foor	53.80	1.90
93	Foor	38.23	1.35
	Peter	15.57	0.55
94	Foor	24.07	0.85
	Adams	41.77	1.475
95	Foor	33.27	1.175
95a	Baker	1.42	0.05
96	Peter	56.63	2.00
100	Foor	5.66	0.20
104	Awbrey	5.24	0.185
	Hunt	0.42	0.015

DIVERSIONS FROM LIGHTS CREEK
INDIAN CREEK WATERMASTER SERVICE AREA

Figure 10c



Diversion Number	Name		l/s	cfs
36	Wilbur		149.51	55.28
51) 52)	Page		37.66	1.33 *
54	Mill Race Ditch		1 197.81	42.30
	Brown	Scudder		
	Brown	Matz		
	Crenshaw etal	Neer, Eve		
	Foster	Neer, Eve		
	Johnson	Pearce		
	Leininger	Probst		
	Leininger	Young		
55	Baker		96.28	3.40
57a	Neer, F.C.		70.79	2.50



* Diversion at 51 may also be diverted at 52

(Served by: Department Water Resources – Central District, Watermaster Service)

DIVERSONS FROM INDIAN CREEK AND UPPER TRIBUTARIES INDIAN CREEK WATERMASTER SERVICE AREA

JUNIPER CREEK WATERMASTER SERVICE AREA

The Juniper Creek service area is situated in the northwest part of Lassen County, south and east of the town of Bieber, in Big Valley (see Figure 3).

Basis of Service

The Juniper Creek watermaster service area which consists of Iverson Reservoir, was created on January 14, 1976. On November 24, 1964, water right application 20916 was granted by the Water Resources Control Board for the storage of 2.2 cubic hectometres (1,800 acre-feet) for Iverson Reservoir.

In the matter of application 20916, a stipulation and agreement, dated July 17, 1964 between applicant John McArthur and the Pacific Gas and Electric Company is the basis of watermaster service. Watermaster service is provided between November 1 and May 1 of each year.

1977 Distribution

Watermaster service began in the Juniper Creek watermaster service area on November 2, 1976, with Kenneth E. Morgan, Water Resources Engineering Associate, as watermaster.

The drought conditions of 1976 continued until mid-December 1977.

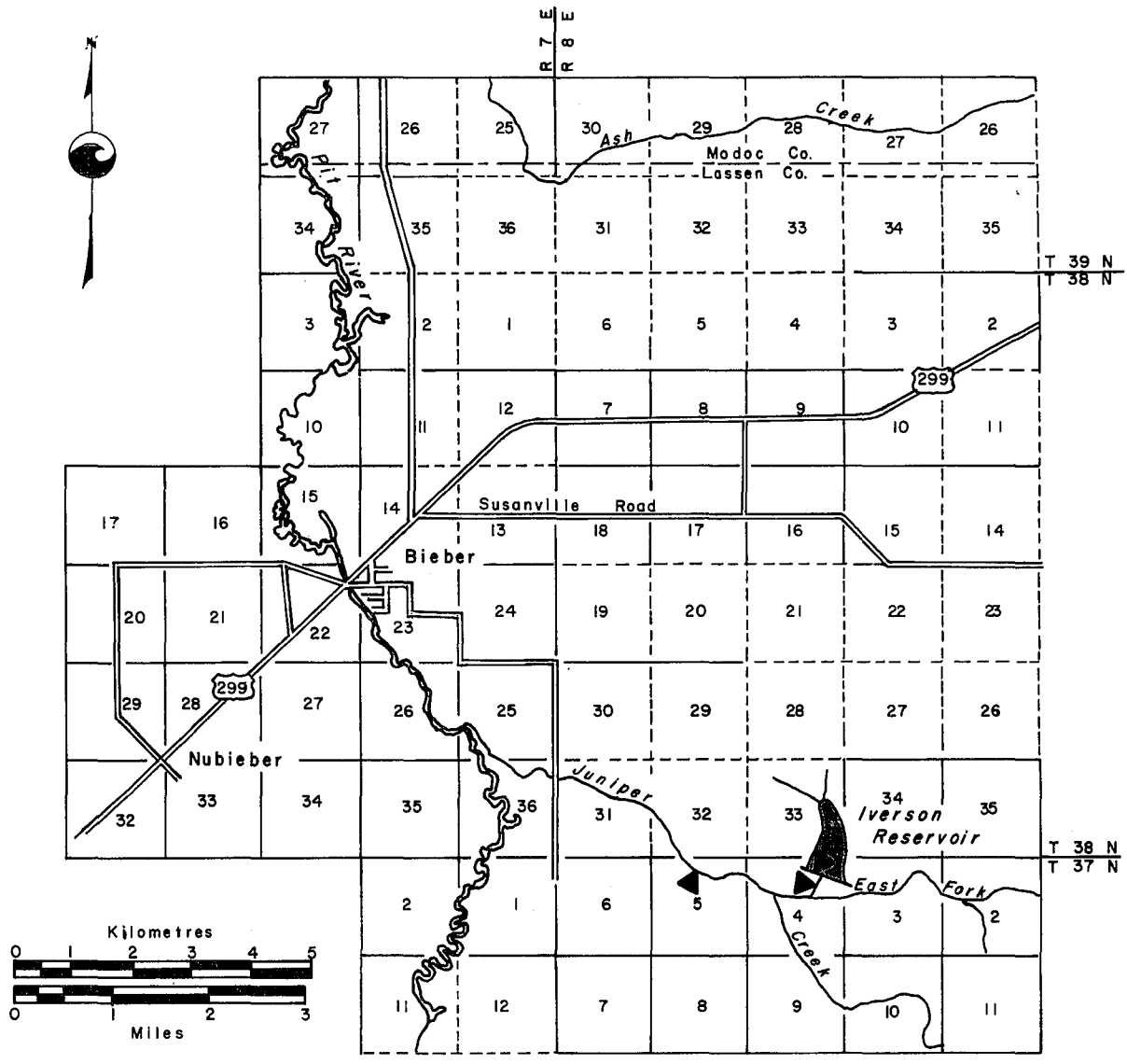
A clarification of the July 17, 1964 stipulation and agreement has not been reached between the owners of Iverson Reservoir and Pacific Gas and Electric Company in regard to the right to store in Iverson Reservoir.

Iverson Reservoir Operations

	Storage		Releases	
Date	hm^3	A/F	hm^3	A/F
11/2/76	.000	0		
			.000	0
11/30/76	.000	0		
			.000	0
12/3/76	.000	30		
			.000	0
2/1/77	.046	37		
			.000	0
3/1/77	.049	40		
				1/
5/27/77	.189	153		
11/1/77	.000	0		
				0
12/12/77	.000	0		
				0
12/31/77	.308	250		

1/ Period of releases for irrigation

Figure 11



Iverson Reservoir Capacity 2.2 hm^3 (1 800 A/F)

▲ Watermaster installed recorder station

DIVERSIONS FROM IVERSON RESERVOIR JUNIPER CREEK WATERMASTER SERVICE AREA

MIDDLE FORK FEATHER RIVER WATERMASTER SERVICE AREA

The Middle Fork Feather River service area is located in and around Sierra Valley, a plateau area on the west slope of the Sierra Nevada Mountains in the eastern portion of Sierra and Plumas Counties.

Major sources of supply for this service area are the Middle Fork Feather River and its tributaries in the Sierra Valley. The area is comprised of five major stream groups. Starting in the northeast corner of the valley and proceeding in a clockwise direction, these are Little Last Chance Creek, Smithneck Creek, Webber Creek and tributaries, West Side Canal, and Fletcher Creek and Spring Channels. The Middle Fork Feather River flows generally north for approximately 24 kilometres (15 miles) through Sierra Valley. It then flows out of the valley in a westerly direction near Beckwourth. The major place of use is in Sierra Valley, which is about 24 km (15 miles) long and 16 km (10 miles) wide. The average elevation of the valley floor is 1 493 metres (4,900 feet).

Maps of the Middle Fork Feather River service area are presented as Figures 12 through 12k, pages 70 through 81.

Basis of Service

The Middle Fork Feather River watermaster service area was created on March 29, 1940, to include, with the exception of certain tributaries and springs, all water rights set forth in Decree No. 3095 entered in the Middle Fork Feather River statutory adjudication proceeding on January 19, 1940, Superior Court, Plumas County.

The 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 - eight; Smithneck Creek - five; West Side Canal Group - five; Fletcher Creek and Spring Channels - three; Webber Creek and tributaries - six; and Sierra Valley Water Company - one.

The service area has been amended three times to include and exclude certain water rights. Watermaster service has been provided during each irrigation season since the service area was created and annual reports have been prepared to show the work accomplished.

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.

Natural flows of Little Last Chance Creek are supplemented by reservoir storage provided by Frenchman Dam which was constructed by the Department of Water Resources in 1961. Stored water is released and used as needed under the provisions of an annual contract.

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

The natural flow of Webber Creek is normally sufficient to supply all allotments until the middle of May. At that time up to 1 700 litres per second (60 cubic feet per second) is diverted from the Little Truckee River to supplement the flow. This imported water is diverted through the Little Truckee Ditch into Onion Creek and then into Webber Creek, via Cold Stream, for use of shareholders in the Sierra Valley Water Company. This supplemental supply decreases rapidly during July, producing only a small quantity during the latter part of the season.

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

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

Records of the daily mean discharge of Little Truckee Ditch and the Middle Fork Feather River near Portola are presented in Tables 17 and 18, page 69.

Method of Distribution

Wild flooding is employed by the majority of the water users to irrigate their fields. Small diversion dams are placed in the stream channels to divert the water into individual distribution systems. Check dams are constructed in the swales to implement flooding once the water reaches the fields.

1977 Distribution

Watermaster service in the Middle Fork Feather River service area began March 15, and continued until September 30. Joe Nessler, Water Resources Engineering Associate, was Supervising Watermaster during this period. Conrad Lahr, Water Resources Technician II, assisted as watermaster. The available supply in the service area was below average during the season.

Little Last Chance Creek. Frenchman Dam and Reservoir began its sixteenth season of operation. An annual contract concerning storage, distribution, and sale of water was again negotiated with the Last Chance Creek Water District. Delivery and distribution of water was made in accordance with the provisions of the contract and the instructions of the District's Board of Directors.

Smithneck Creek. The available water supply was not sufficient to satisfy all allotments (five priorities) at any time during the season. A two-week rotation schedule was started April 10, and continued for seven rotations. Thereafter, the flow was too low for effective rotation.

Webber Creek and Tributaries. The natural flow of Webber Creek was sufficient to supply all allotments (six priorities) until about June 15. It then decreased gradually until first priority and a small portion of second priority allotments were being served at the end of the season. Importation of water from the Little Truckee River began on March 23, supplementing the natural flow of Webber Creek to help satisfy all allotments of the Sierra Valley Water Company shareholders (one priority). A total of 9 233 cubic hectometres (7,485 acre-feet) of water was diverted through the Little Truckee Ditch up to July 15, when the flow ceased. This diversion provided sufficient water until about June 15.

West Side Canal Group. The available water supply in the West Side Canal Group, consisting of Hamlin, Miller, and Turner Creeks, was sufficient to satisfy all allotments (five priorities) until the first of May.

Fletcher Creek and Spring Channels. There wasn't sufficient water to supply all allotments at any time during the irrigation season. The flow dropped to about 50 percent of first priority by mid-July. The flow remained near this rate for the remainder of the season.

MIDDLE FORK FEATHER RIVER WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 17

LITTLE TRUCKEE DITCH AT HEAD

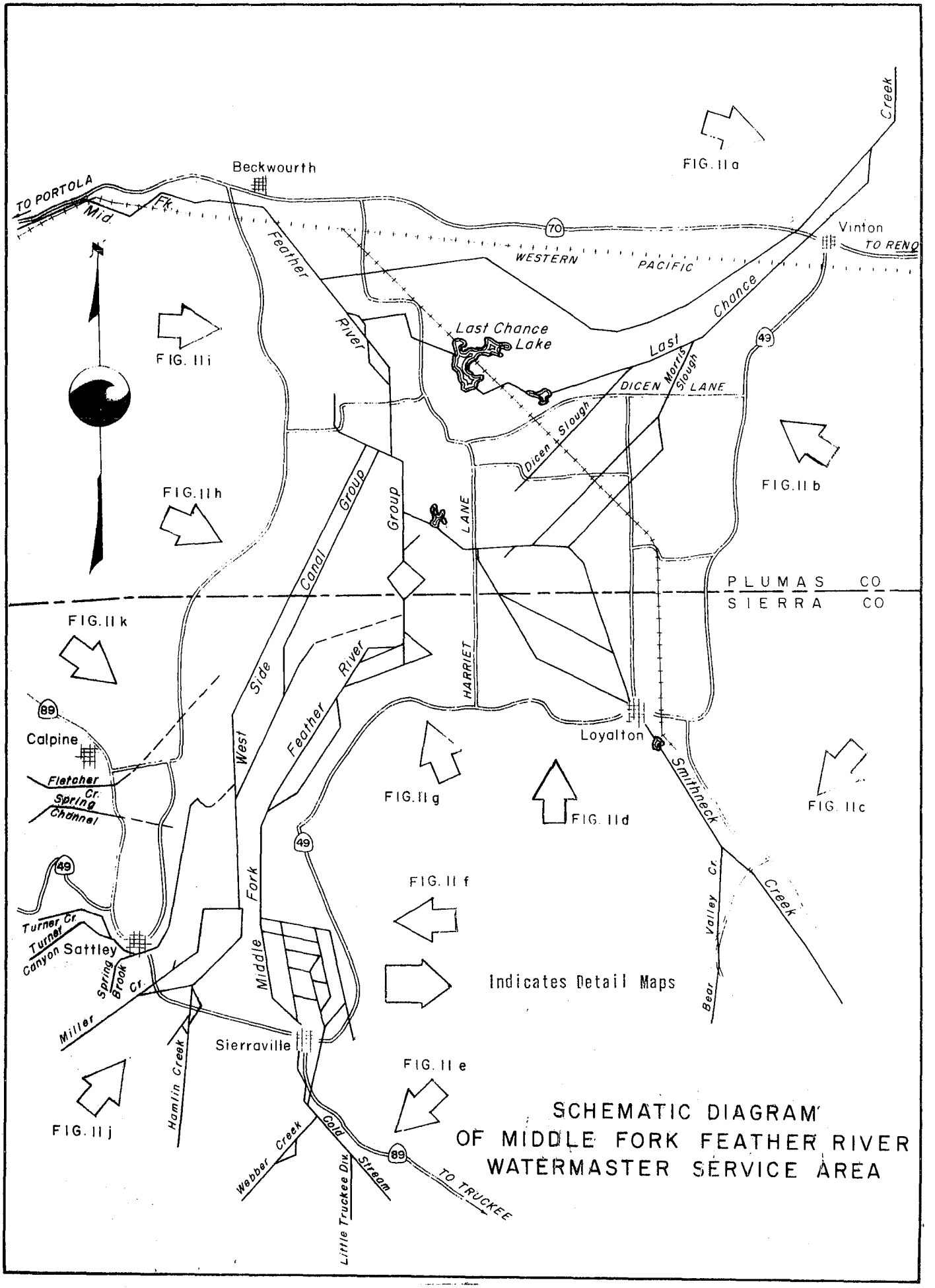
Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1			79	2.8	1 610	57	1 670	59	105	3.7	00	0.0	00	0.0	1
2			68	2.4	1 500	53	1 700	60	139	4.9	00	0.0	00	0.0	2
3			51	1.8	1 330	47	1 670	59	125	4.4	00	0.0	00	0.0	3
4			48	1.7	1 160	41	1 700	60	110	3.9	00	0.0	00	0.0	4
5			207	7.3	1 100	39	1 700	60	85	3.0	00	0.0	00	0.0	5
6			425	15	1 080	38	1 700	60	59	2.1	00	0.0	00	0.0	6
7			566	20	991	35	1 700	60	51	1.8	00	0.0	00	0.0	7
8			736	26	1 020	36	1 730	61	42	1.5	00	0.0	00	0.0	8
9			736	26	1 130	40	1 730	61	39	1.4	00	0.0	00	0.0	9
10			1 020	36	1 020	36	1 730	61	31	1.1	00	0.0	00	0.0	10
11			1 100	39	935	33	1 530	54	31	1.1	00	0.0	00	0.0	11
12			1 360	48	935	33	1 250	44	25	0.9	00	0.0	00	0.0	12
13			1 440	51	1 020	36	1 050	37	22	0.8	00	0.0	00	0.0	13
14			1 590	56	1 440	51	906	32	19	0.7	00	0.0	00	0.0	14
15			1 640	58	1 640	58	821	29	11	0.4	00	0.0	00	0.0	15
16			1 700	60	1 420	50	793	28	8.5	0.3	00	0.0	00	0.0	16
17			1 700	60	1 300	46	793	28	8.5	0.3	00	0.0	00	0.0	17
18			1 700	60	1 160	41	651	23	8.5	0.3	00	0.0	00	0.0	18
19			1 500	53	1 130	40	708	25	8.5	0.3	00	0.0	00	0.0	19
20			1 390	49	1 330	47	708	25	8.5	0.3	00	0.0	00	0.0	20
21			1 390	49	1 590	56	566	20	00	0.0	00	0.0	00	0.0	21
22			1 420	50	1 700	60	453	16	00	0.0	00	0.0	00	0.0	22
23	99	3.5*	1 590	56	1 700	60	368	13	00	0.0	00	0.0	00	0.0	23
24	99	3.5	1 470	52	1 610	57	312	11	00	0.0	00	0.0	00	0.0	24
25	51	1.8	1 610	57	1 440	51	278	9.8	00	0.0	00	0.0	00	0.0	25
26	51	1.8	1 470	52	1 500	53	252	8.9	00	0.0	00	0.0	00	0.0	26
27	48	1.7	1 500	53	1 700	60	224	7.9	00	0.0	00	0.0	00	0.0	27
28	68	2.4	1 500	53	1 670	59	198	7.0	00	0.0	00	0.0	00	0.0	28
29	79	2.8	1 500	53	1 670	59	153	5.4	00	0.0	00	0.0	00	0.0	29
30	79	2.8	1 500	53	1 700	60	119	4.2	00	0.0	00	0.0	00	0.0	30
31	79	2.8			1 670	59			00	0.0	00	0.0			31
Mean	21.1	0.7	1 130	40.0	1 360	48.1	972	34.3	30.3	1.1	00	0.0	00	0.0	Mean
Volume															Volume
hm	.060		2.940		3.650		2.520		.080		.000		.000		hm
AF		45.8		2380		2950		2040		65.9		0.0		0.0	AF

* Beginning of Record

TABLE 18

MIDDLE FORK FEATHER RIVER NEAR PORTOLA

Day	March		April		May		June		July		August		September		D y
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1	1 080	38	453	16	368	13	736	26	3 650	129	2 970	105	142	5.0	1
2	1 160	41	481	17	368	13	708	25	3 650	129	2 950	104	142	5.0	2
3	1 270	45	538	19	396	14	566	20	3 650	129	2 950	104	142	5.0	3
4	1 250	44	566	20	425	15	566	20	3 600	127	2 920	103	170	6.0	4
5	1 190	42	623	22	453	16	510	18	3 540	125	2 920	103	170	6.0	5
6	1 250	44	2 180	77	538	19	510	18	3 540	125	2 920	103	170	6.0	6
7	1 190	42	1 130	40	595	21	566	20	3 540	125	2 920	103	198	7.0	7
8	1 190	42	680	24	736	26	1 100	39	3 540	125	2 920	103	170	6.0	8
9	1 190	42	623	22	906	32	3 820	135	3 540	125	2 920	103	85	3.0	9
10	1 160	41	595	21	1 080	38	3 940	139	3 540	125	2 890	102	56	2.0	10
11	1 100	39	566	20	1 160	41	3 910	138	3 540	125	2 860	101	56	2.0	11
12	1 130	40	566	20	1 330	47	3 910	138	3 540	125	2 860	101	56	2.0	12
13	1 220	43	538	19	1 640	58	3 820	135	3 540	125	2 860	101	56	2.0	13
14	1 130	40	510	18	1 590	56	3 680	130	3 510	124	2 860	101	56	2.0	14
15	1 130	40	510	18	1 440	51	3 570	126	3 480	123	2 860	101	56	2.0	15
16	1 160	41	538	19	1 440	51	3 090	109	3 430	121	2 860	101	56	2.0	16
17	1 300	46	481	17	1 470	52	3 650	129	3 400	120	2 860	101	56	2.0	17
18	1 330	47	510	18	1 470	52	3 770	133	3 430	121	3 030	107	56	2.0	18
19	1 390	49	538	19	1 500	53	4 300	152	3 430	121	2 150	76	85	3.0	19
20	1 420	50	510	18	1 590	56	4 960	175	3 400	120	312	11	85	3.0	20
21	1 420	50	510	18	1 500	53	4 390	155	3 400	120	255	9.0	85	3.0	21
22	1 360	48	510	18	1 190	42	4 110	145	3 400	120	198	7.0	85	3.0	22
23	1 160	41	481	17	1 080	38	3 990	141	3 400	120	227	8.0	85	3.0	23
24	1 100	39	453	16	963	34	3 910	138	3 370	119	227	8.0	85	3.0	24
25	1 050	37	368	13	850	30	3 850	136	3 340	118	227	8.0	85	3.0	25
26	623	22	340	12	793	28	3 770	133	3 340	118	170	6.0	85	3.0	26
27	481	17	340	12	765	27	3 770	133	3 600	127	142	5.0	85	3.0	27
28	425	15	368	13	736	26	3 770	133	3 230	114	113	4.0	85	3.0	28
29	425	15	368	13	793	28	3 740	132	3 120	110	113	4.0	113	4.0	29
30	453	16	368	13	878	31	3 710	131	3 060	108	142	5.0	113	4.0	30
31	453	16			878	31			3 030	107	142	5.0			31
Mean	1 070	37.8	575	20.3	997	35.2	3 020	107	3 440	122	1 830	64.6	99.1	3.5	Mean
Volume															Volume
hm	2.870		1.490		2.670		7.840		9.230		4.900		.260		hm
AF		2320		1210		2160		6350		7470		3970		208	AF



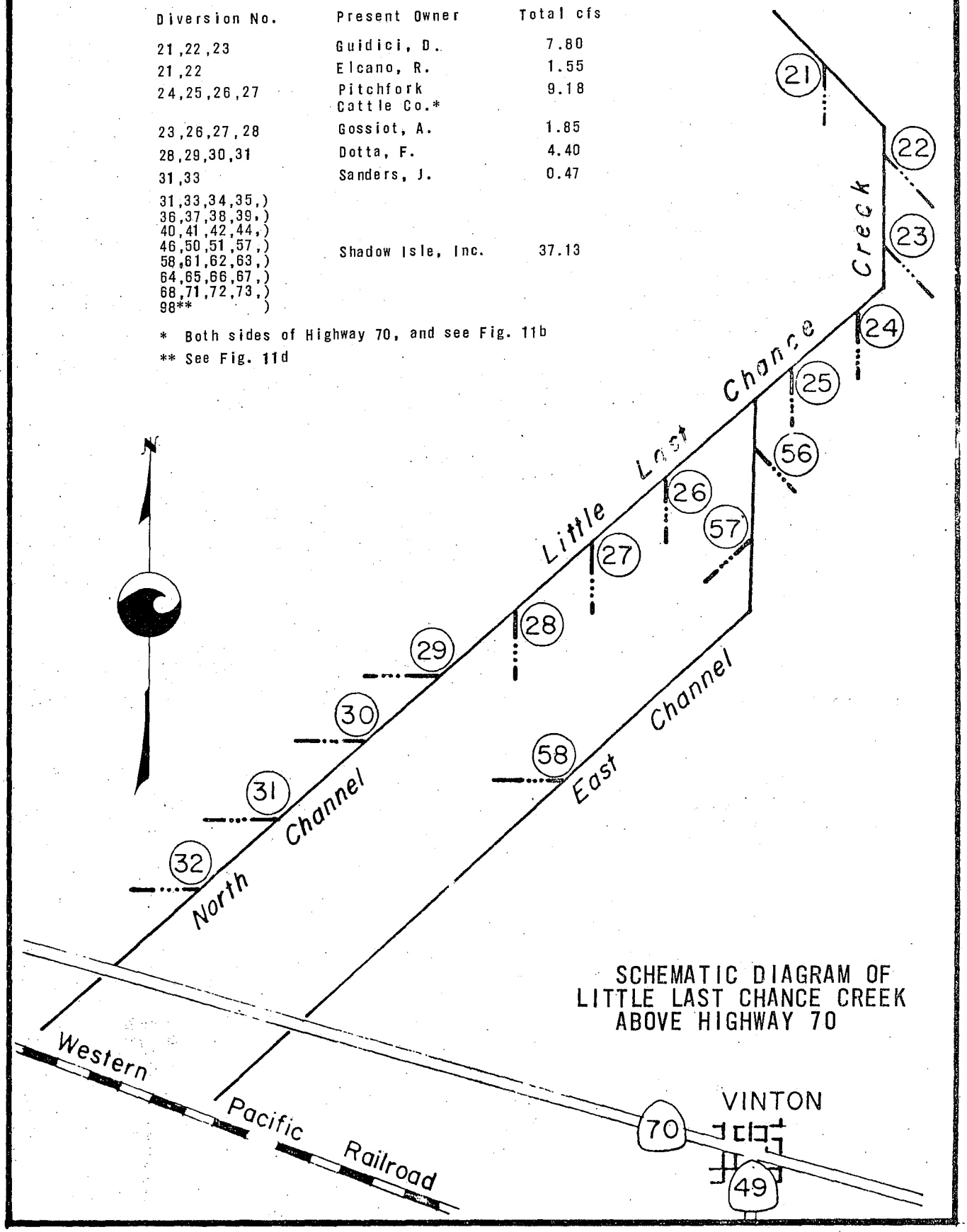
SCHEMATIC DIAGRAM
OF MIDDLE FORK FEATHER RIVER
WATERMASTER SERVICE AREA

ALLOCATIONS FROM LITTLE LAST CHANCE CREEK
ABOVE HIGHWAY 70

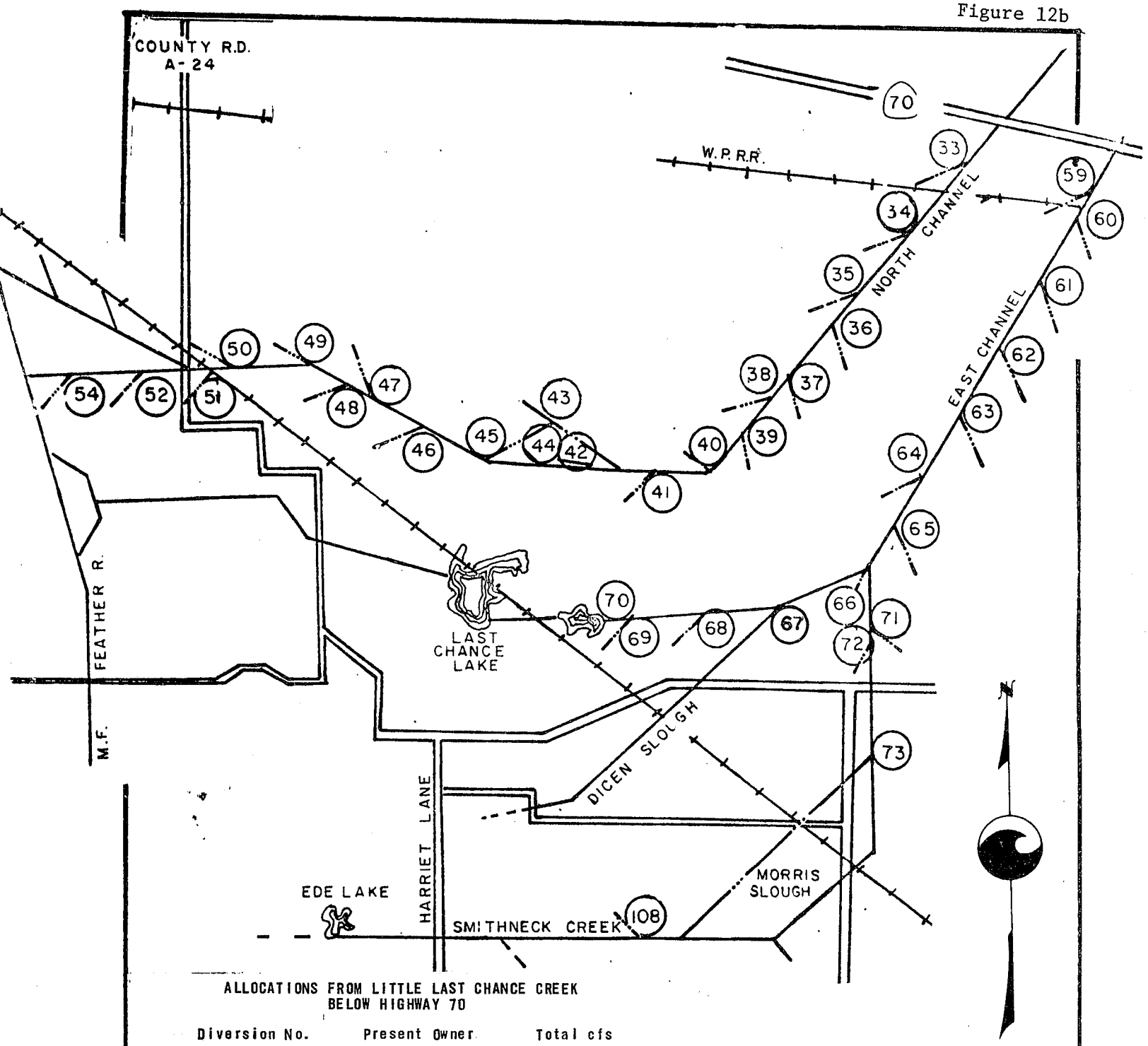
Diversion No.	Present Owner	Total cfs
21,22,23	Guidici, D.	7.80
21,22	Elcano, R.	1.55
24,25,26,27	Pitchfork Cattle Co.*	9.18
23,26,27,28	Gossiot, A.	1.85
28,29,30,31	Dotta, F.	4.40
31,33	Sanders, J.	0.47
31,33,34,35,) 36,37,38,39,) 40,41,42,44,) 46,50,51,57,) 58,61,62,63,) 64,65,66,67,) 68,71,72,73,) 98**)	Shadow Isle, Inc.	37.13

* Both sides of Highway 70, and see Fig. 11b

** See Fig. 11d



SCHEMATIC DIAGRAM OF
LITTLE LAST CHANCE CREEK
ABOVE HIGHWAY 70



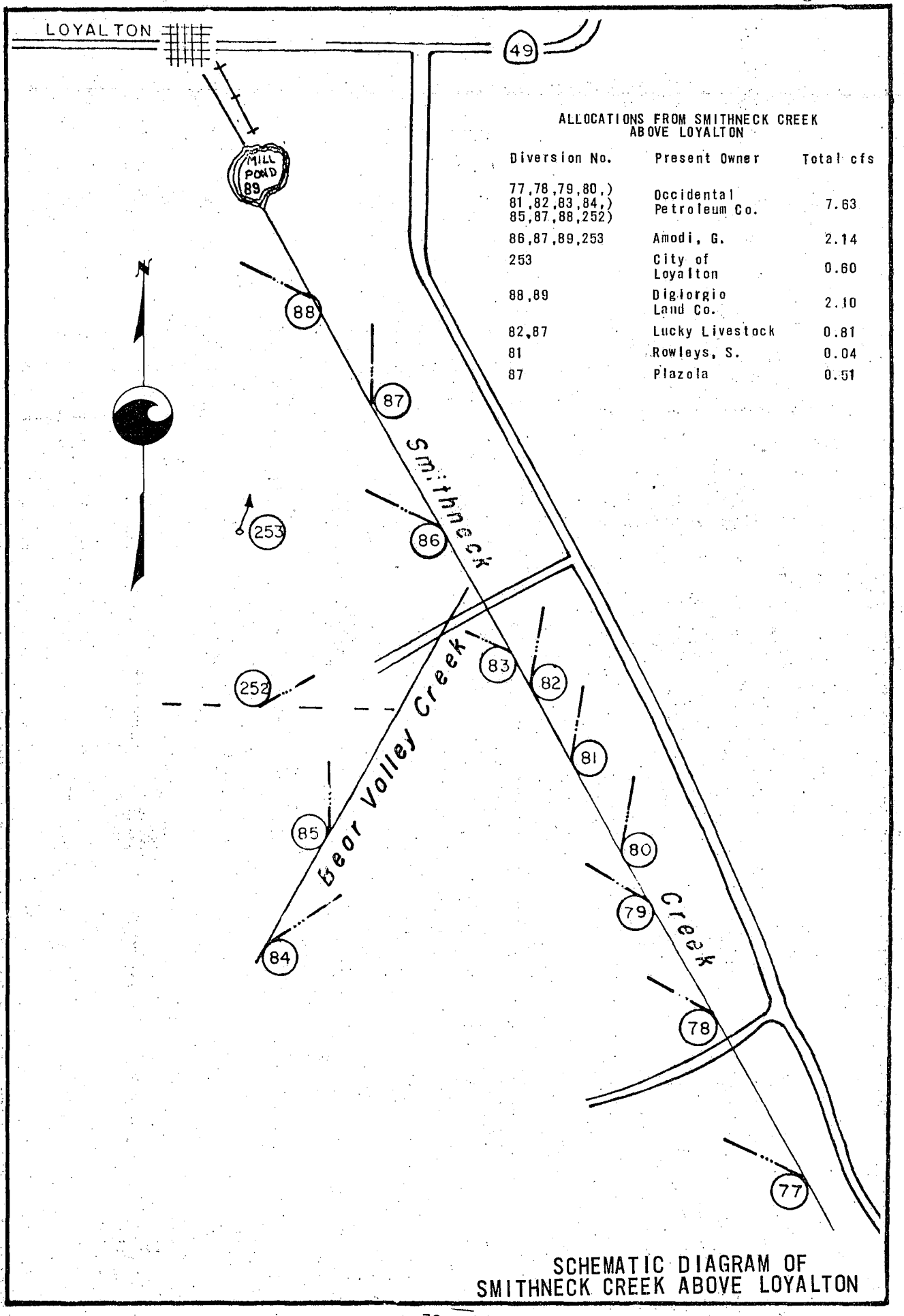
ALLOCATIONS FROM LITTLE LAST CHANCE CREEK
BELOW HIGHWAY 70

Diversion No.	Present Owner	Total cfs
31*,32*,57*,) 58*,59,60)	Ramelli, T.	3.30
57,58,59,60	Ayoob, G.	4.05
43,44,45,67, 68,69,72,79	Roberti, E.	9.14
70	Ramelli, M.	0.55
70	Wiley, V.	0.20
70	Carmicheal, S.	0.10
47,48,49	Overland Inc.	4.45
52,53	Maddalena, L.	1.20
54,55	Noble, P.	0.45
67,72	Lucky Livestock	1.68
67,108	Hage, J.	0.20

* See Fig. 11a for location of diversions 33-42, 46,50,51,61-68,71,72,73,98 (Occidental Petroleum)

SCHEMATIC DIAGRAM OF
LITTLE LAST CHANCE CREEK
BELOW HIGHWAY 70

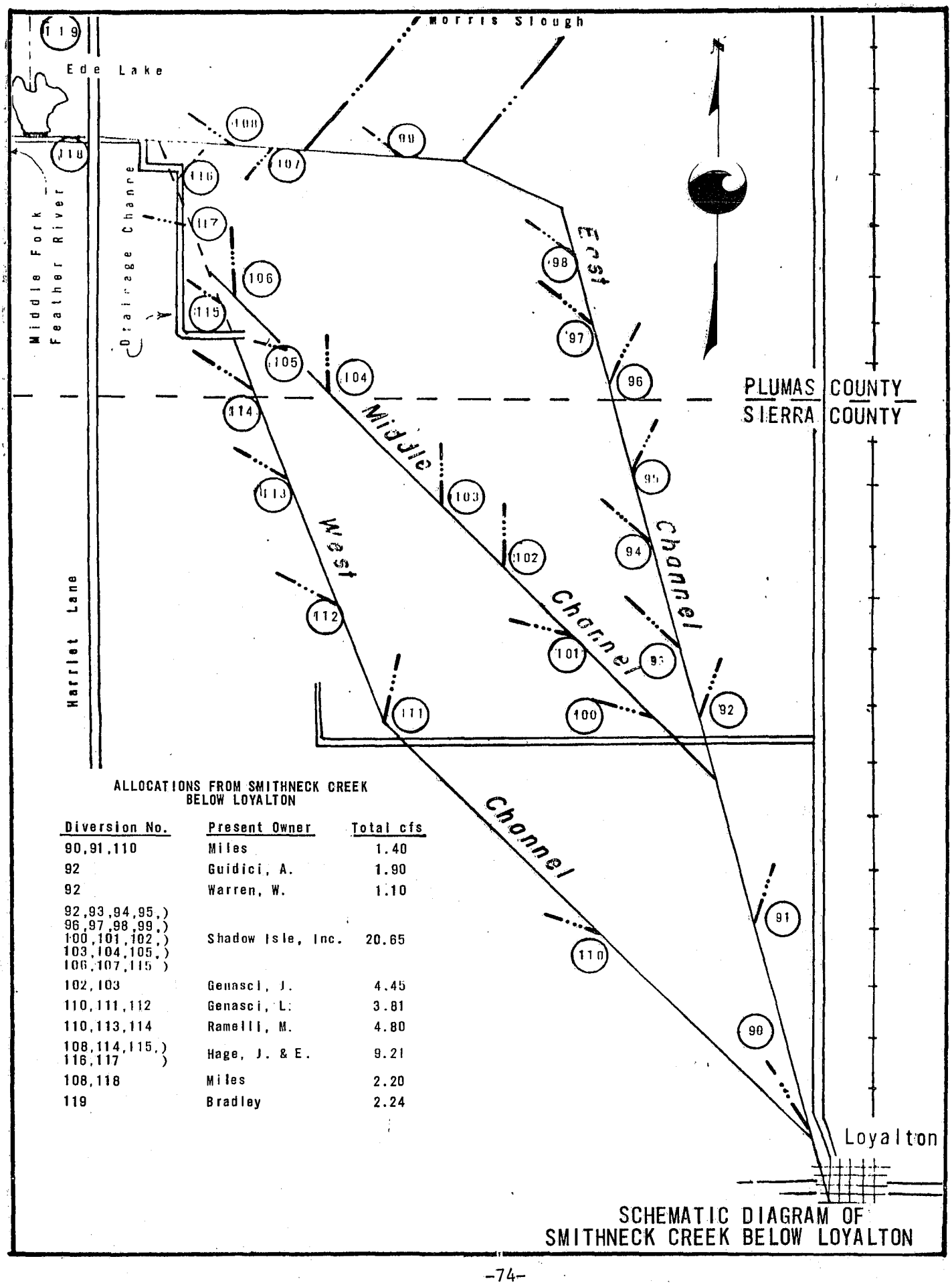
Figure 12c



ALLOCATIONS FROM SMITHNECK CREEK ABOVE LOYALTON

Diversion No.	Present Owner	Total cfs
77,78,79,80,) 81,82,83,84,) 85,87,88,252)	Occidental Petroleum Co.	7.63
86,87,89,253	Amodi, G.	2.14
253	City of Loyalton	0.60
88,89	Digiorgio Land Co.	2.10
82,87	Lucky Livestock	0.81
81	Rowleys, S.	0.04
87	Plazola	0.51

SCHEMATIC DIAGRAM OF SMITHNECK CREEK ABOVE LOYALTON



ALLOCATIONS FROM SMITHNECK CREEK
BELOW LOYALTON

Diversion No.	Present Owner	Total cfs
90,91,110	Miles	1.40
92	Guidici, A.	1.90
92	Warren, W.	1.10
92,93,94,95,) 96,97,98,99,) 100,101,102,) 103,104,105,) 106,107,115)	Shadow Isle, Inc.	20.65
102,103	Genasci, J.	4.45
110,111,112	Genasci, L.	3.81
110,113,114	Ramelli, M.	4.80
108,114,115,) 116,117)	Hage, J. & E.	9.21
108,118	Miles	2.20
119	Bradley	2.24

SCHEMATIC DIAGRAM OF
SMITHNECK CREEK BELOW LOYALTON

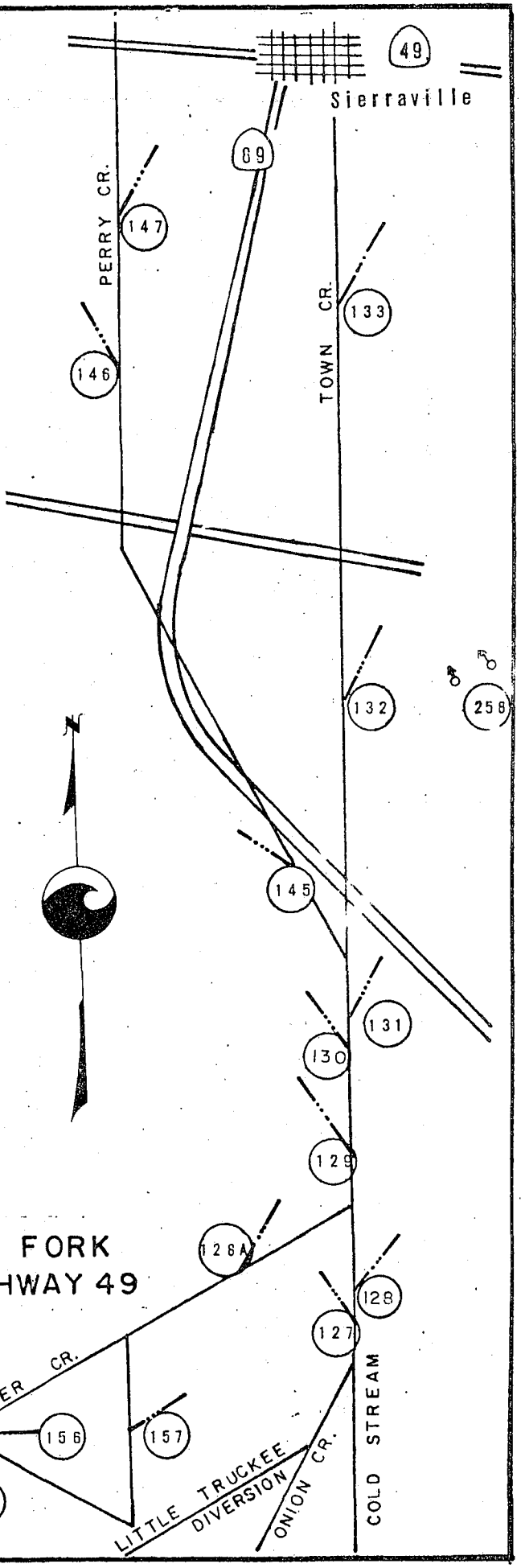
ALLOCATIONS FROM MIDDLE FORK FEATHER RIVER SOUTH OF HIGHWAY 49

Diversion No.	Present Owner	Total cfs
127	Morgan	0.009
127	Monico	0.111
155	Amodei, J.	2.50
133, 156, 157	McKinney	1.35
128, 128A	Johnson, A.	0.453
128, 128A	Stodiek	0.452
133, 134	Johnson, L.	1.04
134*	Johnson, S.	0.22
129*	Maddalena, G.	2.30
131	Pitchfork Cattle Co.	0.07
131, 132, 145, 258	RST Cattle Co.	2.38
128, 128A	S.F. Bay Girl Scout Council	0.095
130	LaCosta, P.	0.006
130	Dellera, K.	0.025
145	Heisen, A.	0.02
145	Wright, I.	0.10
145	McCaffrey	0.10
145	Scudder, N.	0.04
133	Goodrich, C.	0.02
134	Mello, E.	0.08
134	West, H.	0.03
134	Griffen, T.	0.03
134	Rosocoe, P.	0.01
134	Savage, H&E.	0.01
129, 133**	Webber, C.	2.11
R. R. Springs	Sierraville PUD	0.654

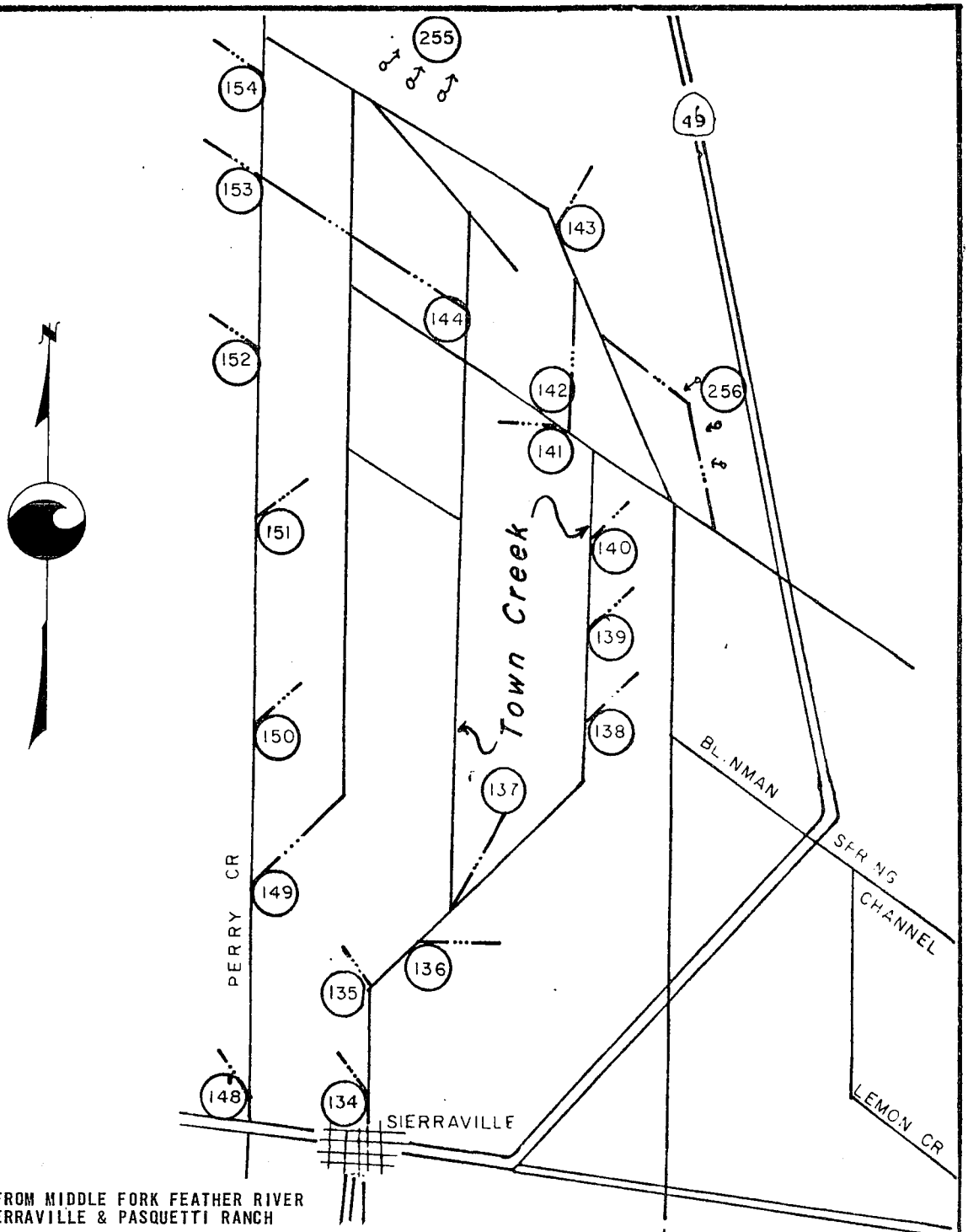
* Both sides of Highway 49

** Other allocations north of Highway 49

Rights under Div. 134, formerly used in Sierraville



SCHEMATIC DIAGRAM OF MIDDLE FORK FEATHER RIVER SOUTH OF HIGHWAY 49

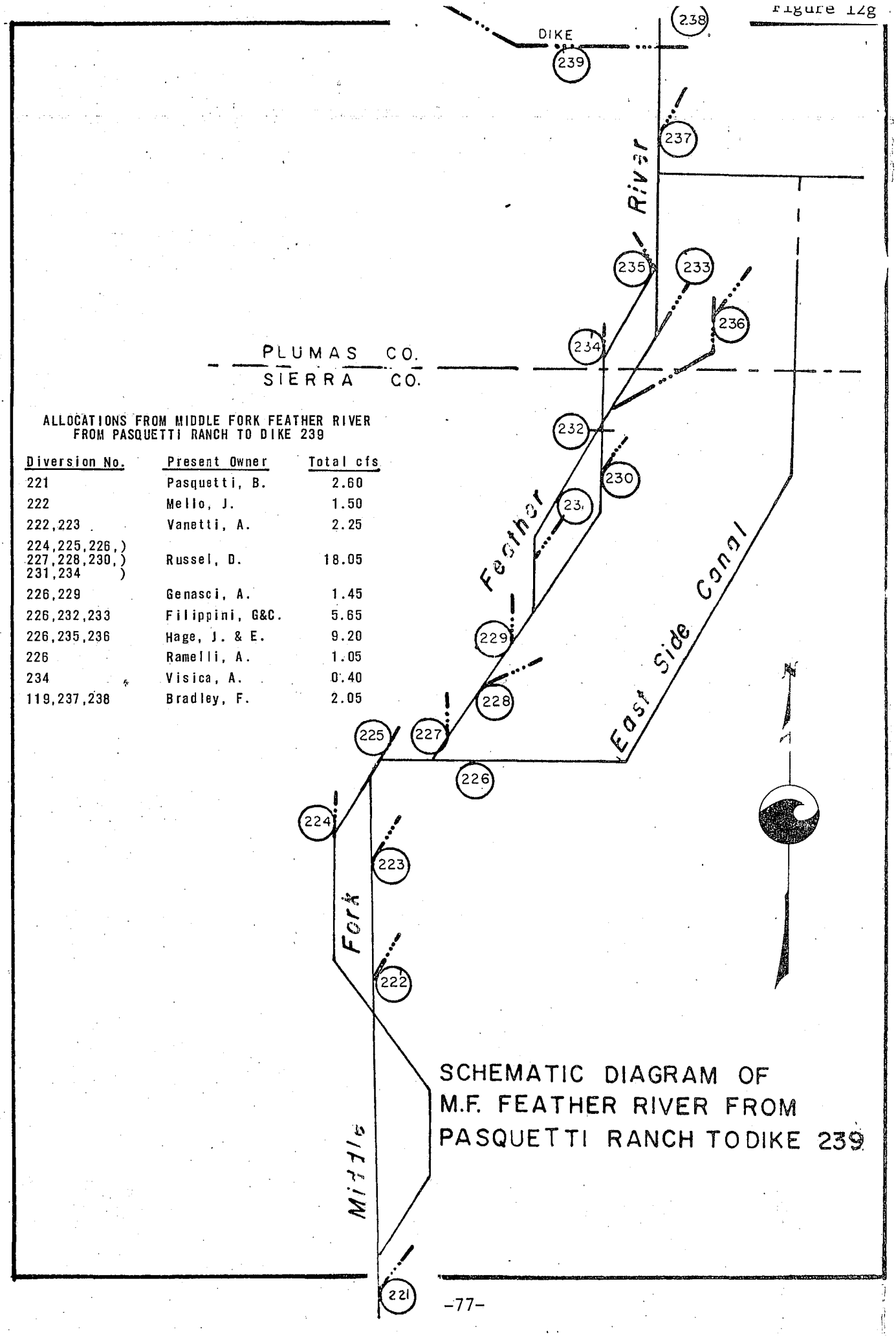


ALLOCATIONS FROM MIDDLE FORK FEATHER RIVER
BETWEEN SIERRAVILLE & PASQUETTI RANCH

Diversion No.	Present Owner	Total cfs
134	Hannon, P.	0.015
134	Snozzi, A.	0.02
135	Carmichael, S.	0.55
137,141,146*,) 147*,149,152)	Webber, G.	13.00
136,137,138,) 139,147*)	Bony, M.	6.85
148	Wilson Bros.	2.00
148,149,150,) 151)	Small, F.	4.90
140,256	Alpers, F.	3.20
142,143,255	Torri, K.	4.00
144,153,154	Mooney, J.	2.00

* See Fig. 11e

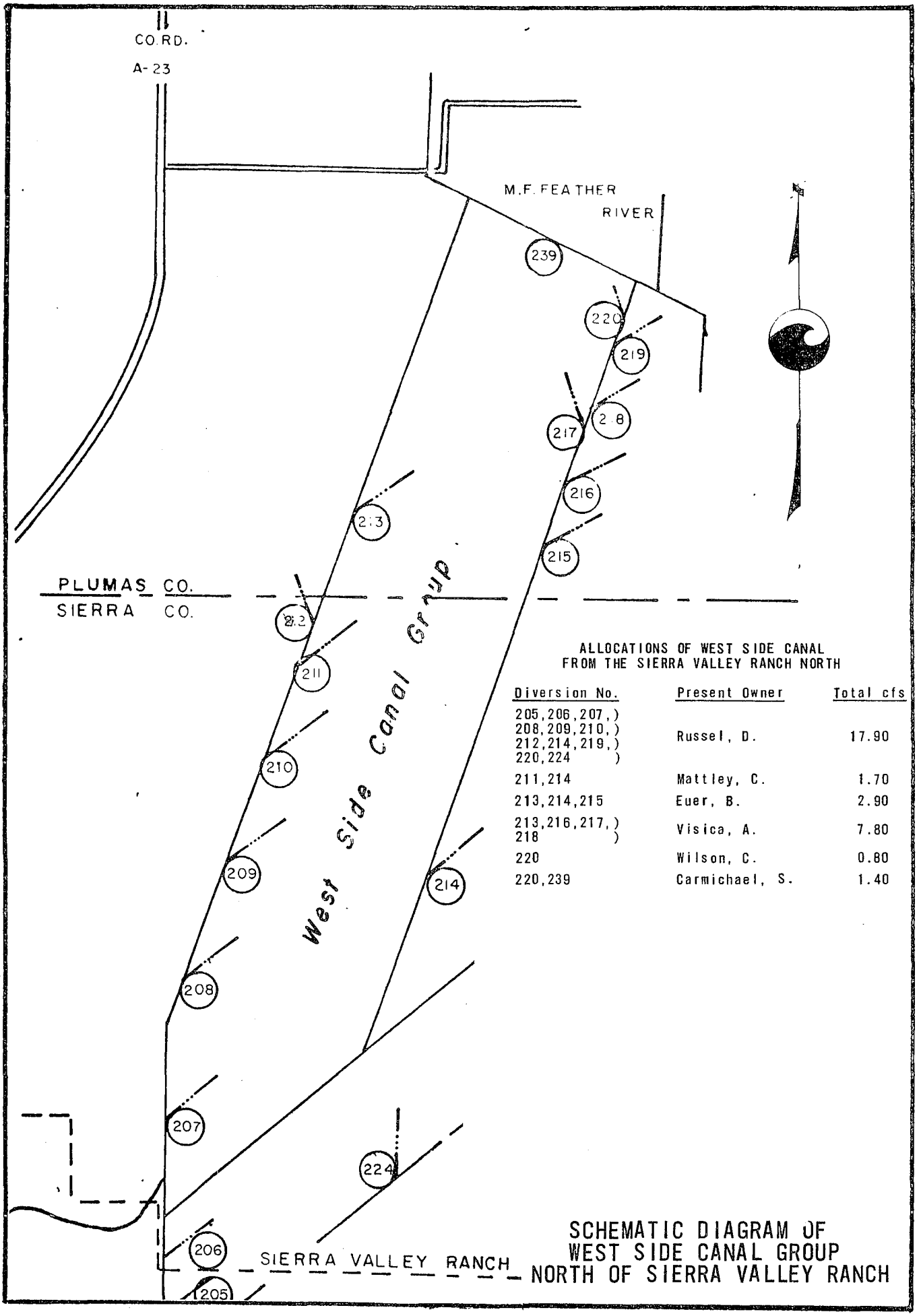
SCHEMATIC DIAGRAM OF
MIDDLE FORK FEATHER RIVER
BETWEEN
SIERRAVILLE AND PASQUETTI RANCH



ALLOCATIONS FROM MIDDLE FORK FEATHER RIVER
FROM PASQUETTI RANCH TO DIKE 239

Diversion No.	Present Owner	Total cfs
221	Pasquetti, B.	2.60
222	Mello, J.	1.50
222,223	Vanetti, A.	2.25
224,225,226,) 227,228,230,) 231,234)	Russel, D.	18.05
226,229	Genasci, A.	1.45
226,232,233	Filippini, G&C.	5.65
226,235,236	Hage, J. & E.	9.20
226	Ramelli, A.	1.05
234	Visica, A.	0.40
119,237,238	Bradley, F.	2.05

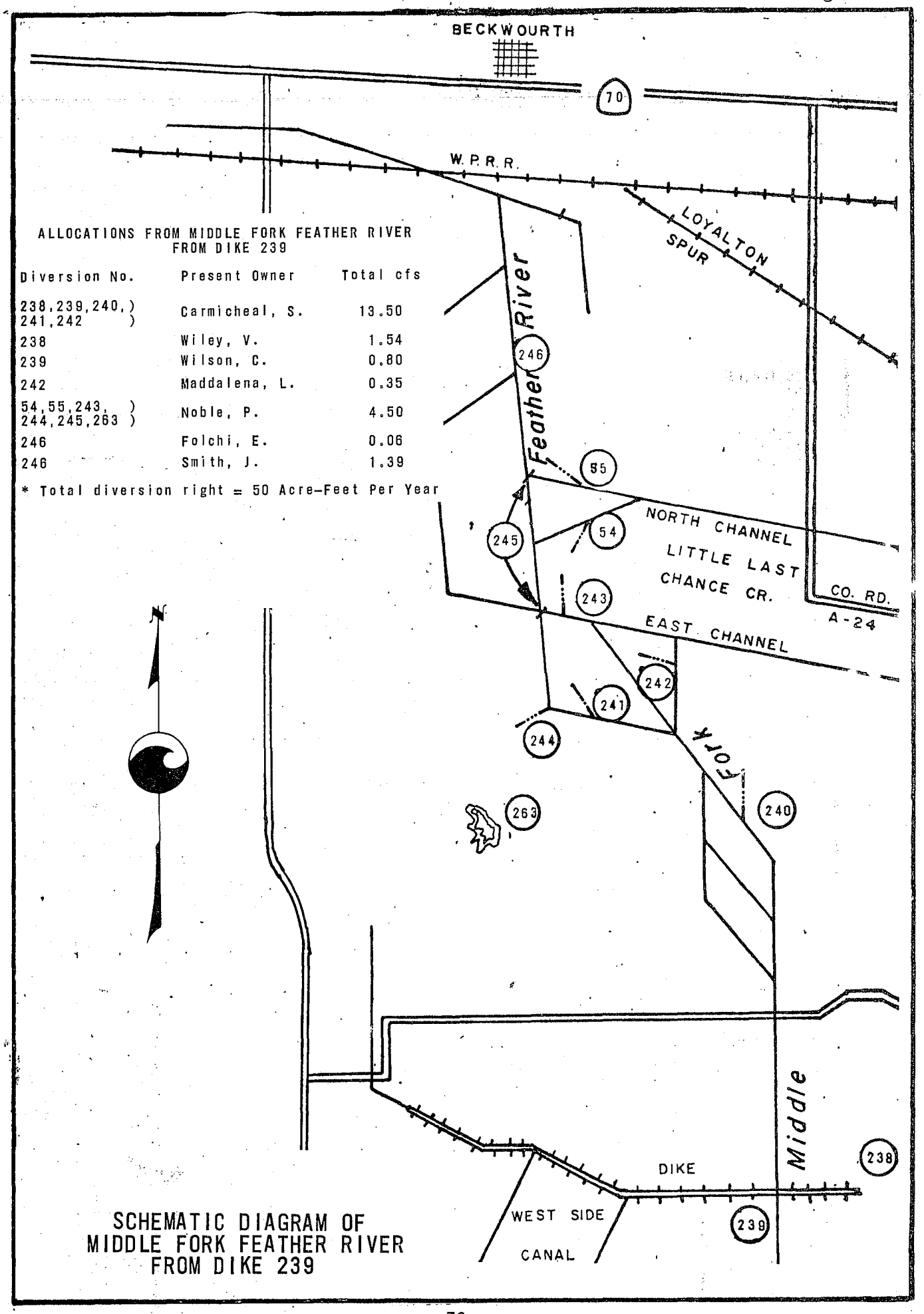
SCHEMATIC DIAGRAM OF
M.F. FEATHER RIVER FROM
PASQUETTI RANCH TO DIKE 239



ALLOCATIONS OF WEST SIDE CANAL
FROM THE SIERRA VALLEY RANCH NORTH

Diversion No.	Present Owner	Total cfs
205,206,207,) 208,209,210,) 212,214,219,) 220,224)	Russel, D.	17.90
211,214	Mattley, C.	1.70
213,214,215	Euer, B.	2.90
213,216,217,) 218)	Visica, A.	7.80
220	Wilson, C.	0.80
220,239	Carmichael, S.	1.40

SCHEMATIC DIAGRAM OF
WEST SIDE CANAL GROUP
NORTH OF SIERRA VALLEY RANCH



ALLOCATIONS FROM MIDDLE FORK FEATHER RIVER FROM DIKE 239

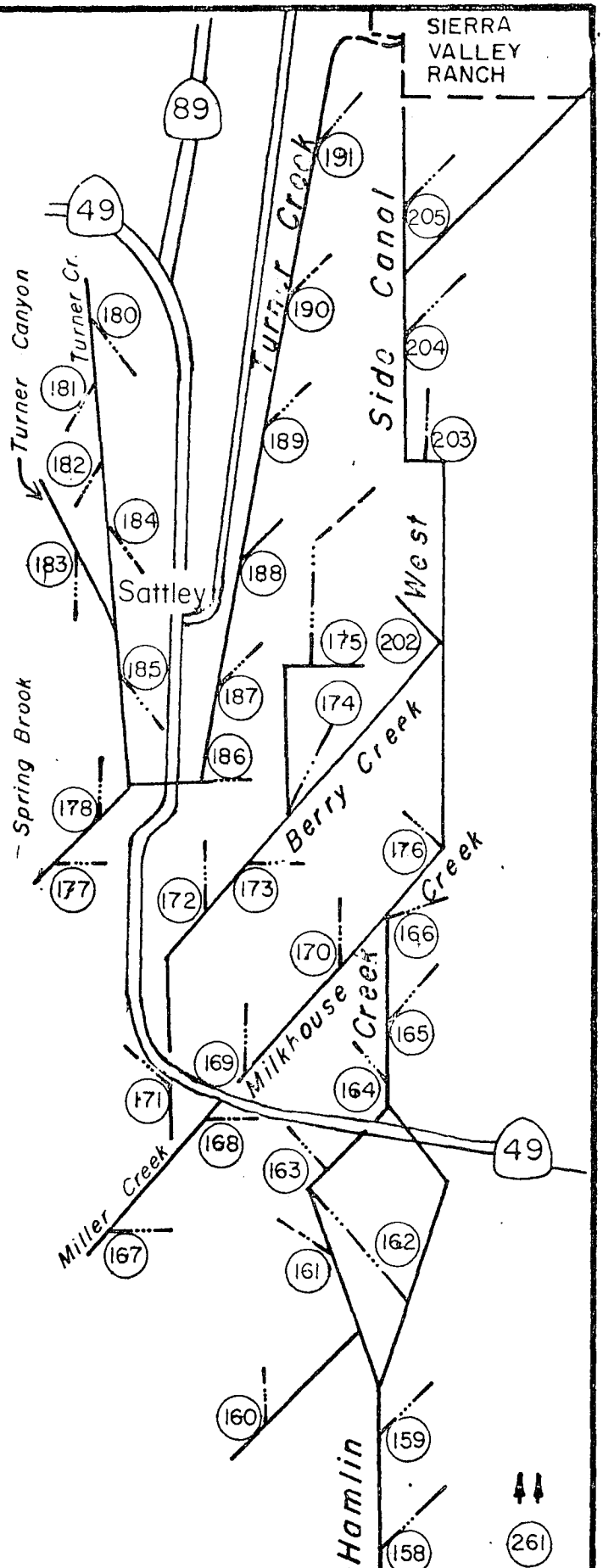
Diversion No.	Present Owner	Total cfs
238,239,240,) 241,242)	Carmicheal, S.	13.50
238	Wiley, V.	1.54
239	Wilson, C.	0.80
242	Maddalena, L.	0.35
54,55,243,) 244,245,263)	Noble, P.	4.50
246	Folchi, E.	0.06
246	Smith, J.	1.39

* Total diversion right = 50 Acre-Feet Per Year

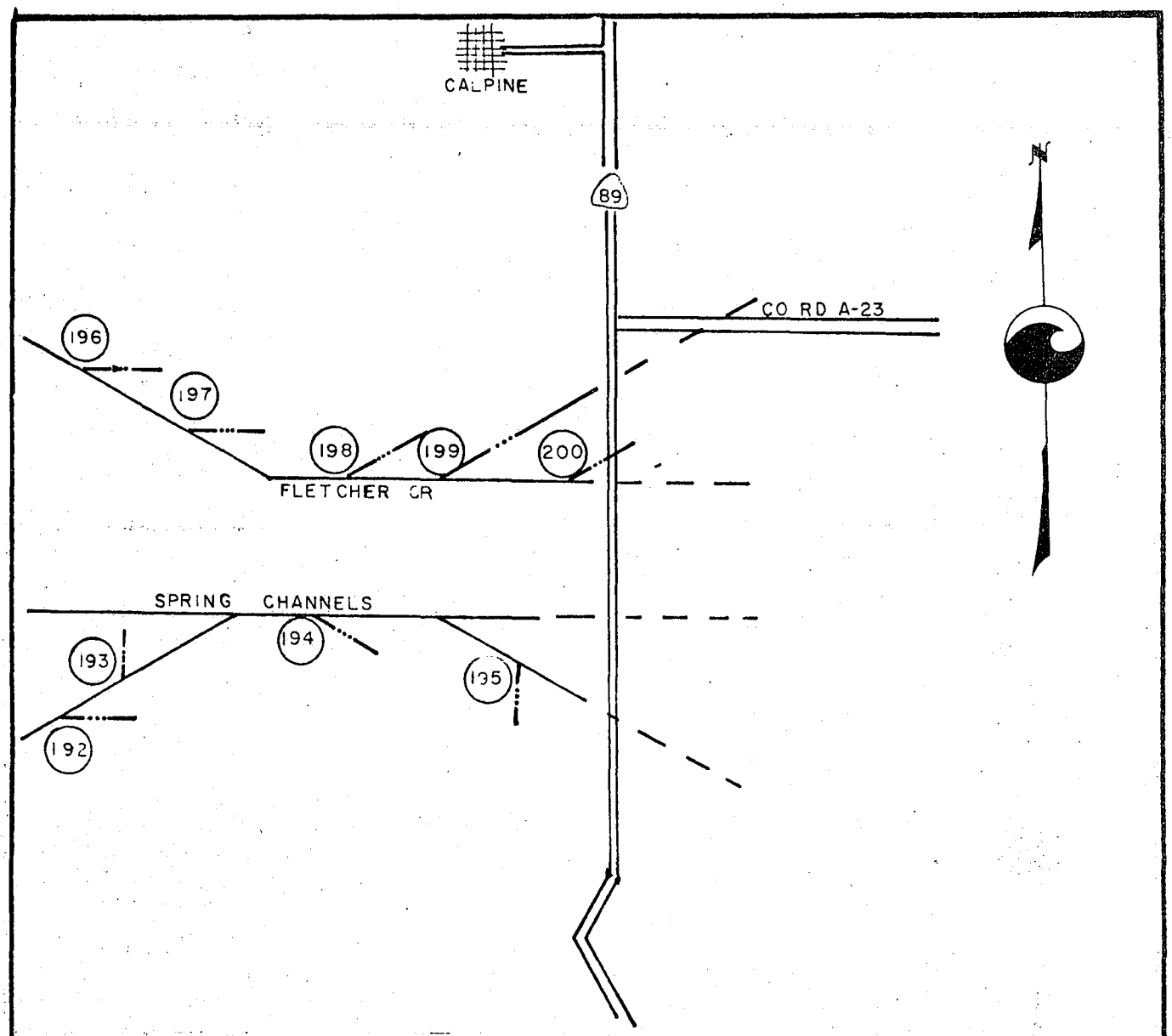
SCHEMATIC DIAGRAM OF MIDDLE FORK FEATHER RIVER FROM DIKE 239

ALLOCATIONS FROM WEST SIDE CANAL GROUP
SOUTH OF SIERRA VALLEY RANCH

Diversion No.	Present Owner	Total cfs
158,159,161,) 162,261)	Maddalena, L.	6.13
160,161,163,) 164,167)	Strang, A&E.	8.55
165,167,168,) 169,170,171,) 173,174,177)	Martinetti, E.	6.33
165,166	Webber, G.	2.60
172,177,178,) 184,185)	Cavitt, J.	4.25
174,202	Tong, J.	2.10
175,184,186,) 187)	Church, G.	5.60
180	Turner, J.	0.02
175,181,182,) 183,184,185,) 187,189,190,) 202)	Turner, F.	10.25
176	Wilson Bros.	1.50
180,188	Dargie, T.	2.90
189	Berutti, J.	2.50
189,191,202,) 204,205)	Van Vleck, G.	6.05
176,203	Mooney, J.	1.50
176	Pasguetti, B.	2.40



SCHEMATIC DIAGRAM OF
WEST SIDE CANAL GROUP
SOUTH OF SIERRA VALLEY RANCH



ALLOCATIONS FROM FLETCHER CREEK
AND SPRING CHANNELS

Diversion No.	Present Owner	Total cfs
196	Sierra Co. Water District	0.56
177,178,192,) 193,194)	Borelli, A.	1.744
192	Scott, F.	0.05
192,193,194	Jinnette, F&W.	0.046
195,199,200	Paulson & Cadenhead	1.428
199	Lukens & Coppla	0.302
199,200	Jaquess, E.	1.32

SCHEMATIC DIAGRAM
FLETCHER CREEK
AND
SPRING CHANNELS

NORTH FORK COTTONWOOD CREEK SERVICE AREA

The North Fork Cottonwood Creek service area is situated in Shasta County near the town of Ono west of Redding. Figure 13 page 85, shows the North Fork Cottonwood Creek stream system including the diversions and roads.

The source of water supply for this service area is the North Fork of Cottonwood Creek and its two major tributaries, Moon Creek and Jerusalem Creek. The North Fork of Cottonwood Creek flows through the service area in a southeasterly direction to its confluence with the other two major forks of Cottonwood Creek and then to the Sacramento River east of the town of Cottonwood. The service area consists of sparsely scattered parcels separated by steep, brushy hills. These lands are at about the 305 metre (1,000-foot) elevation.

Basis of Service

The water rights on this creek system were determined by court reference and set forth in Decree No. 5479, Shasta County Superior Court, dated June 9, 1920. The North Fork Cottonwood Creek watermaster service area was created September 11, 1929; however, service was provided intermittently in accordance with the decree since 1924. All water rights are of equal priority.

Water Supply

Snowmelt contributes to the flow in the North Fork Cottonwood Creek system during the early part of the irrigation season. However, perennial springs provide the major source of supply during the summer and fall months. The flow is normally sufficient to supply all demands. In dry years, however, the available supply may be as low as 20 to 40 percent of the decreed allotments.

A record of the daily mean discharge of North Fork Cottonwood Creek near Igo is presented in Table 19, page 84. This gaging station is downstream from most diversion points 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 wild flooding. One water user, however, pumps directly from the creek using a sprinkler system to irrigate his crops. Pumping was necessary at this diversion point because the irrigated land was considerably higher in elevation than the creek channel.

1977 Distribution

28 Seth Barrett, Water Resources Technician II, was watermaster for the North Fork Cottonwood Creek service area beginning May 1 and continuing until September 30.

The water supply was very low. Rains in May and September were of some help at Gas Point Bridge, which is below the watermaster service area, there was some flow until mid-July, which then eased.

The Bee Ditch was able to deliver water until early in May when low streamflow and a very bad leaking diversion dam 34 prevented the ditch users from receiving their water. The available flows continued down the creek to the lower users.

The combined flow of Moon Creek and North Fork Cottonwood Creek above Rainbow Lake was between 113 and 142 litres per second (4 and 5 cfs) from mid-July to September 30 except for the periods of rain.

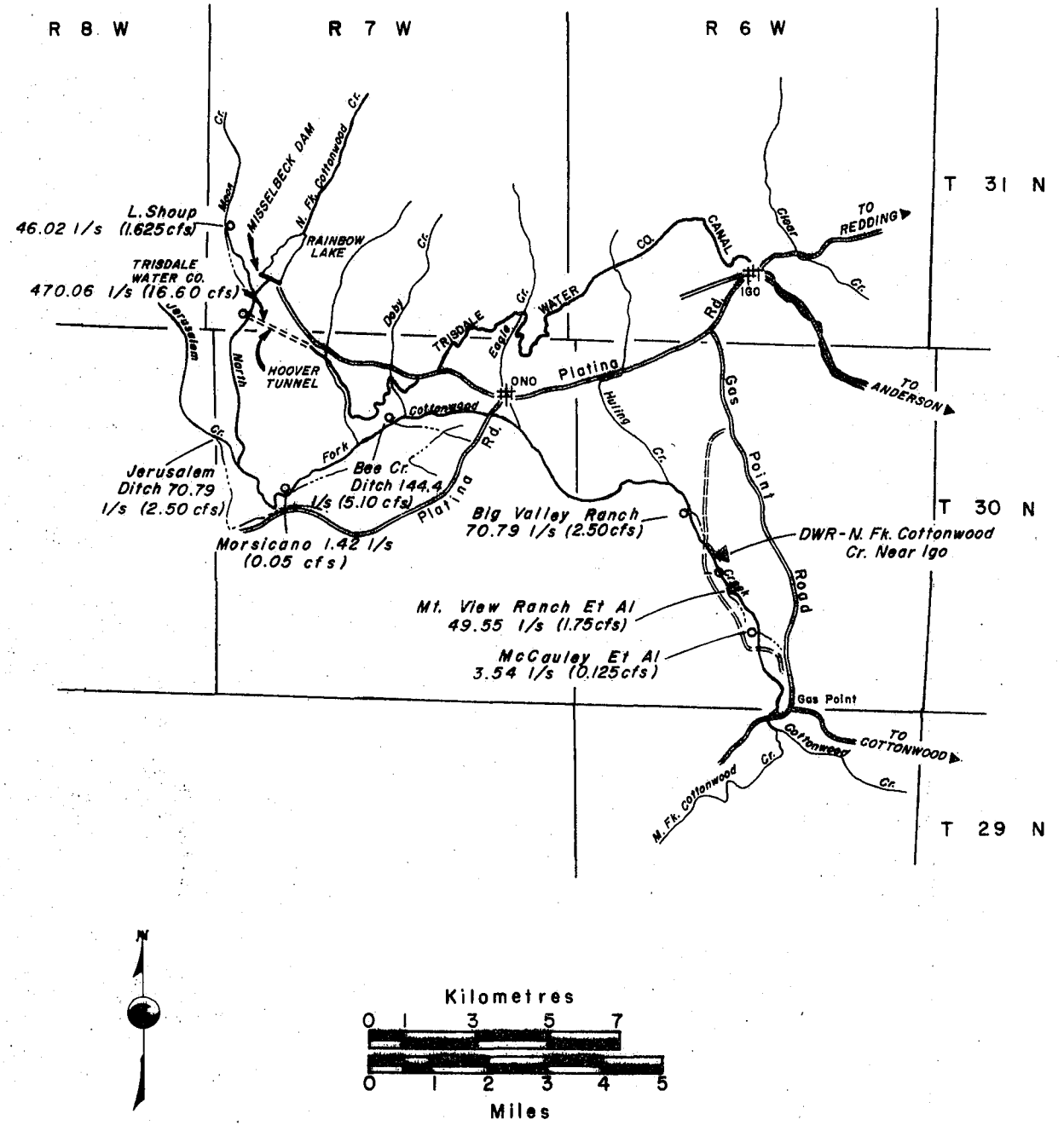
NORTH FORK COTTONWOOD CREEK WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 19

NORTH FORK COTTONWOOD CREEK NEAR IGO

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1	368	13	340	12	765	27	249	8.8	113	4.0	19	0.7	11	0.4	1
2	368	13	340	12	1 270	45	201	7.1	113	4.0	17	0.6	11	0.4	2
3	368	13	312	11	595	21	150	5.3	108	3.8	17	0.6	11	0.4	3
4	340	12	312	11	425	15	136	4.8	105	3.7	14	0.5	11	0.4	4
5	340	12	283	10	312	11	125	4.4	90	3.2	14	0.5	8.5	0.3	5
6	340	12	252	8.9	283	10	113	4.0	85	3.0	14	0.5	11	0.4	6
7	340	12	207	7.3	312	11	93	3.3	99	3.5	14	0.5	11	0.4	7
8	340	12	201	7.1	283	10	87	3.1	93	3.3	14	0.5	11	0.4	8
9	396	14	201	7.1	538	19	93	3.3	96	3.4	14	0.5	11	0.4	9
10	340	12	190	6.7	1 390	49	108	3.8	96	3.4	14	0.5	11	0.4	10
11	278	9.8	178	6.3	2 180	77	116	4.1	93	3.3	14	0.5	8.5	0.3	11
12	252	8.9	159	5.6	1 930	68	113	4.0	99	3.5	14	0.5	8.5	0.3	12
13	278	9.8	153	5.4	1 560	55	99	3.5	102	3.6	17	0.6	8.5	0.3	13
14	312	11	1 130	40	1 300	46	96	3.4	45	1.6	17	0.6	8.5	0.3	14
15	708	25	1 730	61	850	30	87	3.1	36	1.3	17	0.6	8.5	0.3	15
16	1 560	55	1 250	44	821	29	82	2.9	53	1.9	17	0.6	19	0.7	16
17	821	29	156	5.5	708	25	82	2.9	62	2.2	17	0.6	62	2.2	17
18	538	19	116	4.1	708	25	87	3.1	59	2.1	17	0.6	481	17	18
19	481	17	99	3.5	793	28	108	3.8	45	1.6	14	0.5	793	28	19
20	481	17	105	3.7	595	21	113	4.0	39	1.4	14	0.5	850	30	20
21	481	17	93	3.3	510	18	102	3.6	28	1.0	14	0.5	229	8.1	21
22	538	19	96	3.4	510	18	99	3.5	22	0.8	14	0.5	113	4.0	22
23	595	21	99	3.5	595	21	113	4.0	17	0.6	14	0.5	93	3.3	23
24	708	25	105	3.7	623	22	133	4.7	17	0.6	11	0.4	90	3.2	24
25	623	22	156	5.5	453	16	142	5.0	17	0.6	14	0.5	87	3.1	25
26	481	17	142	5.0	821	29	139	4.9	17	0.6	14	0.5	87	3.1	26
27	425	15	119	4.2	765	27	136	4.8	17	0.6	14	0.5	90	3.2	27
28	425	15	116	4.1	510	18	125	4.4	14	0.5	11	0.4	566	20	28
29	396	14	122	4.3	453	16	90	3.2	17	0.6	11	0.4	1 220	43	29
30	396	14	127	4.5	396	14	90	3.2	17	0.6	11	0.4	793	28	30
31	368	13			368	13			19	0.7	11	0.4			31
Mean	474	16.7	296	10.5	762	26.9	117	4.1	59.4	2.1	14.6	0.5	191	6.7	Mean
Volume															Volume
hm	1.270		.770		2.040		.300		.160		.040		.500		hm
AF		1030		622		1650		246		129		31.8		401	AF

Figure 13



DIVERSIONS FROM NORTH FORK COTTONWOOD CREEK WATERMASTER SERVICE AREA

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

The North Fork Pit River service area lies along the west slopes of the Warner Mountains in northeastern Modoc County and extends southward from the Oregon border about 73 kilometres (45 miles) to just south of Alturas.

Eight small independent streams draining the west slope of the Warner Mountains and generally following a westerly direction comprise the major source of water supply. Three of these streams, New Pine, Cottonwood, and Davis Creeks, are tributary to Goose Lake. The other five are tributary to the North Fork Pit River. From north to south these are: Linville, Franklin, Joseph, Thoms, and Parker Creeks.

The North Fork Pit River flows in a southerly direction from the south rim of Goose Lake Basin to its confluence with the South Fork Pit River immediately below Alturas. The basins of Goose Lake and the North Fork Pit River may be considered as completely separate, since the lake has not spilled into the river for nearly 100 years.

The place of use in the northern half of the area lies in a relatively long, narrow, sloping strip extending between the east shore of Goose Lake and the foothills of the Warner Mountains. The places of use in the southern half of the area, which are supplied from the North Fork Pit River and its tributaries, are primarily in the narrow valleys bordering the streams. The elevation of the places of use range from about 1 325 metres (4,350 feet) just below Alturas to about 1 585 m (5,200 feet) at the upper portions on some of the creeks.

Maps of the North Fork Pit River watermaster service area and of the separate stream systems within the area are presented as Figures 14 through 14i, pages 96 through 106.

Basis of Service

Table 20, page 90, briefly outlines the five decrees covering the area and presents data relative to the establishment of watermaster service and water rights.

Water Supply

The water supply is derived primarily from snowmelt for all streams in the North Fork Pit River service area except Linville Creek, which, having a relatively small drainage area, is almost entirely spring fed. After mid-June, the rest of the streams also depend on springs, but diminish rapidly until mid-July, after which the flow remains fairly constant. There are several small reservoirs in the area, but they are used essentially as regulatory storage.

Method of Distribution

Distribution is accomplished by diversion structures in the main channels diverting into ditches which convey the water to its place of use. Wild flooding from small feeder ditches is the common method of application. There is, however, increasing use of sprinkler systems, some directly from ditches with supplemental ground water being added as the surface flow diminishes. Subirrigation by the use of large flashboard dams to raise the water level in the channel is practiced along the North Fork Pit River between Parker Creek and Alturas.

1977 Distribution

Watermaster service in the North Fork Pit River service area was begun on March 15 and continued through September 30. Eldon E. Rinehart, Water Resources Engineering Associate, was the watermaster during this period.

New Pine Creek. The flow in New Pine Creek at the beginning of record on

April 5 was 142 litres per second (5 cfs), which was sufficient to supply about 23 percent of the right under the proration or correlative system of distribution. Despite rainfall in May, the first week of June was the only period when the streamflow equaled 623 l/s (22 cfs), or enough to satisfy all the water rights. From June 8 to the end of the month, the flow gradually diminished to 218 l/s (7.7 cfs), or enough to satisfy about 35 percent of the correlative rights. On July 1, when distribution is based on the priority system, there was sufficient flow to satisfy only the first and second priority allotments. From then until September 30 the flow gradually diminished until only the first priority allotments were met. Due to extremely dry conditions, it was difficult to deliver water to those first priority users at the end of the California Ditch because of the small size of their water rights.

Cottonwood Creek. At the beginning of the watermaster season, flow in Cottonwood Creek was only about 57 l/s (2 cfs) on May 31, or sufficient to meet first through fourth priority allotments. This was the maximum flow recorded and was never sufficient to provide for the fifth and sixth priorities. From June 1 to September 15 the flow diminished to 3 l/s (0.1 cfs), or enough to satisfy only 3 percent of first priority allotments. From September 15 to September 30 the flow increased to about 14 l/s (0.5 cfs), or enough to supply about 14 percent of first priority allotments.

Davis Creek. At the beginning of the watermaster season the flow in Davis Creek was less than 142 l/s (5 cfs), or enough to supply only the first and second priority allotments. Flow gradually increased, due to moderate rainfall in May, and the runoff rose to 510 l/s (18 cfs) on June 1, which was the maximum recorded for the season. This was sufficient to satisfy the first, second, and 40 percent of the third priority allotments. After that, the flow gradually diminished until at the end of the season only the first priority allotments were met.

Linville Creek. In spite of the extremely dry year, spring-fed Linville Creek maintained a remarkably uniform flow throughout the watermaster season. The available water supply in the creek at the start of the season was 68 l/s (2.4 cfs). This remained fairly constant through April and the first part of May, but rose to 79 l/s (2.8 cfs) on May 16, maximum for the season. From then to the end of September the flow gradually diminished to 62 l/s (2.2 cfs), or enough to meet about 56 percent of first priority allotments.

Franklin Creek. The flow in Franklin Creek was sufficient to meet the first, second and about 30 percent of the third priority allotments up to May 23 when the maximum flow for the season, 170 l/s (6 cfs), occurred. From that date until June 25 flow diminished to 45 l/s (1.6 cfs). From then until the end of the season it remained remarkably constant at about 45 l/s (1.6 cfs), or enough to satisfy the first and second priority allotments.

Joseph Creek. At the beginning of the watermaster season the flow in Joseph Creek was sufficient to meet first through third priority allotments. It gradually diminished throughout April and at the end of April was only 82 l/s (2.9 cfs), or enough to meet the first and about 17 percent of second priority allotments. With rain in May, the discharge rose on May 13 to a season high of 396 l/s (14 cfs). After that it diminished to about 17 l/s (0.6 cfs) at the end of the season, or sufficient to meet about 25 percent of first priority allotments.

Thoms Creek. At the beginning of the watermaster season the flow in Thoms Creek was 65 l/s (2.3 cfs), or sufficient to meet the first priority allotments. Flow remained fairly steady until mid-May when it increased to 736 l/s (26 cfs) due to rainfall. After that,

flow diminished rapidly to August 12, when no flow was recorded. The stream remained dry at the recorder for the remainder of the season.

North Fork Pit River. At the beginning of the watermaster season the flow in North Fork Pit River was about 708 l/s (25 cfs), which was sufficient to satisfy first and second priority allotments. May rains brought it to a maximum for the season of 1 472 l/s (52 cfs) on May 18, which was sufficient to satisfy all rights. From that date it gradually diminished to 37 l/s (1.3 cfs) on July 31. The flow remained fairly constant from then to the end of the season, when it was 17 l/s (0.6 cfs), or enough to satisfy only about 8 percent of first priority allotments.

Parker Creek. Streamflow in Parker Creek was sufficient to meet all priorities from April 12 until June 11. From then it diminished rapidly to 125 l/s (4.4 cfs) on June 30. This latter flow was sufficient to satisfy the first and 38 percent of second priority allotments. From that date it further diminished to a low of 31 l/s (1.1 cfs) on September 7, which was sufficient to satisfy only the first priority allotment. Due to cooler weather the flow then gradually increased to 144 l/s (5.1 cfs) on September 30, sufficient to meet requirements of the first and 46 percent of second priority allotments.

Shields Creek. Streamflow in Shields Creek was sufficient to satisfy all priorities through June 6, after which it gradually diminished to 42 l/s (1.5 cfs) on July 10, sufficient to satisfy the first and 32 percent of the second priority allotments. The flow then remained remarkably constant for the rest of the watermaster season.

DECREES AND RELATED DATA - NORTH FORK PIT RIVER SERVICE AREA

Stream	Modoc County Superior Court Decree No.	Date	Type[a/]	Service Area Created	No. of Water Right Owners	Total l/s	Total Cfs	Remarks
New Pine Creek	2821	6-14-32	CR	6-22-32	21	628.07	22.18	Decree does not determine town users rights, but by agreement they may divert from 7 a.m. Monday until 7 a.m. Tuesday, further modified to a continuous flow used in rotation.
Cottonwood Creek	2344	5-03-40	CR	12-13-40	5	434.66	15.35	When water for Diversion No. 3 is insufficient to reach the area of use, it is diverted at Diversion No. 4
Davis Creek	2782	6-30-32	CR	7-13-32	19	1 492.31	52.70	4 priorities, 4-1 to 9-15. Some rights vary according to flow available. Most 1st & 2nd priorities are year-round. One second priority right is for 11.33 l/s (0.40 cfs) export for Roberts Creek.
					2[b/]			Appropriative Permit 9825 allows diversion from North Fork Davis Creek and License 10549 to divert from Davis Creek, both for the period from 10-1 to 5-1.
Franklin Creek	3118	9-08-33	CR	9-14-33	4	330.18	11.66	4 priorities. The 1st priority and all 2nd priority rights are year-round, except one, which is equal to all the others 41.34 l/s (1.46 cfs), and is for the period 9-15 to 3-31 annually. Third and fourth priorities are for 4-1 to 9-30 each year.
North Fork Pit River	4074	12-14-34	S	12-18-39	10	1 464.84	51.73	5 priorities, 4-1 to 9-30. Dorris Reservoir water diverted through Parker Creek ditch on Parker Creek. 4th and 5th priorities are special class.
Linville	4074	12-14-39	S	12-18-39	3	235.03	8.30	2 priorities.
Joseph	4074	12-14-39	S	12-18-39	6	339.24	11.98	4 priorities, 4-1 to 9-30. Diversions on south side of stream, with the exception of No. 26, are on net consumptive use basis.
Parker	4074	12-14-39	S	12-18-39	7	511.69	18.07	4 priorities, 4-1 to 9-30. Diversion to Dorris Reservoir shown on North Fork Pit River schedule is made at No. 120, Parker Creek Ditch.
Shields	4074	12-14-39	S	12-18-39	5	212.38	7.50	4 priorities, 4-1 to 9-30.
Thoms	4074	12-14-39	S	12-18-39	9	182.36	6.44	3 priorities, 4-1 to 9-30.
						266.18	9.40	(141.58 l/s) 5.0 cfs export to Cedar Creek; and (124.59 l/s) 4.40 cfs export to Stony Canyon.
Gleason	4074	12-14-39	S	12-18-39	4	126.01	4.45	5 priorities.

a/ S-Statutory, CR-Court Reference.
b/ Appropriative rights, junior to the decreed rights.

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 21

NEW PINE CREEK BELOW SCHROEDER'S

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1					190	6.7	651	23	218	7.7	147	5.2	142	5.0	1
2					190	6.7	680	24	227	8.0	147	5.2	142	5.0	2
3					204	7.2	680	24	218	7.7	147	5.2	142	5.0	3
4					190	6.7	651	23	218	7.7	147	5.2	142	5.0	4
5			142	5.0*	190	6.7	623	22	218	7.7	147	5.2	142	5.0	5
6			142	5.0	190	6.7	623	22	218	7.7	147	5.2	139	4.9	6
7			144	5.1	193	7.0	623	22	210	7.4	144	5.1	139	4.9	7
8			150	5.3	204	7.2	595	21	210	7.4	144	5.1	139	4.9	8
9			150	5.3	204	7.2	538	19	210	7.4	144	5.1	139	4.9	9
10			147	5.2	210	7.4	481	17	218	7.7	144	5.1	139	4.9	10
11			144	5.1	218	7.7	453	16	218	7.7	144	5.1	139	4.9	11
12			144	5.1	218	7.7	396	14	218	7.7	142	5.0	139	4.9	12
13			147	5.2	246	8.7	368	13	218	7.7	142	5.0	139	4.9	13
14			147	5.2	283	10	340	12	210	7.4	142	5.0	139	4.9	14
15			144	5.1	283	10	312	11	204	7.2	142	5.0	139	4.9	15
16			147	5.2	263	9.3	283	10	184	6.5	142	5.0	136	4.8	16
17			147	5.2	246	8.7	278	9.8	184	6.5	142	5.0	144	5.1	17
18			147	5.2	238	8.4	278	9.8	184	6.5	142	5.0	142	5.0	18
19			147	5.2	246	8.7	255	9.0	184	6.5	142	5.0	139	4.9	19
20			156	5.5	278	9.8	246	8.7	176	6.2	142	5.0	142	5.0	20
21			161	5.7	283	10	238	8.4	167	5.9	142	5.0	142	5.0	21
22			167	5.9	340	12	227	8.0	161	5.7	142	5.0	142	5.0	22
23			176	6.2	368	13	227	8.0	161	5.7	142	5.0	139	4.9	23
24			176	6.2	396	14	218	7.7	161	5.7	142	5.0	139	4.9	24
25			184	6.5	396	14	218	7.7	161	5.7	142	5.0	142	5.0	25
26			184	6.5	425	15	210	7.4	156	5.5	142	5.0	142	5.0	26
27			184	6.5	425	15	210	7.4	156	5.5	142	5.0	142	5.0	27
28			190	6.7	396	14	204	7.2	156	5.5	142	5.0	147	5.2	28
29			184	6.5	396	14	210	7.4	150	5.3	142	5.0	218	7.7	29
30			184	6.5	396	14	218	7.7	150	5.3	142	5.0	184	6.5	30
31					425	15			150	5.3	142	5.0			31
Mean			138	4.9	282	9.9	384	13.6	189	6.7	143	5.1	145	5.1	Mean
Volume															Volume
hm			.360		.750		1.000		.510		.380		.370		hm
AF				289		611		807		411		311		304	AF

* Beginning of Record

TABLE 22

COTTONWOOD CREEK BELOW LARKIN GARDEN DITCH

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1					51	1.8	283	10	48	1.7	28	1.0	5.6	0.2	1
2					53	1.9	263	9.3	48	1.7	25	0.9	5.6	0.2	2
3					56	2.0	258	9.1	45	1.6	22	0.8	5.6	0.2	3
4			56	2.0*	56	2.0	241	8.5	45	1.6	17	0.6	5.6	0.2	4
5			56	2.0	59	2.1	207	7.3	45	1.6	14	0.5	5.6	0.2	5
6			62	2.2	62	2.2	173	6.1	45	1.6	11	0.4	5.6	0.2	6
7			65	2.3	65	2.3	161	5.7	45	1.6	11	0.4	5.6	0.2	7
8			65	2.3	65	2.3	153	5.4	45	1.6	11	0.4	5.6	0.2	8
9			65	2.3	76	2.7	144	5.1	42	1.5	11	0.4	2.8	0.1	9
10			62	2.2	76	2.7	122	4.3	42	1.5	5.6	0.2	2.8	0.1	10
11			62	2.2	82	2.9	116	4.1	42	1.5	5.6	0.2	2.8	0.1	11
12			62	2.2	82	2.9	113	4.0	42	1.5	5.6	0.2	2.8	0.1	12
13			62	2.2	85	3.0	105	3.7	39	1.4	5.6	0.2	2.8	0.1	13
14			62	2.2	90	3.2	99	3.5	39	1.4	5.6	0.2	2.8	0.1	14
15			62	2.2	87	3.1	87	3.1	39	1.4	5.6	0.2	2.8	0.1	15
16			62	2.2	85	3.0	85	3.0	42	1.5	5.6	0.2	2.8	0.1	16
17			62	2.2	87	3.1	76	2.7	42	1.5	5.6	0.2	5.6	0.2	17
18			62	2.2	87	3.1	68	2.4	42	1.5	5.6	0.2	5.6	0.2	18
19			62	2.2	90	3.2	56	2.0	42	1.5	8.5	0.3	8.5	0.3	19
20			93	3.3	90	3.2	51	1.8	39	1.4	8.5	0.3	8.5	0.3	20
21			59	2.1	96	3.4	45	1.6	39	1.4	8.5	0.3	8.5	0.3	21
22			65	2.3	99	3.5	51	1.8	36	1.3	8.5	0.3	8.5	0.3	22
23			62	2.2	96	3.4	56	2.0	36	1.3	8.5	0.3	11	0.4	23
24			59	2.1	96	3.4	59	2.1	36	1.3	8.5	0.3	11	0.4	24
25			59	2.1	159	5.6	56	2.0	36	1.3	8.5	0.3	8.5	0.3	25
26			53	1.9	193	6.8	53	1.9	34	1.2	8.5	0.3	8.5	0.3	26
27			53	1.9	207	7.3	51	1.8	34	1.2	8.5	0.3	8.5	0.3	27
28			51	1.8	244	8.6	51	1.8	31	1.1	8.5	0.3	11	0.4	28
29			48	1.7	283	10	48	1.7	31	1.1	8.5	0.3	14	0.5	29
30			48	1.7	283	10	48	1.7	31	1.1	5.6	0.2	14	0.5	30
31					312	11			31	1.1	5.6	0.2			31
Mean			54.9	1.9	115	4.1	113	4.0	40.2	1.4	10.0	0.4	6.7	0.2	Mean
Volume															Volume
hm			.140		.310		.290		.110		.030		.020		hm
AF				115		249		237		37.2		21.6		14.1	AF

* Beginning of Record

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 23

DAVIS CREEK ABOVE DIVERSION NO. 4

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1					207	7.3	510	18	156	5.5	79	2.8	93	3.3	1
2					198	7.0	510	18	156	5.5	79	2.8	93	3.3	2
3					190	6.7	481	17	156	5.5	87	3.1	87	3.1	3
4			130	4.6*	173	6.1	425	15	147	5.2	79	2.8	87	3.1	4
5			130	4.6	173	6.1	425	15	147	5.2	87	3.1	87	3.1	5
6			139	4.9	173	6.1	396	14	147	5.2	73	2.6	79	2.8	6
7			139	4.9	173	6.1	396	14	139	4.9	93	3.3	79	2.8	7
8			147	5.2	173	6.1	368	13	139	4.9	93	3.3	68	2.4	8
9			147	5.2	215	7.6	312	11	130	4.6	93	3.3	79	2.8	9
10			156	5.5	275	9.7	340	12	116	4.1	93	3.3	79	2.8	10
11			156	5.5	312	11	312	11	116	4.1	93	3.3	93	3.3	11
12			156	5.5	312	11	283	10	116	4.1	93	3.3	93	3.3	12
13			156	5.5	312	11	255	9.0	108	3.8	87	3.1	93	3.3	13
14			156	5.5	312	11	235	8.3	108	3.8	79	2.8	93	3.3	14
15			164	5.8	283	10	215	7.6	102	3.6	73	2.6	93	3.3	15
16			173	6.1	275	9.7	190	6.7	93	3.3	79	2.8	102	3.6	16
17			164	5.8	283	10	190	6.7	87	3.1	79	2.8	139	4.9	17
18			147	5.2	312	11	198	7.0	87	3.1	79	2.8	147	5.2	18
19			139	4.9	312	11	207	7.3	87	3.1	79	2.8	156	5.5	19
20			139	4.9	340	12	244	8.6	87	3.1	79	2.8	164	5.8	20
21			139	4.9	368	13	227	8.0	93	3.3	87	3.1	173	6.1	21
22			164	5.8	425	15	198	7.0	93	3.3	93	3.3	173	6.1	22
23			227	8.0	453	16	173	6.1	93	3.3	93	3.3	147	5.2	23
24			235	8.3	425	15	156	5.5	79	2.8	93	3.3	156	5.5	24
25			244	8.6	396	14	156	5.5	87	3.1	102	3.6	139	4.9	25
26			244	8.6	368	13	173	6.1	93	3.3	79	2.8	139	4.9	26
27			227	8.0	368	13	173	6.1	93	3.3	122	4.3	139	4.9	27
28			227	8.0	368	13	173	6.1	93	3.3	130	4.6	173	6.1	28
29			215	7.6	368	13	156	5.5	93	3.3	130	4.6	227	8.0	29
30			207	7.3	425	15	156	5.5	93	3.3	130	4.6	156	5.5	30
31					425	15			87	3.1	108	3.8			31
Mean			156	5.5	303	10.7	274	9.7	111	3.9	92.1	3.3	121	4.3	Mean
Volume															Volume
hm			.400		.810		.710		.300		.250		.310		hm
AF			327		657		576		240		200		254		AF

* Beginning of Record

TABLE 24

LINVILLE CREEK AT OLD POWERHOUSE

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1					62	2.2	65	2.3	62	2.2	62	2.2	56	2.0	1
2					62	2.2	65	2.3	56	2.0	62	2.2	56	2.0	2
3					56	2.0	65	2.3	56	2.0	62	2.2	56	2.0	3
4					56	2.0	65	2.3	56	2.0	62	2.2	56	2.0	4
5					56	2.0	65	2.3	56	2.0	56	2.0	56	2.0	5
6					56	2.0	65	2.3	56	2.0	56	2.0	56	2.0	6
7					56	2.0	65	2.3	56	2.0	56	2.0	62	2.2	7
8					62	2.2	62	2.2	56	2.0	56	2.0	62	2.2	8
9					65	2.3	62	2.2	56	2.0	56	2.0	62	2.2	9
10					68	2.4	62	2.2	56	2.0	56	2.0	62	2.2	10
11					68	2.4	62	2.2	56	2.0	56	2.0	62	2.2	11
12					70	2.5	62	2.2	62	2.2	56	2.0	62	2.2	12
13					73	2.6	62	2.2	62	2.2	56	2.0	62	2.2	13
14			68	2.4*	73	2.6	62	2.2	62	2.2	56	2.0	62	2.2	14
15			68	2.4	76	2.7	62	2.2	62	2.2	56	2.0	62	2.2	15
16			68	2.4	79	2.8	62	2.2	62	2.2	56	2.0	62	2.2	16
17			65	2.3	76	2.7	62	2.2	62	2.2	56	2.0	62	2.2	17
18			65	2.3	76	2.7	62	2.2	62	2.2	56	2.0	62	2.2	18
19			65	2.3	73	2.6	62	2.2	65	2.3	56	2.0	62	2.2	19
20			62	2.2	73	2.6	62	2.2	65	2.3	56	2.0	62	2.2	20
21			62	2.2	73	2.6	62	2.2	65	2.3	56	2.0	62	2.2	21
22			62	2.2	70	2.5	62	2.2	65	2.3	56	2.0	62	2.2	22
23			62	2.2	70	2.5	62	2.2	65	2.3	56	2.0	62	2.2	23
24			56	2.0	70	2.5	56	2.0	65	2.3	56	2.0	62	2.2	24
25			56	2.0	68	2.4	56	2.0	62	2.2	56	2.0	62	2.2	25
26			56	2.0	65	2.3	56	2.0	62	2.2	56	2.0	56	2.0	26
27			62	2.2	65	2.3	56	2.0	62	2.2	56	2.0	62	2.2	27
28			62	2.2	65	2.3	56	2.0	62	2.2	56	2.0	65	2.3	28
29			62	2.2	65	2.3	62	2.2	62	2.2	56	2.0	62	2.2	29
30			62	2.2	65	2.3	62	2.2	62	2.2	56	2.0	56	2.0	30
31					65	2.3			62	2.2	56	2.0			31
Mean			35.6	1.3	67.4	2.4	62.0	2.2	61.0	2.2	57.3	2.0	60.9	2.1	Mean
Volume															Volume
hm			.090		.180		.160		.160		.150		.160		hm
AF			74.7		146		130		132		124		128		AF

* Beginning of Record

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 25

FRANKLIN CREEK ABOVE DIVERSIONS

Day	March l/s	March cfs	April l/s	April cfs	May l/s	May cfs	June l/s	June cfs	July l/s	July cfs	August l/s	August cfs	September l/s	September cfs	Day
1					90	3.2	127	4.5	45	1.6	45	1.6	45	1.6	1
2					93	3.3	127	4.5	45	1.6	45	1.6	45	1.6	2
3					102	3.6	119	4.2	45	1.6	45	1.6	45	1.6	3
4					96	3.4	110	3.9	45	1.6	45	1.6	45	1.6	4
5			119	4.2*	102	3.6	108	3.8	45	1.6	45	1.6	45	1.6	5
6			130	4.6	105	3.7	105	3.7	45	1.6	45	1.6	45	1.6	6
7			139	4.9	110	3.9	93	3.3	48	1.7	45	1.6	45	1.6	7
8			122	4.3	119	4.2	90	3.2	48	1.7	45	1.6	45	1.6	8
9			119	4.2	159	5.6	82	2.9	48	1.7	45	1.6	48	1.7	9
10			110	3.9	142	5.0	82	2.9	45	1.6	45	1.6	45	1.6	10
11			93	3.3	133	4.7	76	2.7	45	1.6	45	1.6	45	1.6	11
12			102	3.6	127	4.5	76	2.7	45	1.6	45	1.6	45	1.6	12
13			110	3.9	119	4.2	73	2.6	45	1.6	45	1.6	48	1.7	13
14			105	3.7	150	5.3	70	2.5	45	1.6	45	1.6	48	1.7	14
15			102	3.6	142	5.0	70	2.5	45	1.6	45	1.6	48	1.7	15
16			105	3.7	130	4.6	62	2.2	45	1.6	45	1.6	48	1.7	16
17			102	3.6	130	4.6	62	2.2	45	1.6	45	1.6	48	1.7	17
18			96	3.4	127	4.5	62	2.2	45	1.6	45	1.6	56	2.0	18
19			96	3.4	119	4.2	68	2.4	45	1.6	45	1.6	56	2.0	19
20			93	3.3	122	4.3	65	2.3	45	1.6	45	1.6	56	2.0	20
21			90	3.2	139	4.9	62	2.2	45	1.6	45	1.6	56	2.0	21
22			90	3.2	159	5.6	62	2.2	45	1.6	45	1.6	56	2.0	22
23			87	3.1	170	6.0	62	2.2	45	1.6	45	1.6	59	2.1	23
24			87	3.1	150	5.3	48	1.7	45	1.6	51	1.8	62	2.2	24
25			90	3.2	150	5.3	45	1.6	45	1.6	59	2.1	62	2.2	25
26			82	2.9	159	5.6	45	1.6	45	1.6	53	1.9	62	2.2	26
27			82	2.9	153	5.4	45	1.6	45	1.6	51	1.8	62	2.2	27
28			82	2.9	142	5.0	45	1.6	45	1.6	51	1.8	93	3.3	28
29			90	3.2	139	4.9	51	1.8	45	1.6	51	1.8	87	3.1	29
30			87	3.1	130	4.6	45	1.6	45	1.6	51	1.8	68	2.4	30
31					130	4.6			45	1.6	48	1.7			31
Mean			87.2	3.1	130	4.6	74.8	2.6	45.6	1.6	47.0	1.7	54.3	1.9	Mean
Volume hm			.230		.350		.190		.120		.130		.140		Volume hm
AF				183		283		157		98.9		102		114	AF

* Beginning of Record

TABLE 26

JOSEPH CREEK BELOW COUCH CREEK

Day	March l/s	March cfs	April l/s	April cfs	May l/s	May cfs	June l/s	June cfs	July l/s	July cfs	August l/s	August cfs	September l/s	September cfs	Day
1					82	2.9	181	6.4	45	1.6	14	0.5	17	0.6	1
2					85	3.0	187	6.6	65	2.3	14	0.5	17	0.6	2
3					87	3.1	181	6.4	62	2.2	14	0.5	17	0.6	3
4					90	3.2	176	6.2	45	1.6	17	0.6	17	0.6	4
5			195	6.9*	102	3.6	170	6.0	45	1.6	22	0.8	17	0.6	5
6			195	6.9	113	4.0	170	6.0	42	1.5	22	0.8	17	0.6	6
7			255	9.0	113	4.0	167	5.9	36	1.3	22	0.8	17	0.6	7
8			229	8.1	96	3.4	164	5.8	34	1.2	22	0.8	17	0.6	8
9			195	6.9	170	6.0	161	5.7	34	1.2	22	0.8	17	0.6	9
10			170	6.0	181	6.4	156	5.5	31	1.1	17	0.6	17	0.6	10
11			167	5.9	258	9.1	156	5.5	31	1.1	17	0.6	17	0.6	11
12			161	5.7	312	11	150	5.3	28	1.0	17	0.6	17	0.6	12
13			153	5.4	396	14	150	5.3	31	1.1	17	0.6	17	0.6	13
14			139	4.9	258	9.1	150	5.3	31	1.1	17	0.6	17	0.6	14
15			125	4.4	249	8.8	122	4.3	31	1.1	17	0.6	17	0.6	15
16			122	4.3	249	8.8	102	3.6	28	1.0	17	0.6	17	0.6	16
17			113	4.0	255	9.0	87	3.1	25	0.9	17	0.6	17	0.6	17
18			102	3.6	249	8.8	90	3.2	25	0.9	17	0.6	34	1.2	18
19			87	3.1	221	7.8	96	3.4	25	0.9	17	0.6	31	1.1	19
20			82	2.9	212	7.5	108	3.8	22	0.8	17	0.6	36	1.3	20
21			85	3.0	249	8.8	87	3.1	19	0.7	17	0.6	36	1.3	21
22			87	3.1	255	9.0	76	2.7	17	0.6	17	0.6	36	1.3	22
23			87	3.1	258	9.1	70	2.5	17	0.6	17	0.6	36	1.3	23
24			85	3.0	255	9.0	56	2.0	17	0.6	17	0.6	36	1.3	24
25			82	2.9	229	8.1	53	1.9	17	0.6	22	0.8	31	1.1	25
26			79	2.8	255	9.0	53	1.9	14	0.5	22	0.8	28	1.0	26
27			82	2.9	255	9.0	36	1.3	14	0.5	22	0.8	28	1.0	27
28			82	2.9	244	8.6	25	0.9	14	0.5	22	0.8	68	2.4	28
29			85	3.0	221	7.8	25	0.9	14	0.5	17	0.6	102	3.6	29
30			82	2.9	207	7.3	25	0.9	14	0.5	17	0.6	45	1.6	30
31					195	6.9			14	0.5	17	0.6			31
Mean			111	3.9	207	7.3	115	4.0	28.9	1.0	18.4	0.6	28.0	1.0	Mean
Volume hm			.290		.550		.300		.080		.050		.070		Volume hm
AF				233		448		241		62.7		39.9		58.9	AF

* Beginning of Record

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 27

NORTH FORK PIT RIVER BELOW THOMS CREEK

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1					821	29	566	20	261	9.2	31	1.1	8.5	0.3	1
2					935	33	481	17	283	10	25	0.9	11	0.4	2
3					991	35	453	16	312	11	25	0.9	11	0.4	3
4			708	25*	1 020	36	453	16	275	9.7	25	0.9	11	0.4	4
5			651	23	1 130	40	425	15	229	8.1	22	0.8	8.5	0.3	5
6			623	22	1 160	41	396	14	215	7.6	19	0.7	8.5	0.3	6
7			595	21	1 080	38	425	15	212	7.5	17	0.6	11	0.4	7
8			651	23	1 050	37	368	13	207	7.3	14	0.5	11	0.4	8
9			680	24	1 100	39	340	12	193	6.8	11	0.4	14	0.5	9
10			651	23	1 190	42	368	13	181	6.4	8.5	0.3	14	0.5	10
11			651	23	1 160	41	368	13	176	6.2	8.5	0.3	14	0.5	11
12			736	26	1 220	43	396	14	173	6.1	8.5	0.3	11	0.4	12
13			821	29	1 270	45	368	13	167	5.9	8.5	0.3	11	0.4	13
14			850	30	1 330	47	340	12	147	5.2	5.6	0.2	11	0.4	14
15			821	29	1 360	48	340	12	133	4.7	5.6	0.2	11	0.4	15
16			793	28	1 360	48	368	13	122	4.3	5.6	0.2	14	0.5	16
17			736	26	1 420	50	340	12	116	4.1	8.5	0.3	14	0.5	17
18			793	28	1 470	52	340	12	110	3.9	8.5	0.3	17	0.6	18
19			850	30	1 440	51	312	11	108	3.8	8.5	0.3	14	0.5	19
20			906	32	1 390	49	312	11	102	3.6	5.6	0.2	14	0.5	20
21			935	33	1 270	45	312	11	93	3.3	5.6	0.2	14	0.5	21
22			963	34	1 220	43	283	10	82	2.9	5.6	0.2	17	0.6	22
23			906	32	1 250	44	283	10	70	2.5	5.6	0.2	14	0.5	23
24			878	31	1 220	43	278	9.8	62	2.2	8.5	0.3	14	0.5	24
25			878	31	1 190	42	272	9.6	59	2.1	8.5	0.3	14	0.5	25
26			850	30	1 130	40	269	9.5	51	1.8	8.5	0.3	17	0.6	26
27			878	31	1 050	37	263	9.3	45	1.6	5.6	0.2	17	0.6	27
28			850	30	935	33	258	9.1	42	1.5	5.6	0.2	19	0.7	28
29			821	29	850	30	246	8.7	42	1.5	5.6	0.2	19	0.7	29
30			821	29	765	27	238	8.4	39	1.4	5.6	0.2	17	0.6	30
31					651	23			36	1.3	8.5	0.3			31
Mean			710	25.1	1 140	40.4	349	12.3	140	5.0	11.2	0.4	13.6	0.5	Mean
Volume															Volume
hm			1.840		3.060		.900		.380		.030		.040		hm
AF				1490		2480		732		304		24.4		28.6	AF

* Beginning of Record

TABLE 28

THOMS CREEK AT CEDARVILLE-ALTURAS HIGHWAY

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1					70	2.5	170	6.0	51	1.8	34	1.2			1
2					39	1.4	396	14	53	1.9	22	0.8			2
3					51	1.8	340	12	53	1.9	22	0.8			3
4			65	2.3*	51	1.8	246	8.7	51	1.8	14	0.5			4
5			70	2.5	42	1.5	170	6.0	62	2.2	11	0.4			5
6			70	2.5	39	1.4	125	4.4	70	2.5	11	0.4			6
7			65	2.3	42	1.5	116	4.1	65	2.3	8.5	0.3			7
8			76	2.7	39	1.4	108	3.8	59	2.1	5.6	0.2			8
9			79	2.8	39	1.4	102	3.6	70	2.5	5.6	0.2			9
10			70	2.5	36	1.3	102	3.6	76	2.7	2.8	0.1			10
11			65	2.3	34	1.2	93	3.3	76	2.7	2.8	0.1**			11
12			70	2.5	39	1.4	87	3.1	70	2.5					12
13			70	2.5	65	2.3	82	2.9	65	2.3					13
14			65	2.3	96	3.4	79	2.8	70	2.5					14
15			62	2.2	210	7.4	76	2.7	70	2.5					15
16			65	2.3	241	8.5	76	2.7	65	2.3					16
17			93	3.3	252	8.9	70	2.5	62	2.2					17
18			93	3.3	283	10	70	2.5	62	2.2					18
19			82	2.9	368	13	70	2.5	53	1.9					19
20			51	1.8	481	17	70	2.5	51	1.8					20
21			59	2.1	651	23	70	2.5	45	1.6					21
22			59	2.1	708	25	62	2.2	42	1.5					22
23			62	2.2	736	26	51	1.8	42	1.5					23
24			59	2.1	623	22	51	1.8	45	1.6					24
25			70	2.5	595	21	59	2.1	45	1.6					25
26			65	2.3	595	21	45	1.6	39	1.4					26
27			62	2.2	623	22	45	1.6	42	1.5					27
28			59	2.1	538	19	53	1.9	42	1.5					28
29			76	2.7	510	18	59	2.1	42	1.5					29
30			79	2.8	453	16	59	2.1	39	1.4					30
31					481	17			39	1.4					31
Mean			62.4	2.2	291	10.3	107	3.8	55.8	2.0	4.6	0.2			Mean
Volume															Volume
hm			.160		.780		.280		.150		.010				hm
AF				131		633		225		121		9.9			AF

* Beginning of Record
** End of Record

NORTH FORK PIT RIVER WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 29

PARKER CREEK AT FOGARTY RANCH

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1			45	1.6	255	9.0	595	21	156	5.5	73	2.6	45	1.6	1
2			45	1.6	340	12	538	19	167	5.9	68	2.4	45	1.6	2
3			62	2.2	312	11	538	19	164	5.8	65	2.3	45	1.6	3
4			93	3.3	312	11	510	18	156	5.5	68	2.4	45	1.6	4
5			255	9.0	312	11	510	18	159	5.6	70	2.5	45	1.6	5
6			340	12	340	12	566	20	156	5.5	68	2.4	45	1.6	6
7			340	12	340	12	765	27	156	5.5	68	2.4	31	1.1	7
8			312	11	312	11	651	23	147	5.2	68	2.4	39	1.4	8
9			312	11	736	26	680	24	147	5.2	68	2.4	45	1.6	9
10			340	12	1 330	47	510	18	139	4.9	68	2.4	45	1.6	10
11			368	13	1 130	40	425	15	136	4.8	65	2.3	45	1.6	11
12			425	15	1 130	40	255	9.0	133	4.7	62	2.2	48	1.7	12
13			453	16	1 470	52	255	9.0	125	4.4	56	2.0	51	1.8	13
14			255	9.0	2 550	90	187	6.6	119	4.2	62	2.2	56	2.0	14
15			340	12	1 760	62	164	5.8	116	4.1	65	2.3	65	2.3	15
16			425	15	1 300	46	147	5.2	113	4.0	68	2.4	87	3.1	16
17			425	15	1 760	62	133	4.7	108	3.8	70	2.5	108	3.8	17
18			340	12	1 900	67	127	4.5	105	3.7	73	2.6	122	4.3	18
19			283	10	2 210	78	127	4.5	102	3.6	70	2.5	122	4.3	19
20			255	9.0	2 040	72	127	4.5	102	3.6	65	2.3	122	4.3	20
21	62	2.2*	255	9.0	2 040	72	125	4.4	99	3.5	65	2.3	122	4.3	21
22	93	3.3	255	9.0	1 760	62	119	4.2	93	3.3	68	2.4	122	4.3	22
23	70	2.5	255	9.0	1 610	57	119	4.2	93	3.3	68	2.4	122	4.3	23
24	70	2.5	255	9.0	1 330	47	119	4.2	93	3.3	76	2.7	119	4.2	24
25	56	2.0	221	7.8	1 050	37	125	4.4	87	3.1	87	3.1	116	4.1	25
26	53	1.9	221	7.8	1 050	37	119	4.2	87	3.1	87	3.1	116	4.1	26
27	51	1.8	204	7.2	963	34	119	4.2	96	3.4	87	3.1	116	4.1	27
28	48	1.7	170	6.0	906	32	125	4.4	82	2.9	85	3.0	122	4.3	28
29	45	1.6	159	5.6	821	29	125	4.4	76	2.7	79	2.8	139	4.9	29
30	45	1.6	164	5.8	736	26	125	4.4	82	2.9	70	2.5	144	5.1	30
31	45	1.6			651	23			79	2.8	51	1.8			31
Mean	20.7	0.7	262	9.3	1 120	39.6	301	10.6	119	4.2	70.1	2.5	83.3	2.9	Mean
Volume															Volume
hm	.060		.680		3.000		.780		.320		.190		.220		hm
AF		45.0		551		2430		632		257		152		175	AF

* Beginning of Record

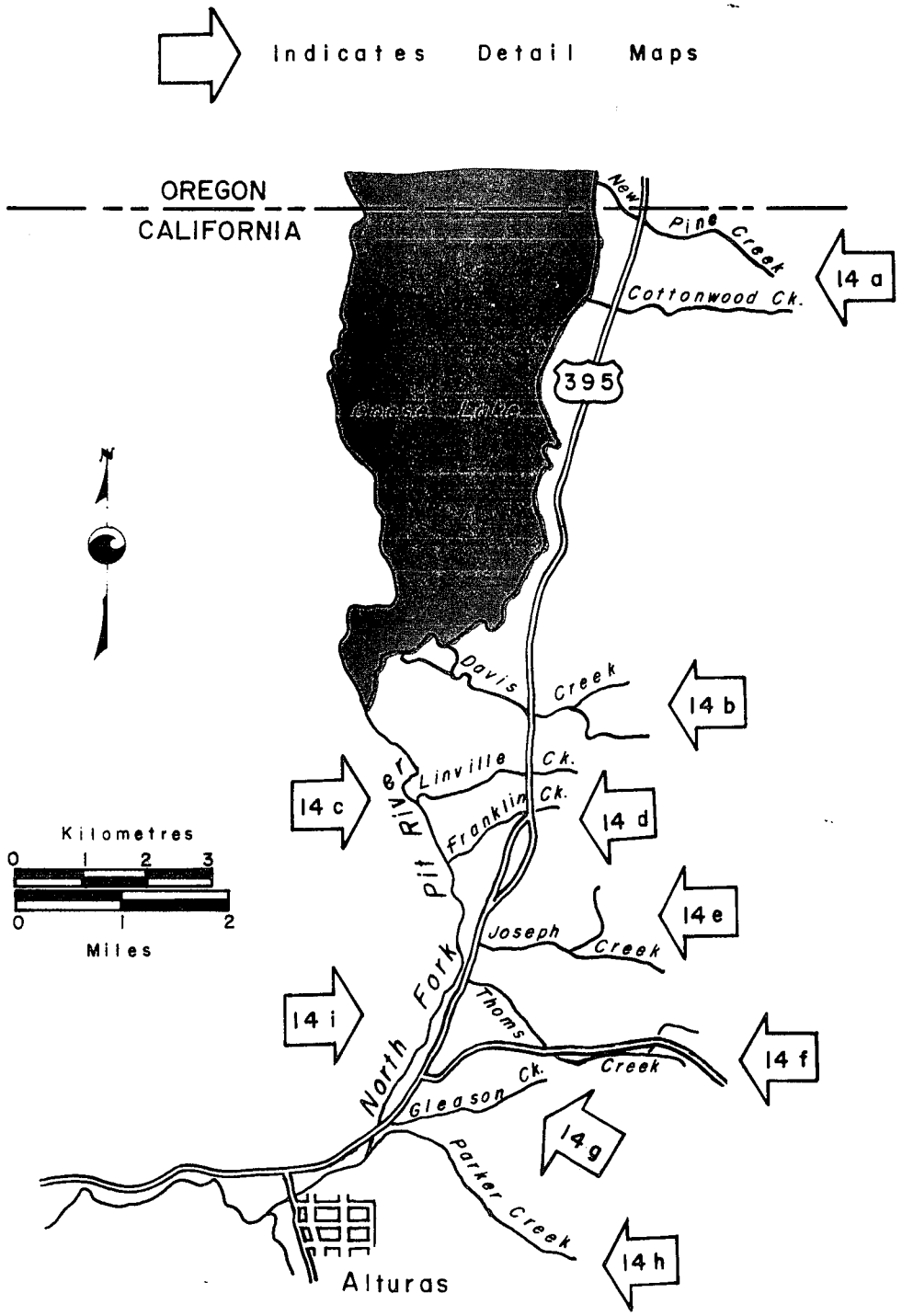
TABLE 30

SHIELDS CREEK BELOW PEPPERDINE RANCH

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1					93	3.3	110	3.9	56	2.0	42	1.5	39	1.4	1
2					93	3.3	122	4.3	56	2.0	42	1.5	34	1.2	2
3					93	3.3	122	4.3	53	1.9	42	1.5	34	1.2	3
4					93	3.3	122	4.3	53	1.9	42	1.5	34	1.2	4
5					93	3.3	122	4.3	53	1.9	42	1.5	34	1.2	5
6					99	3.5	110	3.9	48	1.7	42	1.5	39	1.4	6
7					99	3.5	102	3.6	48	1.7	42	1.5	39	1.4	7
8					105	3.7	93	3.3	48	1.7	42	1.5	34	1.2	8
9					110	3.9	76	2.7	48	1.7	42	1.5	34	1.2	9
10					116	4.1	68	2.4	42	1.5	42	1.5	34	1.2	10
11					110	3.9	62	2.2	42	1.5	42	1.5	31	1.1	11
12					122	4.3	56	2.0	42	1.5	42	1.5	31	1.1	12
13					147	5.2	42	1.5	42	1.5	42	1.5	31	1.1	13
14					156	5.5	48	1.7	42	1.5	42	1.5	31	1.1	14
15					156	5.5	56	2.0	42	1.5	42	1.5	34	1.2	15
16					142	5.0	56	2.0	48	1.7	42	1.5	39	1.4	16
17			93	3.3*	136	4.8	56	2.0	42	1.5	42	1.5	39	1.4	17
18			93	3.3	122	4.3	56	2.0	42	1.5	42	1.5	34	1.2	18
19			93	3.3	122	4.3	56	2.0	48	1.7	42	1.5	34	1.2	19
20			93	3.3	122	4.3	53	1.9	48	1.7	42	1.5	34	1.2	20
21			93	3.3	116	4.1	53	1.9	48	1.7	42	1.5	34	1.2	21
22			93	3.3	110	3.9	53	1.9	48	1.7	42	1.5	34	1.2	22
23			93	3.3	110	3.9	56	2.0	42	1.5	42	1.5	34	1.2	23
24			93	3.3	105	3.7	56	2.0	42	1.5	48	1.7	34	1.2	24
25			93	3.3	105	3.7	53	1.9	42	1.5	48	1.7	31	1.1	25
26			87	3.1	105	3.7	53	1.9	42	1.5	48	1.7	31	1.1	26
27			87	3.1	105	3.7	53	1.9	42	1.5	39	1.4	31	1.1	27
28			87	3.1	116	4.1	53	1.9	42	1.5	39	1.4	42	1.5	28
29			82	2.9	122	4.3	53	1.9	42	1.5	39	1.4	48	1.7	29
30			93	3.3	110	3.9	53	1.9	42	1.5	39	1.4	48	1.7	30
31					110	3.9			42	1.5	39	1.4			31
Mean			42.7	1.5	114	4.0	71.3	2.5	46.1	1.6	42.6	1.5	35.5	1.3	Mean
Volume															Volume
hm			.110		.310		.180		.120		.110		.090		hm
AF				89.6		248		150		100		92.4		74.6	AF

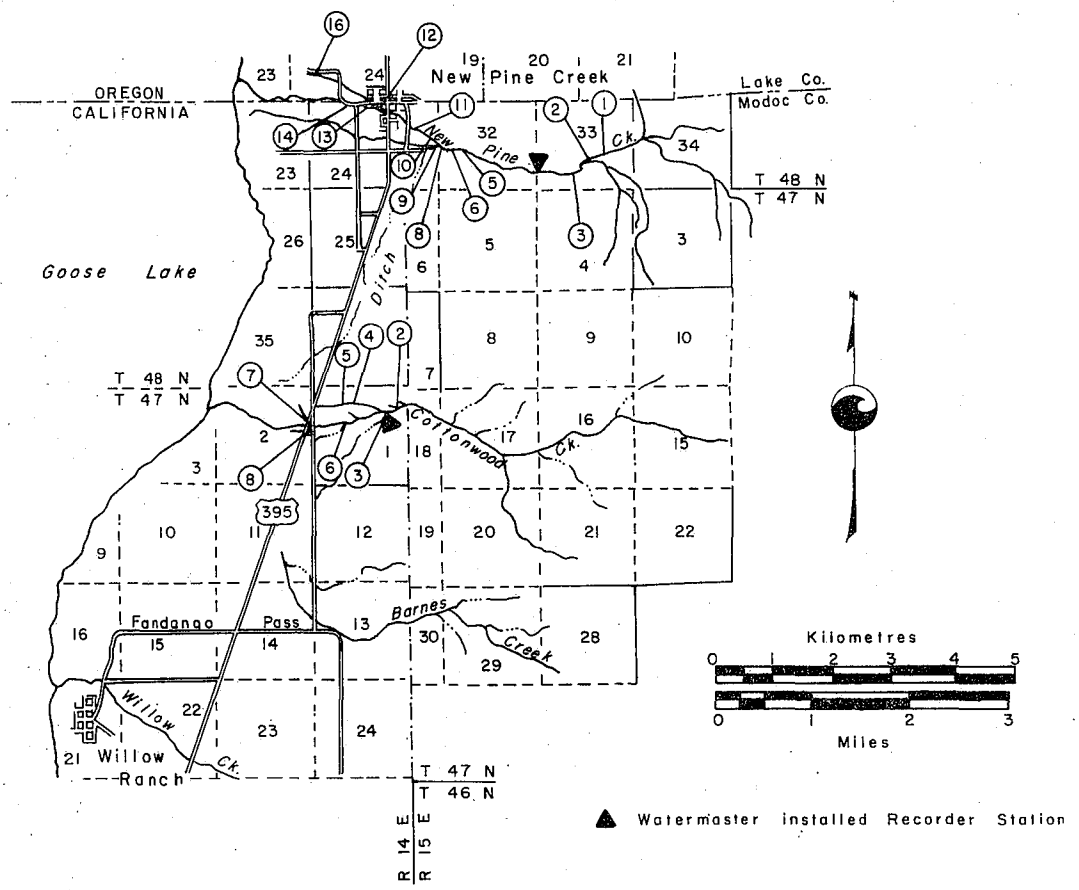
* Beginning of Record

Figure 14



INDEX MAP NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

Figure 14a



NEW PINE CREEK

Diversion Number	Name	l/s	cfs
1,2,3	Clemons, R	6.51	0.23
5	Butler, W	18.41	0.65
	Butler, T	14.44	0.51
6	Brocco, F	0.57	0.02
	Guerne, G.	0.85	0.03
	Stevens, L.	9.34	0.33
	Beachler, B.	4.25	0.15
	Fernwood, S.	5.10	0.18
8	California Ditch		
	Nelson, L.	19.82	0.70
	Stringer, R.	39.36	1.39
	Cunduff, J.	16.14	0.57
	Roberts, A.	99.34	0.33
	Cundiff, H.	18.69	0.66
	Pochop, L.	8.50	0.30
	Smith, M.	2.27	0.08
	Cloud, C	17.56	0.62
	Steward, P.	15.57	0.55
	Lawson, T.	29.45	1.04

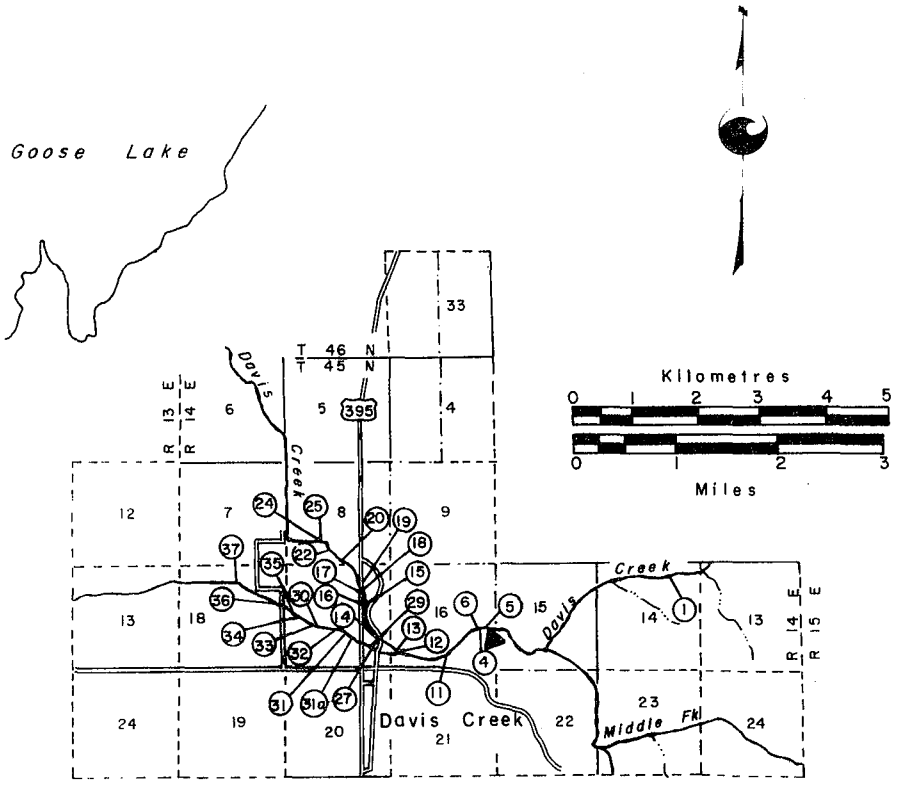
Diversion Number	Name	l/s	cfs	
9,10	Beachler, B.	27.47	0.97	diverted at 8
11	Boutin, H.	0.57	0.02	diverted at 6
12	Johnston, O.	0.57	0.02	diverted at 6
13	Lawson, T.	240 13	8.48	
14,16	Lawson, T.	110.15	3.89	

COTTONWOOD CREEK

Diversion Number	Name	l/s	cfs
2	Allen	45.31	1.60
3	Fleming	130.26	4.60
	Perry	33.98	1.20
4	Weidner (Pipeline)	116.10	4.10
5	Fleming	32.56	1.15
6	U.R. Ranch	45.31	1.60
	Perry	31.15	1.10

Cottonwood Creek diversions 7 & 8 belong to Vincent and are used only during high flows

DIVERSIONS FROM COTTONWOOD AND NEW PINE CREEKS NORTH FORK PIT RIVER WATERMASTER SERVICE AREA



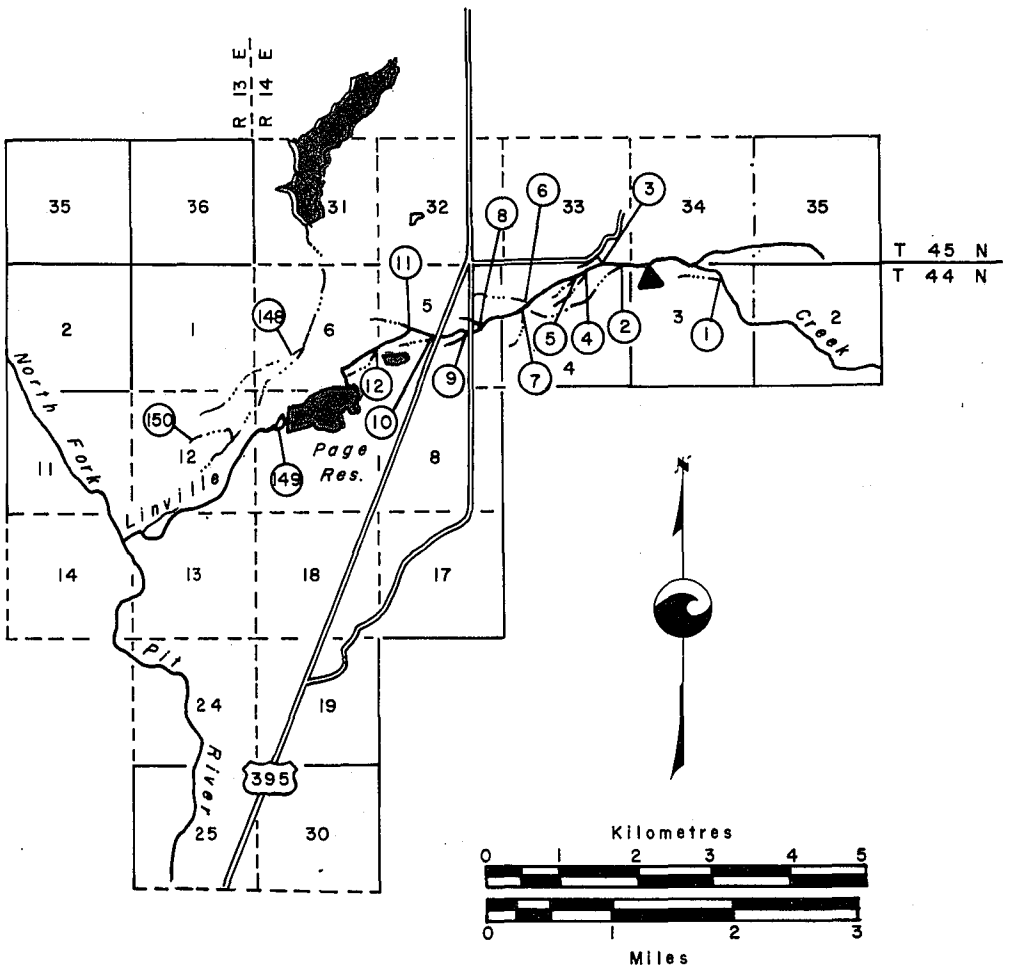
Diversion Number	Name	l/s	cfs
1	Pangborn	11.33	0.40
3	Gardner	11.33	0.40
4	Eddie	22.65	0.80
5	Tilson	2.83	0.10
6	Baker	11.33	0.40
	Dollarhide	1.70	0.06
8	Eddie	4.25	0.15
	Brunnemer	4.25	0.15
	Reith	5.66	0.20
	James	3.19	0.1125
	Shedd	1.06	0.0375
	King	4.25	0.15
	Brear	4.25	0.15
	Pointere	1.13	0.04

Diversion Number	Name	l/s	cfs
4, 5, 11, 16, 19, 20, 22, 24, 25	Davis	178.4	6.30
12, 13, 16, 27, 30, 31, 31a	Tilson	39.6	1.40
14	Eagleston	4.2	0.15
15, 17, 18, 19	Thompson	42.5	1.50
21	Foothill Plumbing	18.4	0.65
1, 27, 29, 32–37	Grace	1117.1	39.45

▲ Watermaster installed recorder station

DIVERSIONS FROM DAVIS CREEK NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

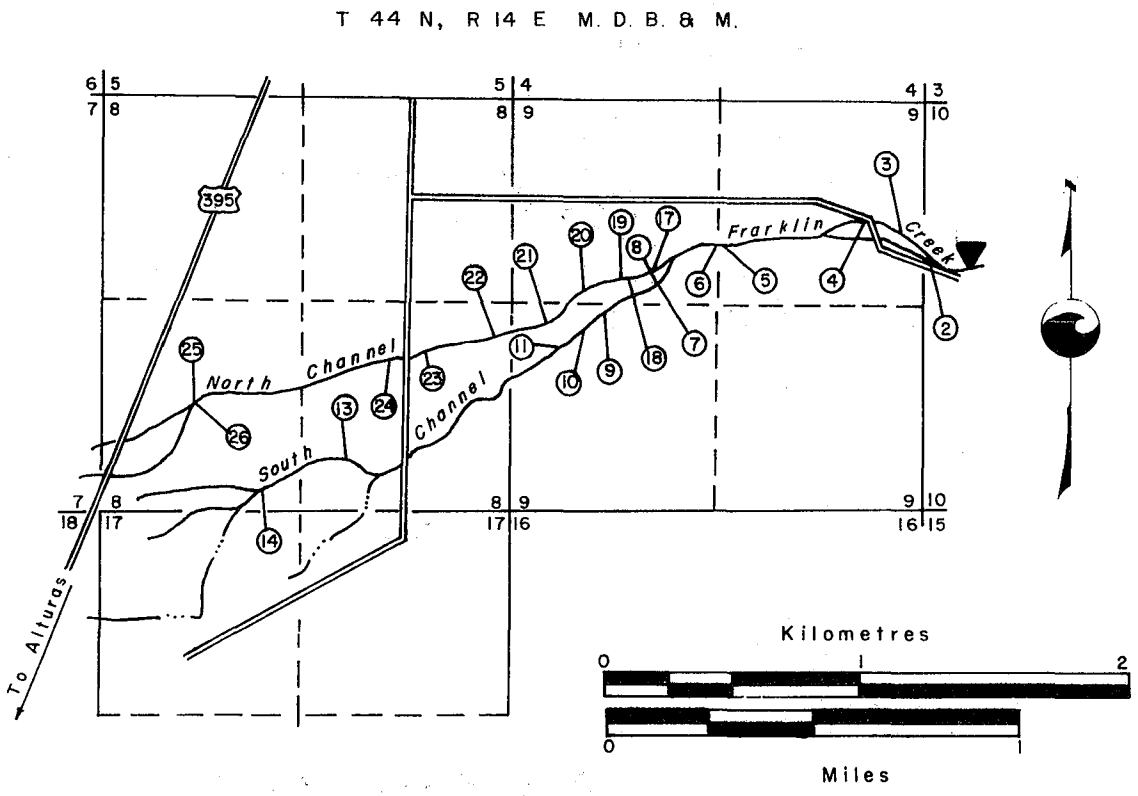
Figure 14c



Diversion Number	Name	l/s	cfs	Diversion Number	Name	l/s	cfs
1	Burns	2.83	0.1	11, 12	Capik	35.4	1.25
2–10	Gardner	107.60	3.8	12, 148 149, 150	Curtis	89.2	3.15

▲ Watermaster installed recorder station.

DIVERSIONS FROM LINVILLE CREEK NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

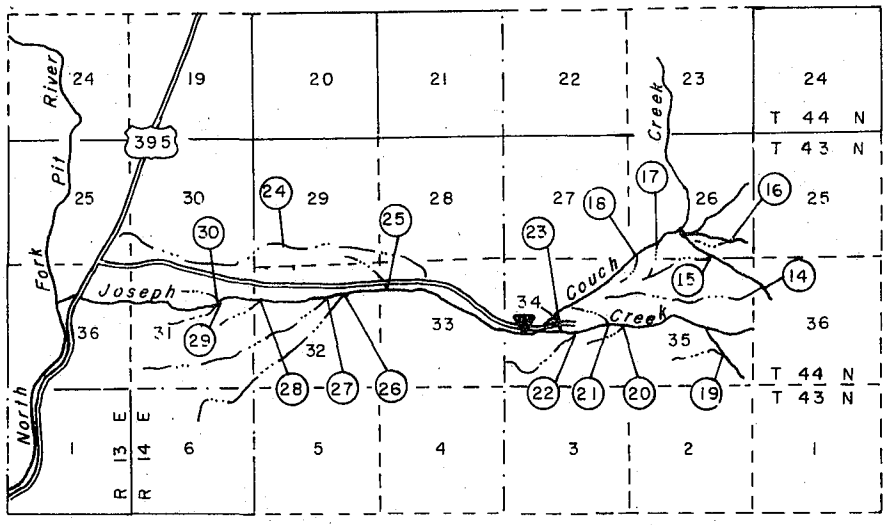


Diversion Number	Name	l/s	cfs
2-4	Curtis	15.0	0.53
5, 6	Curtis	13.0	0.46
7, 8	Gardner	77.0	2.72
9-11	Curtis	11.3	0.40
13,14	Goulding	28.3	1.00
17-22,25	Curtis	83.0	2.93
21	Diablo Vista	65.4	2.31
23,24,26	Goulding	37.1	1.31

▲ Watermaster installed recorder station

DIVERSIONS FROM FRANKLIN CREEK NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

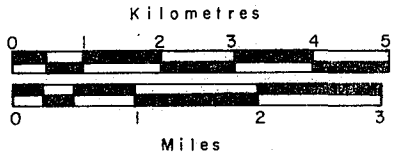
Figure 14e



Diversion Number	Name	l/s	cfs	Diversion Number	Name	l/s	cfs
14–18	U.S. Forest Service	32.6	1.15*	24	Russell	14.2	0.50
19	McQueen	11.3	0.40	24	Franks	2.8	0.10
20–24	Cockrell	39.1	1.38*	26	U.S. Indian Service	36.8	1.30
22	Russell	11.3	0.40	24–30	Cockrell	194	6.8

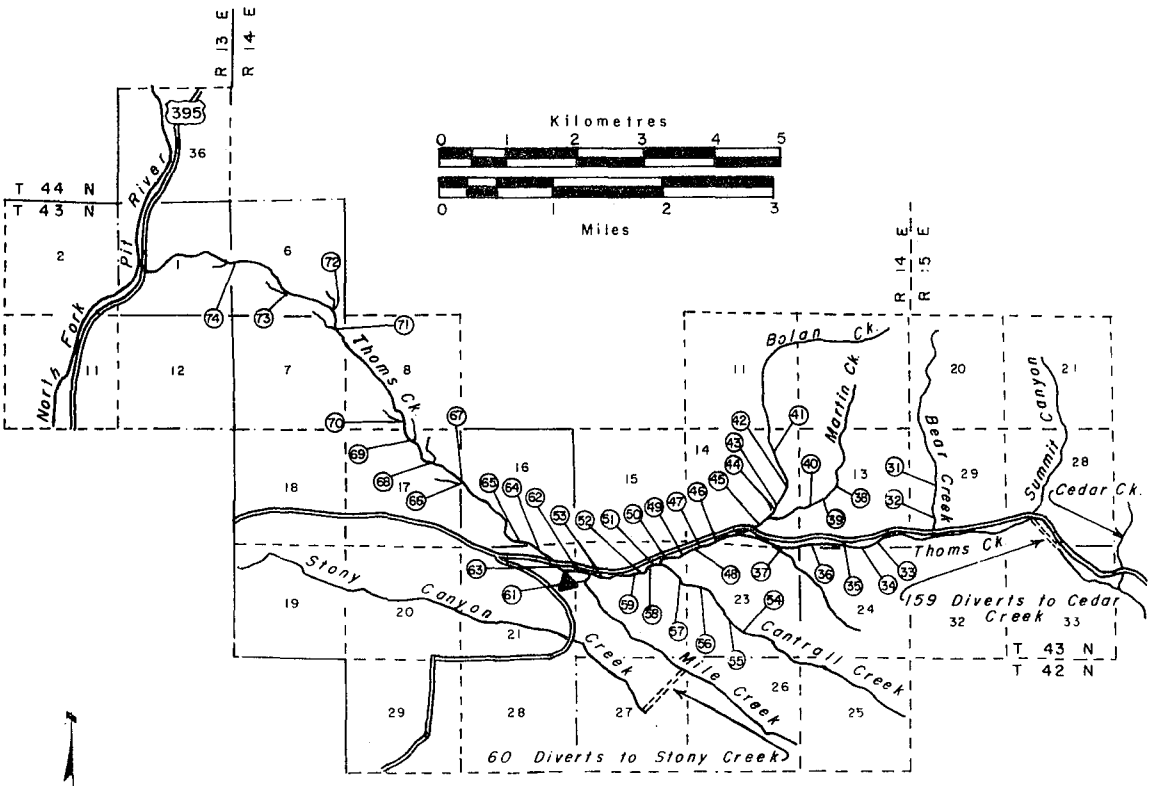
▲ Watermaster installed recorder station

*Net consumptive use



DIVERSIONS FROM JOSEPH CREEK NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

Figure 14 f

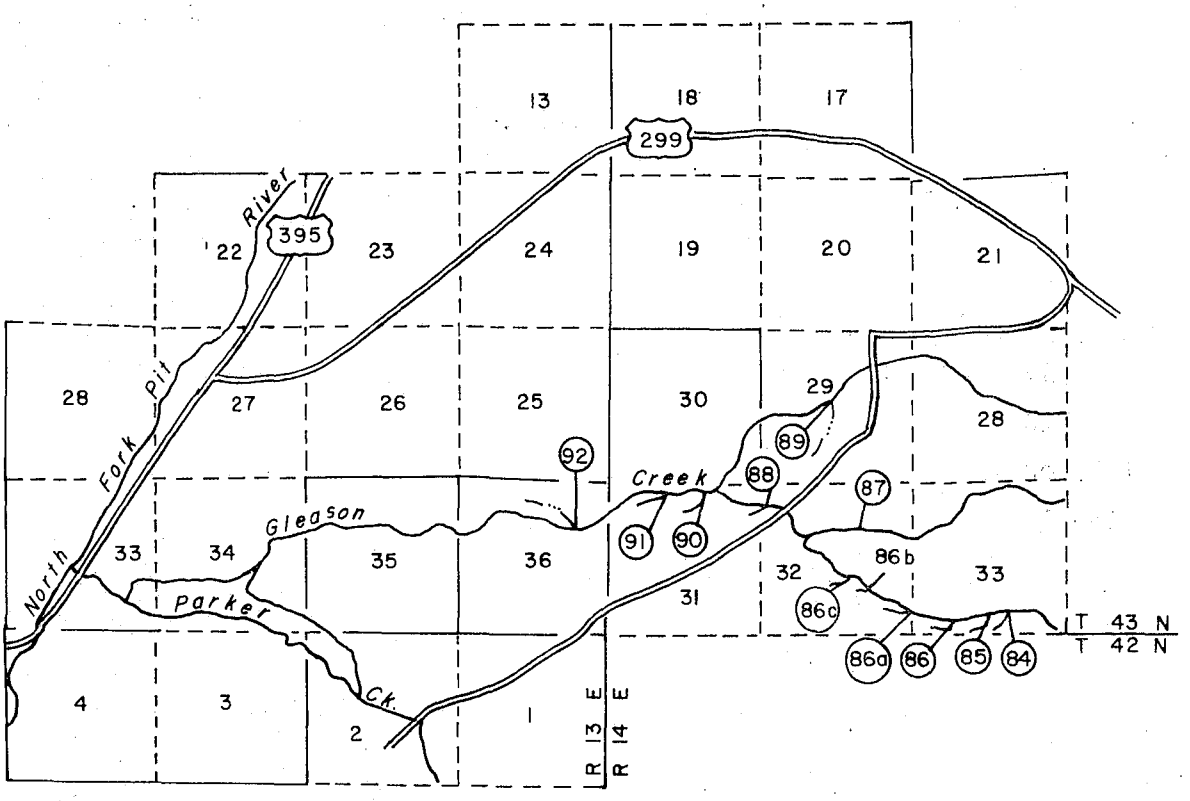


Diversion Number	Name	l/s	cfs
31-36,38-40	Neer	35.4	1.25
54-56	Coppedge	1.1	0.04
37	Armor	0.6	0.02
37, 41-45	DeWitt	37.9	1.34
46-53,57-59,61	Brown	34.4	1.25
62,63	Hart	7.1	0.25
64,65	Thoms Creek Ranch Co	11.3	0.40
66-70	Spaulding and Beebe	32.3	1.14
71-74	Triple K Ranches	21.2	0.75

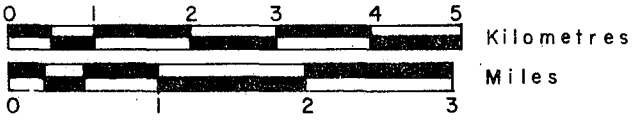
▲ Watermaster installed recorder station

DIVERSIONS FROM THOMS CREEK NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

Figure 14 g



Diversion Number	Name	l/s	cfs
84-86	Russell	28.3	1.00
86 a,b,c	Stanton	5.7	0.20
87-91	Stains	56.6	2.00
82	U.S. Indian Service	38.2	1.35



DIVERSIONS FROM GLEASON CREEK NORTH FORK PIT RIVER WATERMASTER SERVICE AREA

Parker Creek

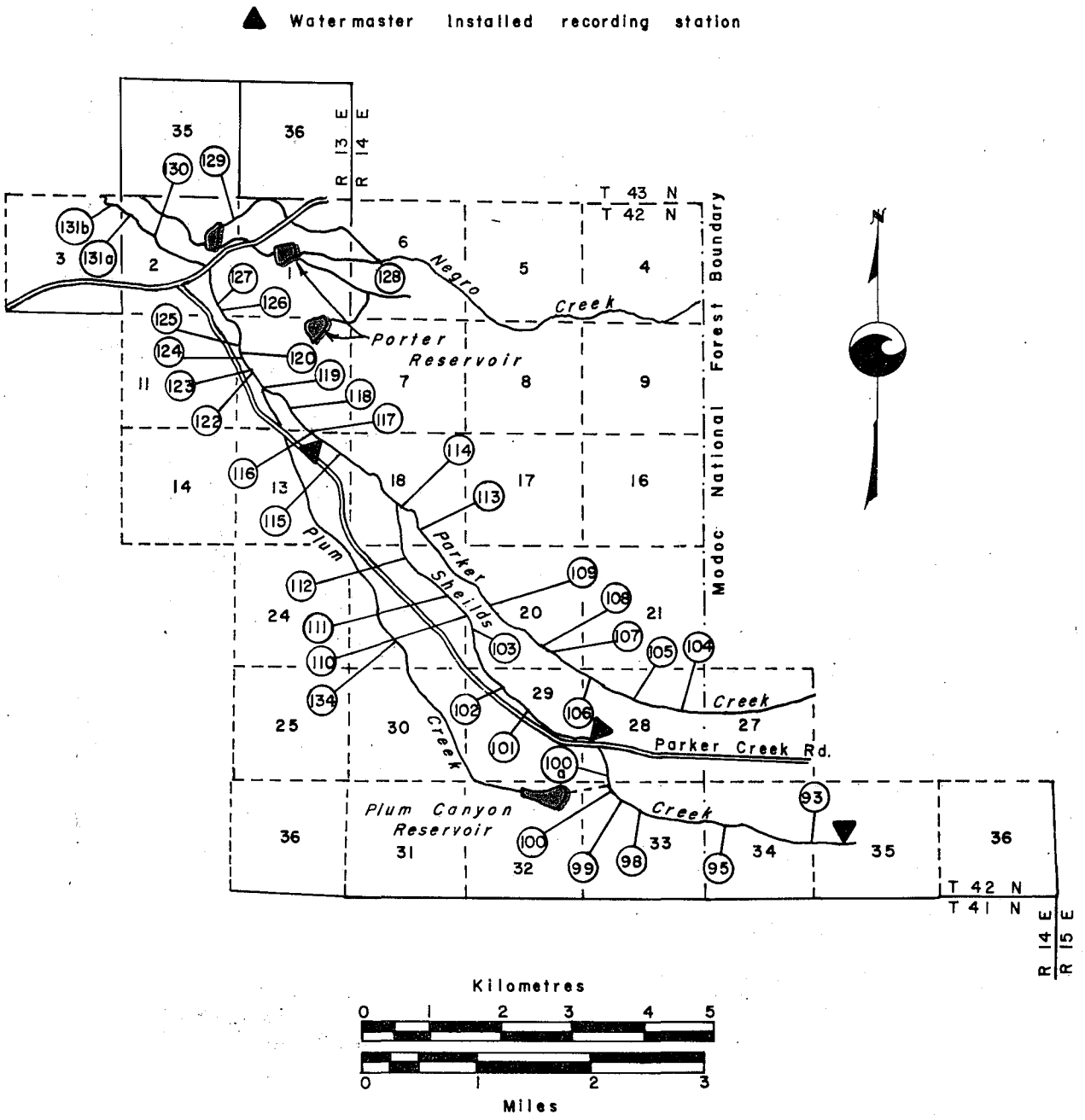
Diversion Number	Name	l/s	Cfs
104,105,106	G. B. Dorris	50.97	1.80
105,107-109	H. Weber	42.47	1.50
109	R. Hicks	5.66	0.20
113	H. Weber	41.05	1.45
113, or 128	W. Volentine	45.59	1.61
116-118 120-124	W. Weber	61.73	2.18
120	W. Volentine	23.50	0.83
	J. Monroe	268.72	9.49
126-131	W. Volentine	31.99	1.13
130,131a	U. S. Indian Service	84.10	2.97

Shields Creek

93,95,98-99	J. Weber	63.71	2.25
93,100-100a	R. Bicknell & G. Eagleston	19.82	0.70
101-103,110	H. Weber	48.13	1.70
100	C. Bailey	14.15	0.50*
134	C. Bailey	7.07	0.25*

* May be diverted at three (3) times these rates when water is available.

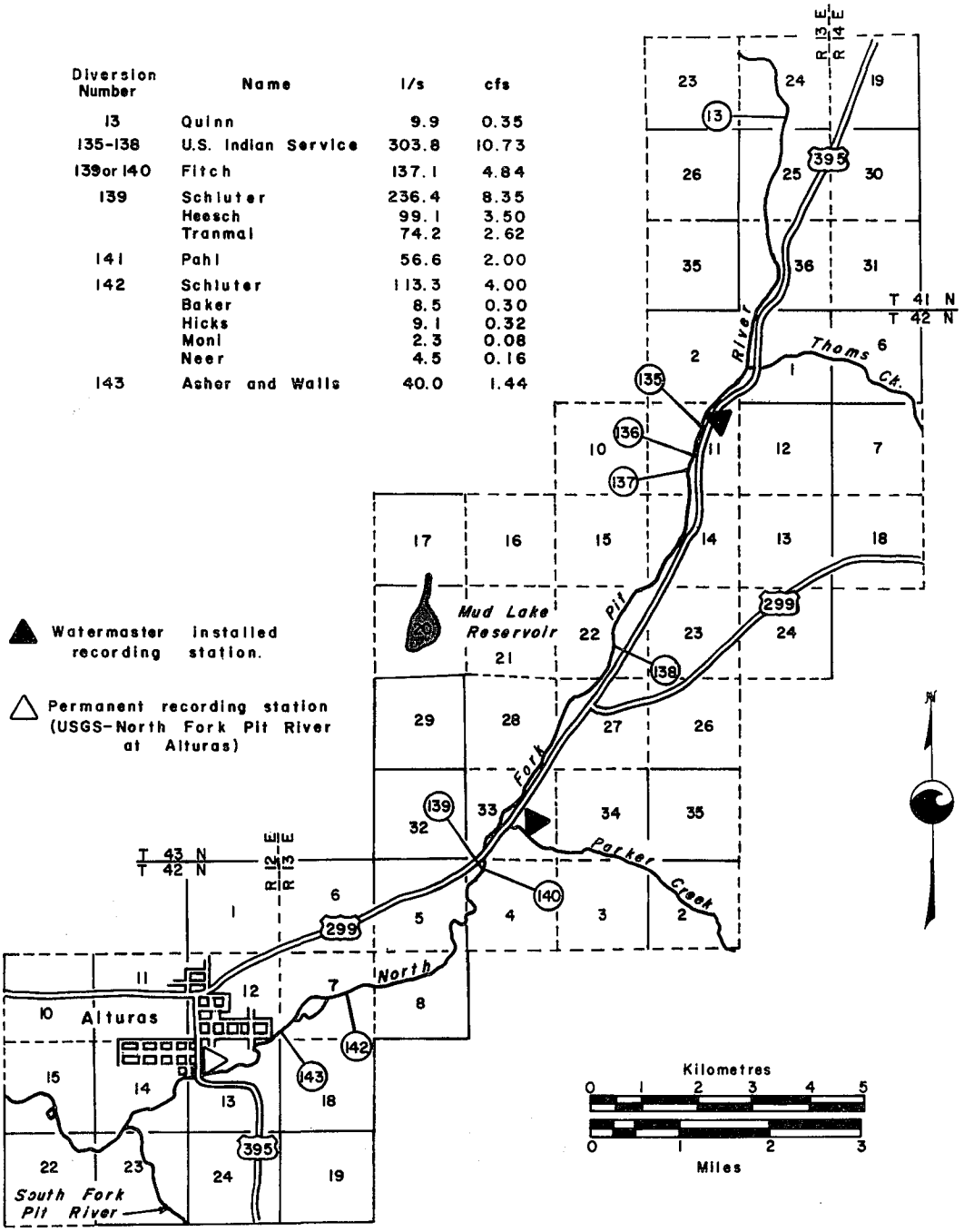
Figure 14h



DIVERSIONS FROM PARKER CREEK AND SHIELDS CREEK
NORTH FORK PIT RIVER
WATERMASTER SERVICE AREA

Figure 14i

Diversion Number	Name	l/s	cfs
13	Quinn	9.9	0.35
135-138	U.S. Indian Service	303.8	10.73
139or140	Fitch	137.1	4.84
139	Schluter	236.4	8.35
	Heesch	99.1	3.50
	Tranmal	74.2	2.62
141	Pahl	56.6	2.00
142	Schluter	113.3	4.00
	Baker	8.5	0.30
	Hicks	9.1	0.32
	Moni	2.3	0.08
	Neer	4.5	0.16
143	Asher and Walls	40.0	1.44



DIVERSIONS FROM NORTH FORK PIT RIVER
NORTH FORK PIT RIVER
WATERMASTER SERVICE AREA

SHACKLEFORD CREEK WATERMASTER SERVICE AREA

The Shackleford Creek service area is located in western Siskiyou County near the town of Fort Jones in Scott Valley. The major sources of water supply for this service area are 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 tributary to Mill Creek, enters 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 3 kilometres (2 miles) wide by 10 km (6 miles) long with the main axis and drainage running from south to north. Elevations on the agricultural area range from about 945 metres (3,100 feet) at the south to about 808 m (2,650 feet) at the confluence of Shackleford Creek and Scott River.

A map of the Shackleford Creek stream system is presented as Figure 15, page 109.

Basis of Service

The Shackleford Creek watermaster service area was created on November 6, 1950. Water is distributed under the provisions of a statutory adjudication which resulted in Decree No. 13775, Siskiyou County Superior Court, dated April 3, 1950.

The allotments are defined in four separate schedules. The Upper Shackleford Creek group and Lower Shackleford Creek group each have seven priority classes, and the Upper Mill Creek group and Lower Mill Creek group each have three priority classes.

Along with these schedules of allotments during the irrigation season, the decree defines two storage rights upstream of all other diversions. This stored water is released late in the irrigation season and commingled with the natural flow of Shackleford Creek for use by the owners.

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 lakes are located near the headwaters of Shackleford Creek.

The watershed of the Shackleford Creek stream system contains about 80 square kilometres (31 square miles), located in the heavily forested, steep, mountainous terrain of the northeasterly slopes of the Salmon Mountains. It varies in elevation from about 2 134 metres (7,000 feet) along its west rim to about 914 m (3,000 feet) at the foot of the slopes bordering Quartz Valley. Snowmelt runoff is normally sufficient to supply all demands until the middle of July. The supply then usually decreases until the first part of August when water is released from Cliff and Campbell Lakes to maintain sufficient flow for second priority allotments in the Shackleford Ditch.

Method of Distribution

Irrigation is accomplished primarily by wild flooding of permanent pasture and alfalfa fields. Water is distributed by ditches and laterals to the places of use. Shackleford Ditch, the largest of these ditches, has a length of about 9 m (6 miles) and a capacity of about 339 litres per second (12 cubic feet per second).

1977 Distribution

Watermaster service began March 17 in the Shackleford Creek service area and continued until September 30. Lester L. Lighthall, Water Resources Technician II, was watermaster during this period.

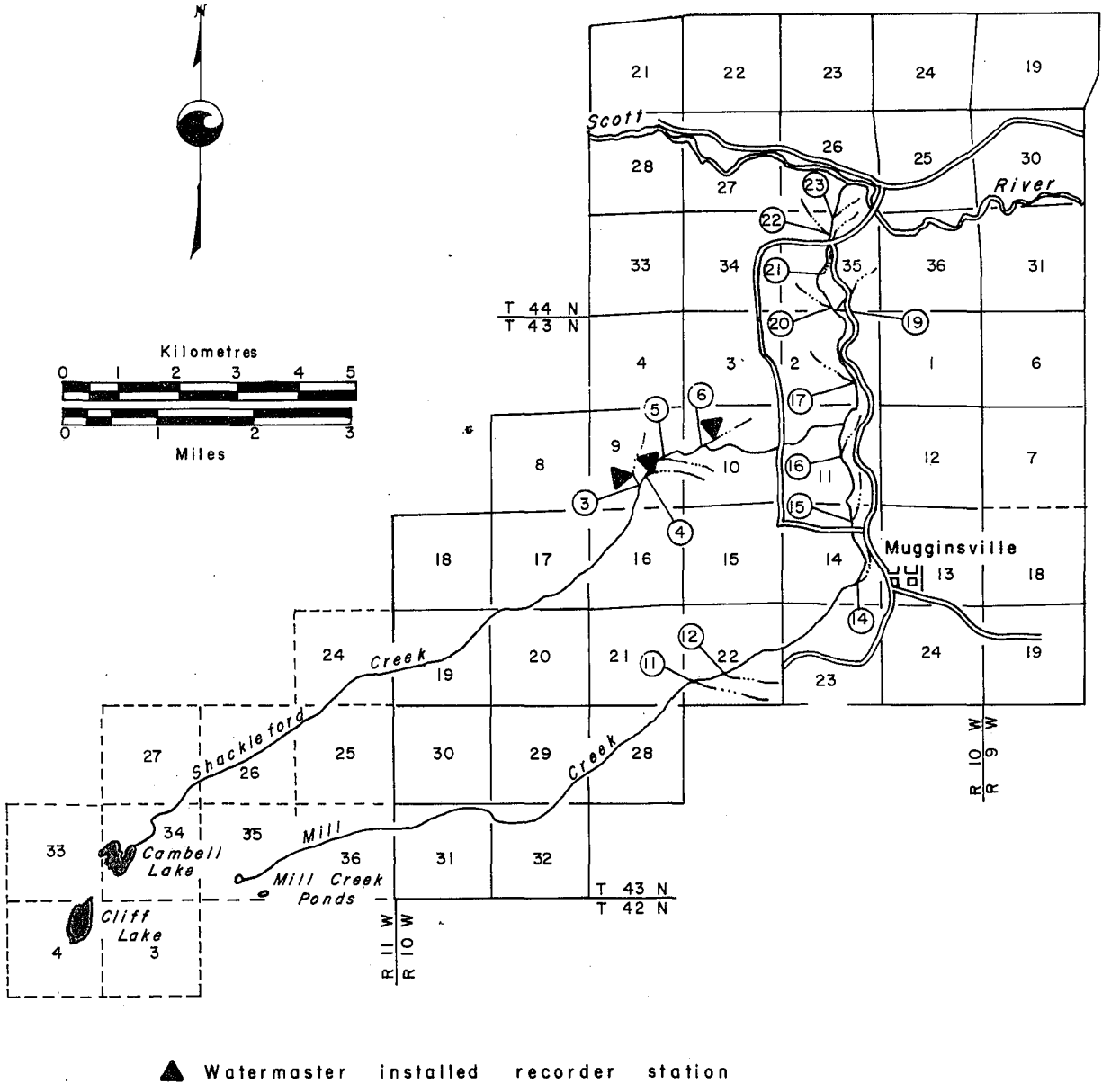
The available water supply was far below normal for the season, with some help from frequent rains in May. Fourth priority water rights were shut off in the middle of June, and, as flow continued to diminish, third priorities were shut off by the first week of July for the remainder of the season.

In the last week of July the Emigrant Creek Ranch started releasing water from Campbell Lake to their Diversion No. 4, Shackleford Ditch.

Diversion Number	Name	l/s	Cfs
3	R. Eastlick Ditch	99.10	3.50
4	Shackleford Ditch	311.48	11.00
5	Howard-Jones Ditch	147.24	5.20
6	Camp Ditch	141.58	5.00
11	Eastlick Ditch	300.72	10.62
12	Couch Ditch	17.55	0.62*
14	China Ditch	39.64	1.40
15	Dangel Ditch	14.15	0.50
16	Denny Bar Ditch	14.15	0.50
17	Freita Ditch	186.89	6.60
19	Hammond-Crawford-Lewis Ditch	101.94	3.60**
20	Burton-Meamber Ditch	164.23	5.80
22	W. Burton	33.98	1.20***
23	E. Burton		

* Out of 11 or 12
** Plus rights not in service area
*** In either 22 or 23

Figure 15



DIVERSIONS FROM SHACKLEFORD CREEK AND MILL CREEK SHACKLEFORD CREEK WATERMASTER SERVICE AREA

SHASTA RIVER WATERMASTER SERVICE AREA

The Shasta River service area is situated in the central part of Siskiyou County, south and east of the town of Yreka.

The source of water supply is Shasta River and its several tributaries. The upper reaches of the service area are served by two groups of tributaries. One group, comprising Boles, Beaughan, Carrick, and Jackson Creeks, rises on the northwestern slopes of Mount Shasta. The other group, consisting of Dale and Eddy Creeks, and Shasta River west of U. S. Highway 99, rises on the eastern slopes of the Trinity Mountains. All these streams join the main stem Shasta River above Dwinnell Reservoir near the town of Weed. As the Shasta River flows northward from Dwinnell Reservoir to its confluence with the Klamath River, north of Yreka, it is joined by three major tributaries. Parks Creek, rising on the eastern slopes of the Trinity Mountains, enters from the west near the town of Gazelle. Big Springs Creek, from Big Springs Lake, enters from the east about a mile below Parks Creek. Little Shasta River, rising on the western slopes of the mountainous area between Butte Valley and Shasta Valley, enters from the east near the town of Montague.

The place of use is in Shasta Valley which is approximately 48 kilometres (30 miles) long and 48 km (30 miles) wide. The valley has numerous small, coneshaped, volcanic hillocks scattered throughout its contral portion that produce the effect of dividing the area into a number of distinctively separate parts. Because of these formations, only about 47 000 hectares (141,000 acres) of the approximately 205 000 ha (507,000 acres) within the valley are irrigable. The valley floor elevation averages approximately 914 metres (3,000 feet).

Maps of the major stream systems in the Shasta River service area are presented as Figures 16 through 16g, pages 119 through 128.

Basis of Service

The Shasta River watermaster service area was created on March 1, 1933. The appropriateive water rights on this stream system were determined by a statutory adjudication which resulted in Decree No. 7035, Siskiyou County Superior Court, dated December 29, 1932.

The decree describes the water rights of the entire stream system in alphabetical order of users. The rights supervised by the watermaster are broken down into eight separate schedules. These are: Shasta River above its confluence with Big Springs Creek - 43 priorities; Boles Creek - 20 priorities; Beaughan Creek - 5 priorities; Jackson Creek - 7 priorities; Carrick Creek - 13 priorities; Parks Creek - 25 priorities; Shasta River below its confluence with Big Springs Creek and Big Springs Creek and tributaries - 29 priorities; and Little Shasta River - 7 priorities. Additional schedules include Willow Creek, Yreka Creek, and miscellaneous independent springs, gulches and sloughs, but these are not included in the service area.

Montague Water Conservation District has appropriative rights for storage of Shasta River and Parks Creek water in Dwinnell Reservoir (Lake Shastina). By agreement with the District, five nearby downstream users receive water from storage in lieu of their decreed continuous flow allotments. The watermaster handles the reservoir releases for these users as well as for the district itself.

A peculiarity of the Shasta River decree is that it defines only appropriative rights and excludes a number of riparian users on the lower Shasta River. Owners of these rights are not subject to watermaster supervision, causing considerable distribution problems during seasons of short water supply.

Water Supply

The water supply for Shasta Valley is derived from snowmelt runoff, springs and underground flow, and occasional summer thundershowers. In several portions of the stream system the springs from underground flow are adequate to supply most allotments throughout the season. Much of the underground flow is derived from the northern slopes of Mount Shasta, which rises to an elevation of 4 317 metres (14,162 feet) at the south end of Shasta Valley. Although the snowpack on Mount Shasta is usually heavy, there is negligible surface runoff.

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

Beaughan Creek, Carrick Creek, Shasta River from Boles Creek to Dwinnel Reservoir, Big Springs, and Lower Shasta River have enough runoff from springs 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 31, 32, 33, 35, and 36, pages 114 through 117. The daily mean storage in Dwinnell Reservoir is presented in Table 34, page 116.

Method of Distribution

Irrigation of permanent pasture and alfalfa lands is accomplished principally by wild flooding. Much of the return water is recaptured and used on lower pasture lands. Sprinkling systems are used for irrigating some alfalfa and grain lands.

Water is diverted primarily 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 1 699 litres per second (60 cubic feet per second) and a length of about 22 km (14 miles). Water is also supplied into ditch systems by pumped diversions, the three largest belonging to two irrigation districts and a private water users association. Some riparian lands are also served by pump diversions.

Many privately owned storage reservoirs exist in the area. Water storage from these reservoirs is used to supplement continuous-flow allotments.

Because of their large rights, close surveillance of the two public agencies, Grenada and Big Springs Irrigation Districts, and the privately operated Shasta River Water Users Association, is very important, particularly in dry years. Control of releases from Montague Water Conservation District's Dwinnell Reservoir (Lake Shastina) is another responsibility of the watermaster. This includes measurement of deliveries of stored water to users just below the dam.

1977 Distribution

Lester L. Lighthall, Water Resources Technician II, was watermaster in the Shasta River service area from March 1 through September 30.

The water supply in the service area was far below average during the season.

Parks Creek. The flow in Parks Creek was sufficient to supply only first and second priorities until the first part of June. It diminished until the first priority allotments of 170 l/s (6 cfs) were at 60 percent by the last part of June and remained there for the rest of the season.

Water users downstream from the lowest first priority diversion received a portion of their allotments during the latter part of the season from return flow and from water rising in the gravel streambed.

Upper Shasta River. No water flowed past the Yreka Ditch in 1977. First and second priorities only received a part of their allotments. Yreka Ditch users received about 60 percent of their rights until the middle of June; then the streamflow declined until only 10 percent was received by the first week of July. It stayed that way for the rest of the season.

Lower priority users received a small amount of their rights below the Yreka Ditch from return flow and channel increase.

Shasta River from Boles Creek to Dwinnell Reservoir. Boles Creek and this portion of the Shasta River were operated as one stream, under a long-standing oral agreement among the water right owners. Water is distributed on a correlative, equal-priority basis. By July 25 all water right owners were reduced to 80 percent of their allotments.

Beaughan Creek. The flow of Beaughan Creek was sufficient to satisfy most demands (five priorities) for the entire season. The creek is routed through a mill pond owned by the International Paper Company which uses approximately 35 percent of the flow for industrial purposes.

Carrick Creek. The water supply in Carrick Creek was adequate to satisfy all allotments (13 priorities) during the entire irrigation season.

Little Shasta River. There was only enough water available in Little Shasta River to satisfy fifth priority allotments (seven priorities) until the first of June, at which time full regulation became necessary to adequately distribute this priority. The flow continued to decrease to 30 percent of fifth priority allotments by the first of July. It then stayed constant for the remainder of the season.

The daily mean discharge of Little Shasta River near Montague is presented in Table 35, page 117. This runoff is augmented by rising water along the river channel, and by substantial inflow from Cleland Springs, a tributary approximately 3 km (2 miles) below the stream gaging station. Therefore, considerably more water was available for distribution at downstream diversion points than is reported in the discharge table.

Dwinnell Reservoir. Releases from Dwinnell Reservoir to the Montague Water Conservation District commenced on April 6 and continued into October. Reservoir storage data for the 1977 is shown on Table 34, page 116.

By agreement with the Montague Water Conservation District, water users on Shasta River below Dwinnell Reservoir received stored water from the reservoir on demand in lieu of their natural flow rights. The agreement allotment totals and the amount delivered to each user this season are shown in the tabulation on page 114.

Big Springs. The flow of Big Springs was sufficient to satisfy 100 percent of twenty-fourth priority allotments through the first half of the season. On the first of July it became necessary to regulate the Big Springs Irrigation District's pumps. The springs continued to decline until the last week in September when the Big Springs Irrigation District was shut off (24th priority). The Brahs pump (21st priority) was also shut off. Flow of the springs started to increase by the middle of August, but did not fill all priorities again.

Lower Shasta River. The water supply in Lower Shasta River was sufficient to satisfy all allotments (29 priorities) until the 27th of June when the Grenada Irrigation District pumps were regulated. The low point was on August 9 when the Webb Brothers pump was shut off (26th priority).

DELIVERIES TO NATURAL FLOW WATER RIGHT OWNERS BELOW DWINNELL RESERVOIR - 1977

Name of Water Right Owner	Allotment in hm^3	Allotment in A/F	Allotment Delivered From Dwinnell Reservoir hm^3	Allotment Delivered From Dwinnell Reservoir A/F	% of Allotment
Lake Shastina Properties, Inc., Flying "L" Ranch	.24	198	.05	42[1/]	100
Ross Park Homes, Inc.	.57	464	.57	464	100
J. N. Taylor	1.48	1,200	1.48	1,200	100
Lake Shastina Properties, Inc. Hole-in-the-Ground Ranch	.74	596	.93	752	100
Lake Shastina Properties, Inc., Seldom Seen Ranch	1.14	924	1.14	924	100
Totals	4.17	3,382	4.17	3,382	

1/ 0.19 hm^3 (156 acre-feet) of Flying "L" Ranch water was transferred to the Hole-in-the-Ground Ranch.

SHASTA RIVER WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 31

SHASTA RIVER NEAR YREKA

Day	March l/s	March cfs	April l/s	April cfs	May l/s	May cfs	June l/s	June cfs	July l/s	July cfs	August l/s	August cfs	September l/s	September cfs	Day
1	4 160	147	2 750	97	1 440	51	1 440	51	363	13	312	11	566	20	1
2	4 130	146	3 260	115	1 500	53	1 160	41	906	32	396	14	510	18	2
3	4 280	151	3 770	133	1 670	59	1 250	44	623	22	651	23	481	17	3
4	4 280	151	3 620	128	1 640	58	1 190	42	595	21	651	23	340	12	4
5	4 190	148	3 290	116	1 610	57	991	35	736	26	368	13	269	9.5	5
6	4 420	156	3 600	127	2 150	76	623	22	510	18	229	8.1	453	16	6
7	4 160	147	2 380	84	1 950	69	963	34	651	23	246	8.7	651	23	7
8	3 650	129	2 100	74	1 730	61	3 260	115	793	28	538	19	425	15	8
9	3 570	126	2 240	79	1 670	59	2 520	89	736	26	193	6.8	278	9.8	9
10	2 780	98	2 720	96	2 100	74	2 690	95	736	26	238	8.4	363	13	10
11	2 580	91	2 520	89	2 780	98	2 040	72	765	27	368	13	425	15	11
12	2 630	93	1 980	70	4 080	144	2 380	84	850	30	425	15	368	13	12
13	2 460	87	2 120	75	3 090	109	2 270	80	1 020	36	595	21	261	9.2	13
14	2 520	89	1 810	64	2 410	85	1 730	61	906	32	396	14	275	9.7	14
15	2 660	94	1 670	59	2 240	79	1 300	46	1 050	37	453	16	280	9.9	15
16	2 460	87	1 670	59	2 010	71	1 300	46	595	21	312	11	510	18	16
17	2 580	91	1 670	59	1 930	70	1 130	40	425	15	312	11	595	21	17
18	2 040	72	2 320	82	2 010	71	765	27	368	13	340	12	623	22	18
19	1 900	67	2 350	83	2 040	72	1 730	61	283	10	312	11	651	23	19
20	2 150	76	1 440	51	2 240	79	1 160	41	283	10	510	18	821	29	20
21	1 810	64	1 360	48	1 950	69	935	33	241	8.5	680	24	906	32	21
22	1 640	58	1 330	47	1 700	60	1 020	36	173	6.1	651	23	850	30	22
23	1 780	63	1 220	43	3 940	139	935	33	229	8.1	595	21	991	35	23
24	2 150	76	1 220	43	3 990	141	765	27	170	6.0	651	23	1 100	39	24
25	2 180	77	1 270	45	4 190	148	623	22	425	15	765	27	1 610	57	25
26	1 930	68	1 160	41	3 940	139	538	19	680	24	935	33	1 700	60	26
27	1 780	63	1 050	37	3 820	135	312	11	623	22	850	30	1 420	50	27
28	2 010	71	1 360	48	2 830	100	218	7.7	368	13	623	22	1 700	60	28
29	2 210	78	1 840	65	2 460	87	201	7.1	255	9.0	453	16	3 650	129	29
30	2 180	77	1 360	48	2 100	74	173	6.1	235	8.3	396	14	3 140	111	30
31	2 520	89			1 760	62			207	7.3	765	27			31
Mean	2 770	97.7	2 080	73.5	2 420	85.5	1 250	44.3	542	19.1	491	17.3	874	30.9	Mean
Volume hm	7.410		5.400		6.480		3.250		1.450		1.310		2.270		Volume hm
AF		6010		4370		5250		2630		1180		1060		1840	AF

SHASTA RIVER WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 32

SHASTA RIVER AT EDGEWOOD

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1			453	16*	425	15	453	16	312	11	178	6.3	241	8.5	1
2			481	17	396	14	453	16	340	12	215	7.6	241	8.5	2
3			481	17	396	14	340	12	241	8.5	283	10	227	8.0	3
4			425	15	396	14	340	12	261	9.2	312	11	227	8.0	4
5			340	12	425	15	453	16	261	9.2	261	9.2	241	8.5	5
6			340	12	481	17	396	14	241	8.5	215	7.6	241	8.5	6
7			368	13	425	15	1 760	62	261	9.2	215	7.6	227	8.0	7
8			453	16	425	15	991	35	261	9.2	227	8.0	227	8.0	8
9			623	22	680	24	680	24	190	6.7	215	7.6	241	8.5	9
10			510	18	708	25	680	24	164	5.8	204	7.2	241	8.5	10
11			481	17	1 160	41	680	24	153	5.4	215	7.6	215	7.6	11
12			425	15	765	27	538	19	164	5.8	215	7.6	215	7.6	12
13			340	12	595	21	481	17	164	5.8	215	7.6	215	7.6	13
14			396	14	453	16	425	15	142	5.0	164	5.8	204	7.2	14
15			340	12	453	16	453	16	142	5.0	164	5.8	227	8.0	15
16			340	12	481	17	396	14	198	7.0	190	6.7	340	12	16
17			340	12	453	16	340	12	193	6.8	164	5.8	312	11	17
18			340	12	425	15	340	12	187	6.6	153	5.4	396	14	18
19			340	12	481	17	396	14	181	6.4	178	6.3	708	25	19
20			340	12	425	15	396	14	176	6.2	204	7.2	510	18	20
21			340	12	425	15	312	11	170	6.0	204	7.2	396	14	21
22			340	12	425	15	312	11	164	5.8	204	7.2	425	15	22
23			340	12	708	25	241	8.5	159	5.6	204	7.2	340	12	23
24			283	10	850	30	241	8.5	153	5.4	227	8.0	425	15	24
25			312	11	595	21	261	9.2	147	5.2	261	9.2	396	14	25
26			340	12	595	21	227	8.0	142	5.0	312	11	340	12	26
27			312	11	680	24	215	7.6	136	4.8	312	11	340	12	27
28			312	11	538	19	227	8.0	130	4.6	312	11	453	16	28
29			312	11	510	18	215	7.6	164	5.8	312	11	623	22	29
30			368	13	481	17	227	8.0	190	6.7	283	10	566	20	30
31					481	17			178	6.3	241	8.5			31
Mean			381	13.4	540	19.1	449	15.9	192	6.8	228	8.0	333	11.8	Mean
Volume															Volume
hm			.990		1.450		1.160		.520		.610		.860		hm
AF				799		1170		943		418		494		700	AF

* Beginning of Record

TABLE 33

PARKS CREEK ABOVE EDSON-FOULKE YREKA DITCH

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1			51	1.8*	238	8.4	312	11	56	2.0	31	1.1	31	1.1	1
2			51	1.8	187	6.6	235	8.3	68	2.4	31	1.1	28	1.0	2
3			53	1.9	201	7.1	207	7.3	45	1.6	31	1.1	28	1.0	3
4			82	2.9	153	5.4	201	7.1	42	1.5	34	1.2	28	1.0	4
5			125	4.4	119	4.2	187	6.6	39	1.4	34	1.2	31	1.1	5
6			136	4.8	119	4.2	235	8.3	39	1.4	34	1.2	31	1.1	6
7			201	7.1	119	4.2	249	8.8	39	1.4	34	1.2	31	1.1	7
8			232	8.2	113	4.0	187	6.6	39	1.4	34	1.2	31	1.1	8
9			164	5.8	201	7.1	170	6.0	36	1.3	34	1.2	31	1.1	9
10			119	4.2	227	8.0	187	6.6	36	1.3	34	1.2	31	1.1	10
11			116	4.1	283	10	212	7.5	36	1.3	34	1.2	31	1.1	11
12			130	4.6	238	8.4	221	7.8	36	1.3	31	1.1	28	1.0	12
13			147	5.2	258	9.1	153	5.4	34	1.2	31	1.1	28	1.0	13
14			119	4.2	275	9.7	125	4.4	34	1.2	31	1.1	28	1.0	14
15			136	4.8	266	9.4	116	4.1	34	1.2	31	1.1	28	1.0	15
16			170	6.0	249	8.8	99	3.5	34	1.2	31	1.1	28	1.0	16
17			153	5.4	227	8.0	96	3.4	34	1.2	31	1.1	31	1.1	17
18			119	4.2	212	7.5	116	4.1	34	1.2	31	1.1	34	1.2	18
19			105	3.7	212	7.5	125	4.4	34	1.2	31	1.1	56	2.0	19
20			102	3.6	221	7.8	99	3.5	34	1.2	31	1.1	56	2.0	20
21			105	3.7	238	8.4	93	3.3	34	1.2	31	1.1	34	1.2	21
22			116	4.1	283	10	85	3.0	34	1.2	31	1.1	31	1.1	22
23			125	4.4	312	11	76	2.7	34	1.2	31	1.1	31	1.1	23
24			136	4.8	340	12	73	2.6	34	1.2	31	1.1	31	1.1	24
25			159	5.6	312	11	68	2.4	34	1.2	31	1.1	31	1.1	25
26			125	4.4	481	17	62	2.2	34	1.2	31	1.1	31	1.1	26
27			119	4.2	425	15	59	2.1	34	1.2	31	1.1	31	1.1	27
28			119	4.2	312	11	56	2.0	34	1.2	31	1.1	70	2.5	28
29			119	4.2	275	9.7	45	1.6	31	1.1	31	1.1	70	2.5	29
30			153	5.4	266	9.4	45	1.6	31	1.1	31	1.1	42	1.5	30
31					275	9.7			31	1.1	31	1.1			31
Mean			126	4.5	246	8.7	140	4.9	37.0	1.3	31.9	1.1	35.3	1.2	Mean
Volume															Volume
hm			.330		.660		.360		.099		.090		.090		hm
AF				265		535		294		78		69.3		74.2	AF

* Beginning of Record

SHASTA RIVER WATERMASTER SERVICE AREA
October 1, 1976 through September 30, 1977 (in acre-feet)

TABLE 34

DAILY MEAN STORAGE IN DWINNELL RESERVOIR

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sept.	Day
1	8,677	8,488	9,970	11,420	12,760	13,937	14,408	11,200	9,750	6,240	2,850	1,594	1
2	8,659	8,533	10,030	11,470	12,804	13,970	14,408	11,050	9,620	6,128	2,775	1,555	2
3	8,641	8,560	10,080	11,530	12,837	13,992	14,408	10,840	9,500	6,000	2,700	1,513	3
4	8,614	8,596	10,130	11,590	12,881	14,025	14,408	10,670	9,320	5,840	2,625	1,468	4
5	8,596	8,659	10,180	11,650	12,925	14,047	14,396	10,540	9,120	5,680	2,560	1,432	5
6	8,569	8,703	10,220	11,680	12,958	14,069	14,384	10,420	8,983	5,530	2,510	1,390	6
7	8,515	8,767	10,270	11,710	13,013	14,080	14,300	10,330	8,875	5,404	2,460	1,345	7
8	8,416	8,803	10,310	11,750	13,134	14,102	14,212	10,200	8,785	5,306	2,408	1,321	8
9	8,389	8,875	10,400	11,790	13,200	14,124	14,124	10,140	8,758	5,180	2,340	1,291	9
10	8,353	8,901	10,450	11,830	13,255	14,135	14,047	10,090	8,713	5,096	2,280	1,267	10
11	8,308	8,938	10,500	11,870	13,310	14,146	13,948	10,160	8,668	4,984	2,216	1,240	11
12	8,263	8,970	10,550	11,910	13,354	14,157	13,871	10,210	8,596	4,882	2,161	1,210	12
13	8,227	9,028	10,600	11,950	13,387	14,168	13,772	10,230	8,470	4,816	2,113	1,180	13
14	8,182	9,073	10,650	11,990	13,420	14,190	13,662	10,250	8,353	4,732	2,074	1,135	14
15	8,155	9,160	10,700	12,030	13,442	14,212	13,552	10,260	8,245	4,648	2.044	1,096	15
16	8,146	9,220	10,750	12,070	13,475	14,223	13,442	10,280	8,092	4,532	2,011	1,054	16
17	8,128	9,270	10,780	12,100	13,497	14,234	13,332	10,280	7,948	4,420	1,978	1,012	17
18	8,110	9,330	10,840	12,144	13,530	14,245	13,278	10,260	7,822	4,312	1,945	978	18
19	8,110	9,390	10,870	12,188	13,563	14,267	13,035	10,170	7,750	4,210	1,915	948	19
20	8,110	9,450	10,920	12,232	13,596	14,289	12,907	10,150	7,660	4,102	1,885	920	20
21	8,128	9,500	10,950	12,265	13,640	14,300	12,760	10,080	7,597	4,000	1,858	900	21
22	8,146	9,550	10,980	12,320	13,695	14,324	12,540	10,020	7,507	3,880	1,834	870	22
23	8,173	9,600	11,030	12,364	13,750	14,348	12,342	10,050	7,417	3,766	1,810	840	23
24	8,200	9,650	11,070	12,408	13,783	14,372	12,188	10,060	7,300	3,652	1,789	810	24
25	8,227	9,700	11,110	12,452	13,816	14,384	12,030	10,050	7,192	3,538	1,765	780	25
26	8,263	9,750	11,150	12,496	13,838	14,396	11,860	10,030	7,075	3,430	1,744	754	26
27	8,297	9,770	11,190	12,540	13,882	14,396	11,760	10,020	6,940	3,322	1,720	730	27
28	8,326	9,820	11,230	12,573	13,915	14,396	11,650	10,000	6,760	3,214	1,699	710	28
29	8,362	9,870	11,270	12,617		14,396	11,500	9,970	6,596	3,150	1,672	690	29
30	8,407	9,920	11,320	12,661		14,396	11,320	9,930	6,376	3,005	1,645	670	30
31	8,452		11,370	12,705		14,408		9,850		2,925	1,621		31

Conversion Factor - 1 Acre-Foot = .0012335 Cubic Hectometres

SHASTA RIVER WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 35

LITTLE SHASTA RIVER NEAR MONTAGUE

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1	119	4.2	147	5.2	312	11	278	9.8	139	4.9	93	3.3	73	2.6	1
2	119	4.2	153	5.4	266	9.4	263	9.3	142	5.0	90	3.2	70	2.5	2
3	113	4.0	204	7.2	280	9.9	252	8.9	130	4.6	102	3.6	70	2.5	3
4	110	3.9	340	12	283	10	241	8.5	130	4.6	93	3.3	65	2.3	4
5	147	5.2	481	17	235	8.3	227	8.0	133	4.7	90	3.2	65	2.3	5
6	153	5.4	510	18	235	8.3	229	8.1	130	4.6	87	3.1	62	2.2	6
7	142	5.0	538	19	252	8.9	481	17	125	4.4	87	3.1	62	2.2	7
8	147	5.2	510	18	229	8.1	566	20	122	4.3	93	3.3	59	2.1	8
9	156	5.5	368	13	283	10	340	12	122	4.3	90	3.2	59	2.1	9
10	113	4.0	283	10	793	28	312	11	122	4.3	87	3.1	59	2.1	10
11	113	4.0	283	10	765	27	283	10	119	4.2	85	3.0	56	2.0	11
12	116	4.1	340	12	736	26	252	8.9	119	4.2	82	2.9	59	2.1	12
13	116	4.1	368	13	538	19	224	7.9	113	4.0	82	2.9	59	2.1	13
14	122	4.3	312	11	396	14	212	7.5	113	4.0	79	2.8	56	2.0	14
15	122	4.3	312	11	340	12	195	6.9	110	3.9	76	2.7	70	2.5	15
16	125	4.4	368	13	396	14	184	6.5	108	3.8	76	2.7	116	4.1	16
17	125	4.4	312	11	510	18	193	6.8	105	3.7	73	2.6	82	2.9	17
18	130	4.6	283	10	538	19	218	7.7	105	3.7	73	2.6	79	2.8	18
19	125	4.4	283	10	538	19	201	7.1	105	3.7	73	2.6	127	4.5	19
20	130	4.6	283	10	425	15	178	6.3	108	3.8	70	2.5	99	3.5	20
21	153	5.4	283	10	368	13	170	6.0	102	3.6	68	2.4	85	3.0	21
22	204	7.2	261	9.2	368	13	159	5.6	102	3.6	68	2.4	82	2.9	22
23	258	9.1	249	8.8	566	20	153	5.4	99	3.5	65	2.3	85	3.0	23
24	190	6.7	241	8.5	510	18	144	5.1	99	3.5	85	3.0	122	4.3	24
25	204	7.2	255	9.0	425	15	144	5.1	108	3.8	90	3.2	85	3.0	25
26	227	8.0	266	9.4	623	22	139	4.9	113	4.0	85	3.0	82	2.9	26
27	249	8.8	238	8.4	623	22	136	4.8	96	3.4	82	2.9	87	3.1	27
28	170	6.0	232	8.2	425	15	133	4.7	96	3.4	79	2.8	153	5.4	28
29	167	5.9	224	7.9	368	13	130	4.6	96	3.4	76	2.7	340	12	29
30	159	5.6	232	8.2	340	12	130	4.6	99	3.5	76	2.7	125	4.4	30
31	159	5.6			312	11			96	3.4	73	2.6			31
Mean	151	5.3	305	10.8	428	15.1	226	8.0	113	4.0	82.0	2.9	90.1	3.2	Mean
Volume															Volume
hm	.400		.790		1.150		.580		.300		.220		.230		hm
AF	328		641		929		474		246		178		189		AF

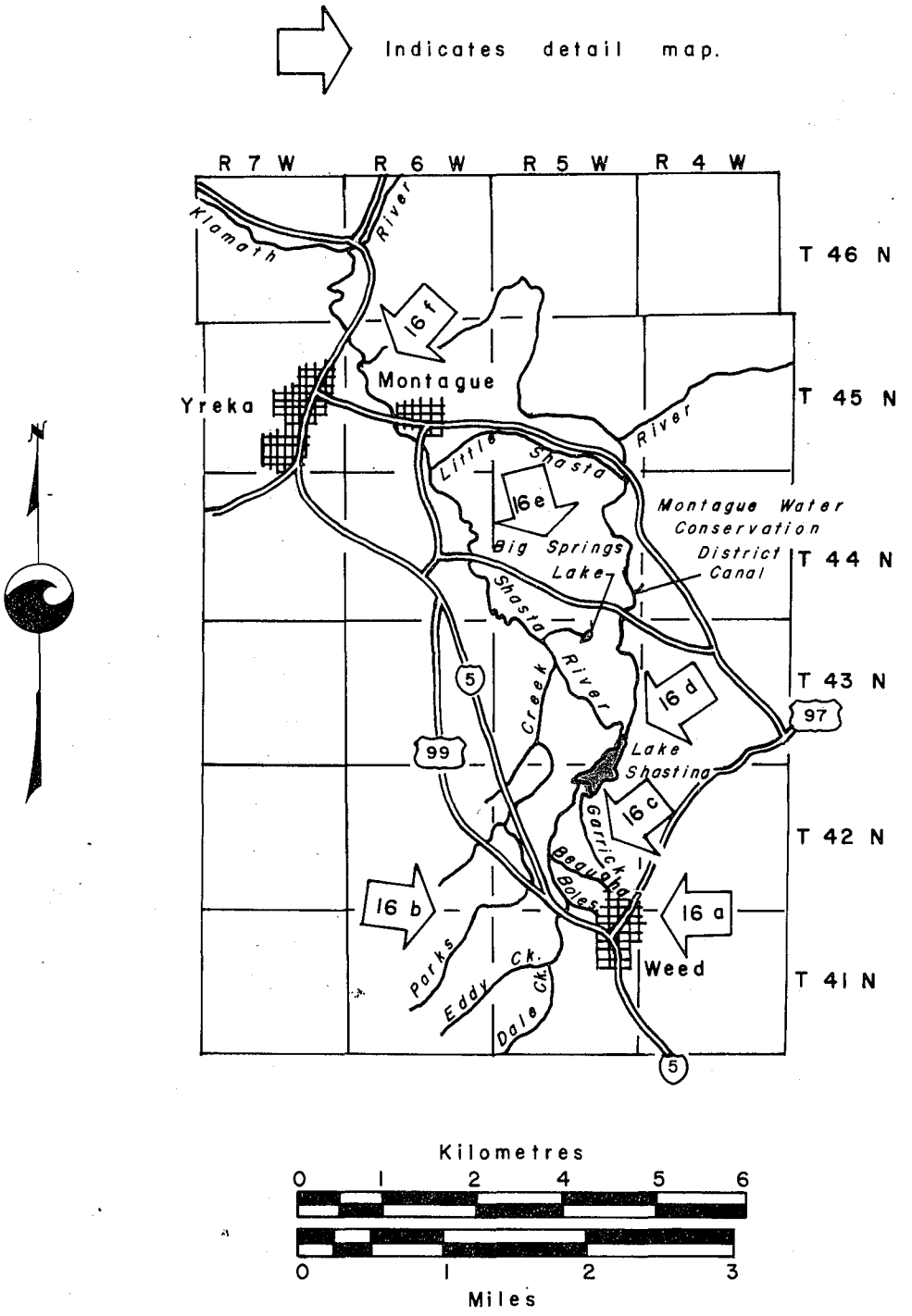
TABLE 36

SHASTA RIVER AT MONTAGUE-GRENADA HIGHWAY BRIDGE

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1			**	**	1 300	46	793	28	680	24	623	22	396	14	1
2			**	**	1 470	52	765	27	453	16	651	23	396	14	2
3			**	**	1 590	56	793	28	453	16	538	19	227	8.0	3
4			**	**	1 500	53	623	22	538	19	651	23	187	6.6	4
5			**	**	2 040	72	425	15	312	11	453	16	396	14	5
6			**	**	2 550	90	425	15	680	24	481	17	510	18	6
7			**	**	2 040	72	963	34	878	31	651	23	340	12	7
8			**	**	1 760	62	3 120	110	878	31	368	13	227	8.0	8
9			**	**	1 900	67	2 180	77	850	30	453	16	396	14	9
10			**	**	2 380	84	1 390	49	878	31	595	21	396	14	10
11			**	**	2 380	84	1 160	41	906	32	538	19	340	12	11
12			**	**	2 380	84	1 870	66	1 080	38	566	20	396	14	12
13			**	**	2 380	84	1 190	42	878	31	396	14	227	8.0	13
14			**	**	2 150	76	1 080	38	1 250	44	368	13	283	10	14
15			**	**	1 700	60	850	30	878	31	368	13	481	17	15
16			**	**	1 760	62	850	30	651	23	481	17	510	18	16
17			**	**	1 700	60	595	21	510	18	340	12	510	18	17
18			**	**	1 700	60	765	27	453	16	453	16	510	18	18
19			**	**	1 810	64	1 220	43	340	12	595	21	566	20	19
20			2 210	78*	1 530	54	651	23	283	10	680	24	680	24	20
21			2 040	72	1 250	44	736	26	283	10	623	22	538	19	21
22			1 700	60	1 500	53	680	24	510	18	623	22	708	25	22
23			1 470	52	**	**	623	22	623	22	623	22	651	23	23
24			1 250	44	**	**	453	16	680	24	623	22	793	28	24
25			1 080	38	**	**	425	15	793	28	793	28	1 250	44	25
26			1 250	44	**	**	283	10	736	26	680	24	1 100	39	26
27			1 760	62	**	**	207	7.3	453	16	538	19	1 080	38	27
28			2 040	72	2 040	72	340	12	396	14	453	16	1 700	60	28
29			1 250	44	1 560	55	227	8.0	340	12	368	13	3 400	120	29
30			1 190	42	1 500	53	453	16	221	7.8	680	24	3 120	110	30
31					1 250	44			623	22	510	18			31
Mean							871	30.8	629	22.2	541	19.1	744	26.3	Mean
Volume															Volume
hm							2.260		1.680		1.450		1.930		hm
AF							1830		1360		1170		1560		AF

* Beginning of Record
** Mean daily flow from April 1 to April 19 and May 23 to May 27 was in excess of 2 831.7 l/s (100 cfs)

Figure 16

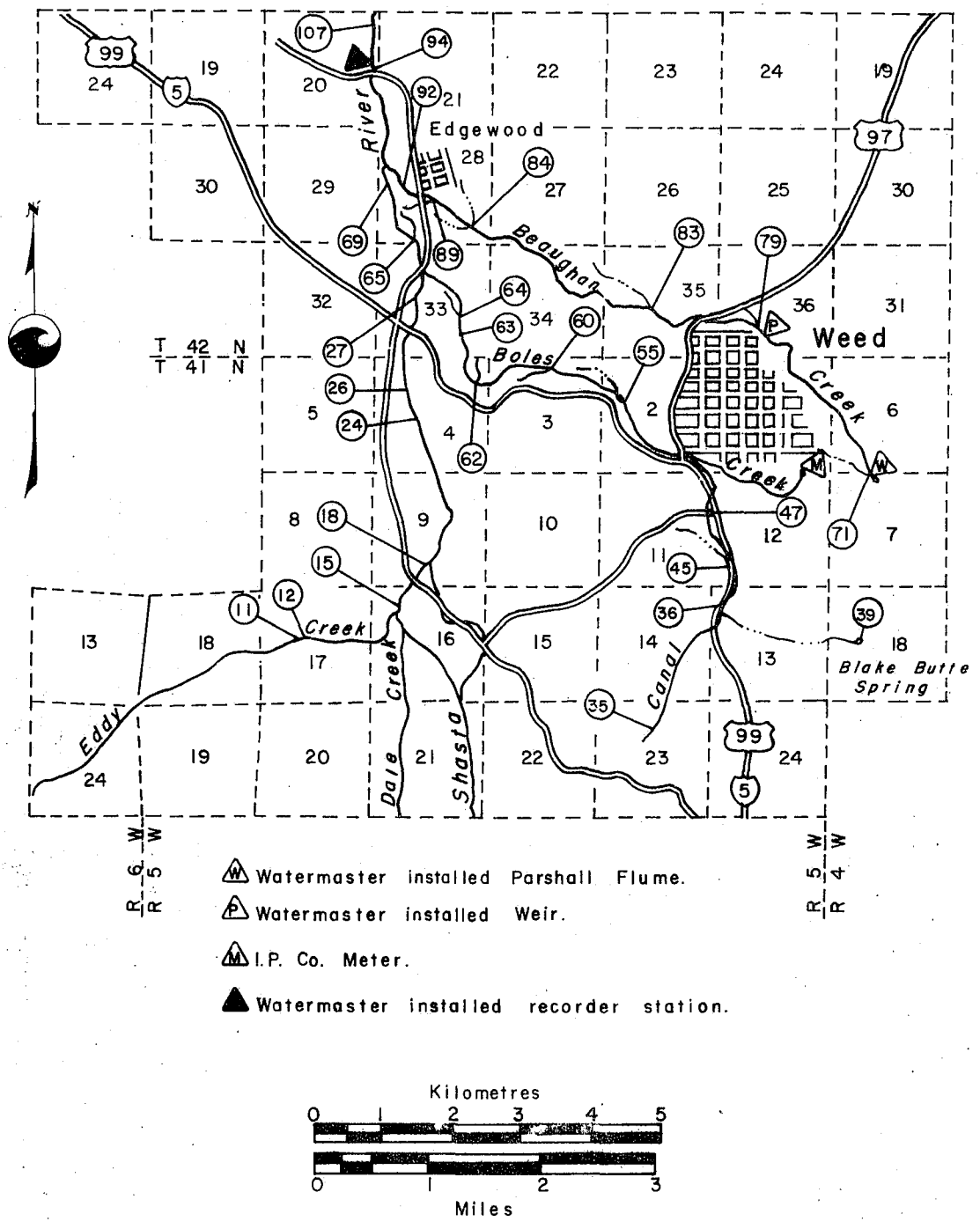


INDEX MAP SHASTA RIVER WATERMASTER SERVICE AREA

Diversion Number	Name	l/s	Cfs
11	Dow Ditch	43.89	1.55
12	Hammond-Scott Ditch	265.04	9.36
15	Dobkin Ditch	16.99	0.60
18	Yreka Ditch	849.51	30.00
24	Dillman	11.33	0.40
26	Mazzini	175.85	6.21
27	West Neal Ditch	28.31	1.00
35	Jones	11.33	0.40
36	International Paper Company	113.27	4.00
39	Black Butte Spring	14.16	0.50
45	Thompson Ditch	29.73	1.05
47	Sullivan Ditch	8.49	0.30
55	Salanti Ditch	33.27	1.175
60	Davidson Ditch	19.82	0.70*
62	Belcastro Ditch	2.83	0.10*
63	Upper Lemos Ditch	73.62	2.60
64	Lower Lemos Ditch	31.14	1.10
65	East Neal Ditch	22.65	0.80
69	Alexander Ditch	45.30	1.60
71-78	International Paper Company	115.25	4.07
79	Linville	19.82	0.70
83	Belcastro	15.57	0.55
84-87	Jackson	109.58	3.87
89	Ordway	11.32	0.40
92	Ordway	24.35	0.86
94	Davis	18.41	0.65
107	Mills Ranch	16.99	0.60

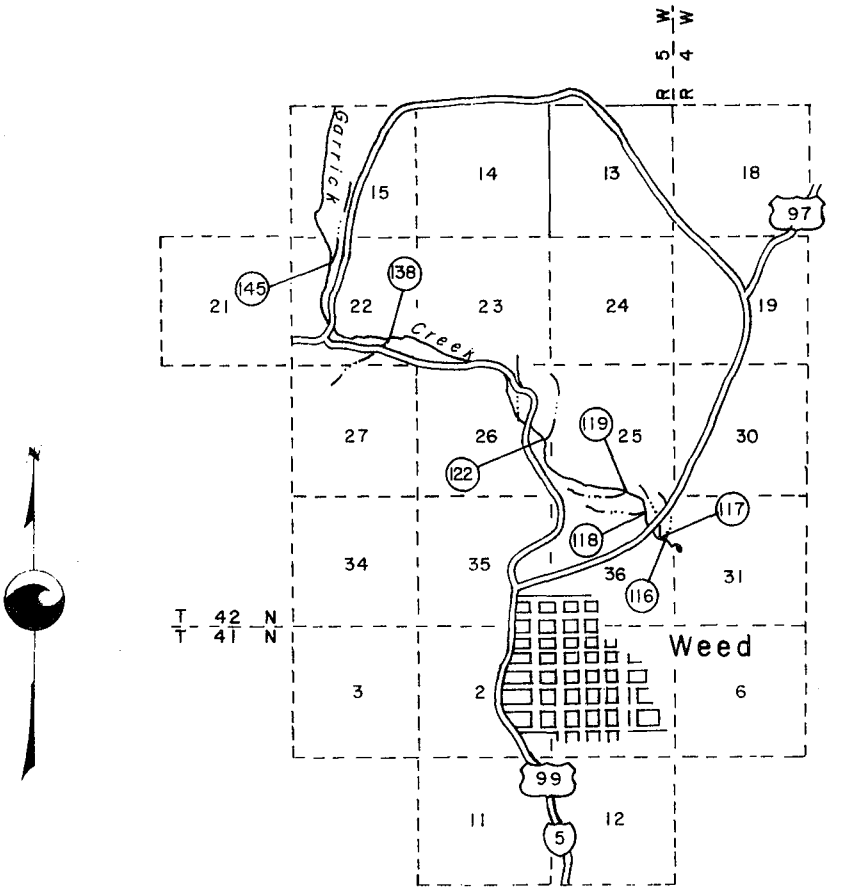
* Not in use

Figure 16 a



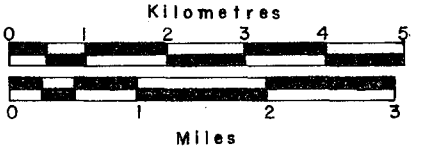
DIVERSIONS FROM SHASTA RIVER BEAUGHAN CREEK AND BOLES CREEK SHASTA RIVER WATERMASTER SERVICE AREA

Figure 16b



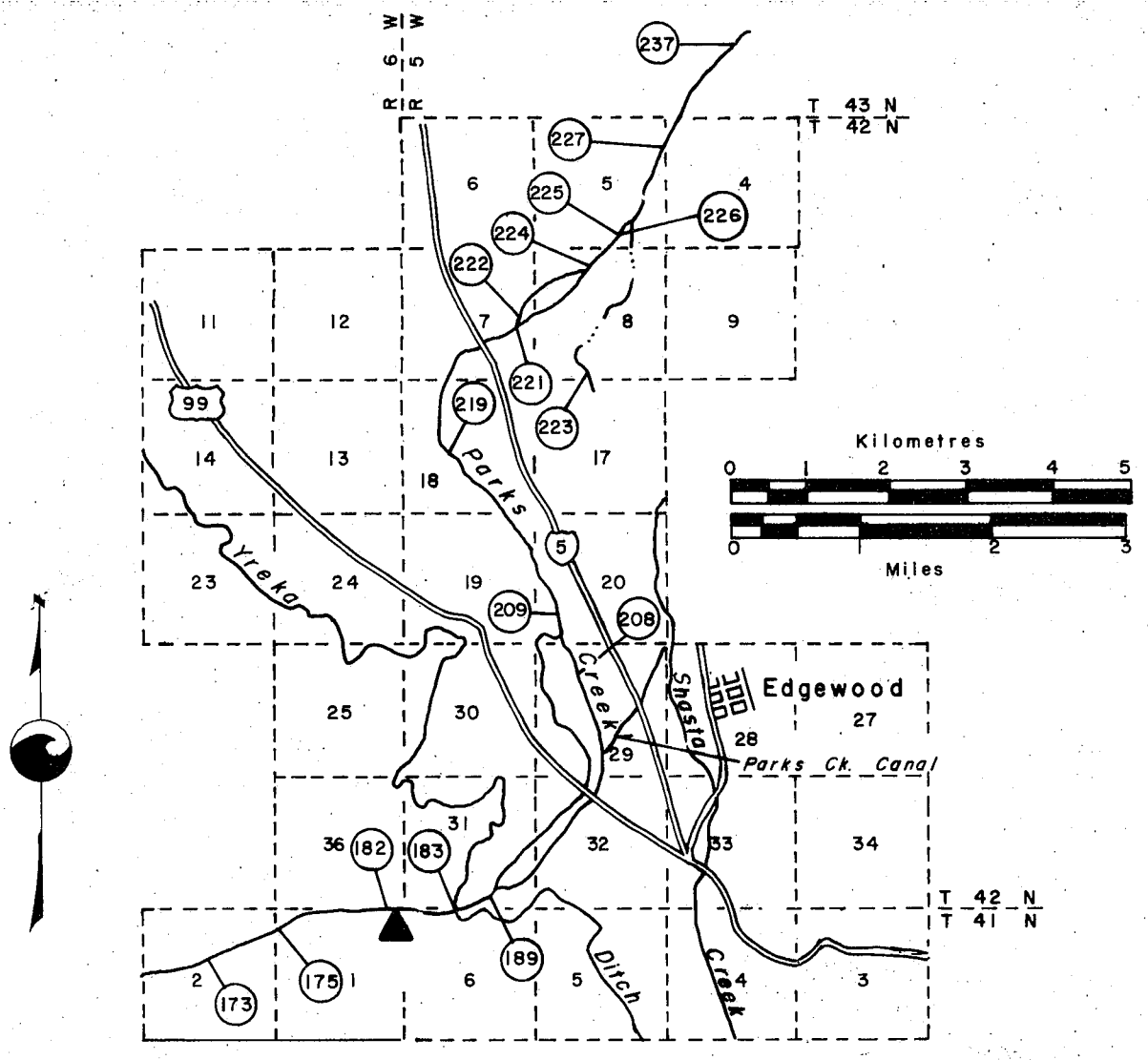
Diversion Number	Name	l/s	cfs
116	Zwanziger	62.30	2.20
117	Goltz	62.30	2.20
118	Belcastro-Luiz	11.33	0.40
119	Luiz	11.33	0.40
122	Hoy	24.35	0.86
138	Jackson	33.98	1.20
145	Mills	31.15	1.10

Garrick Creek is shown as Carrick in the Decree



DIVERSIONS FROM GARRICK CREEK SHASTA RIVER WATERMASTER SERVICE AREA

Figure 16c



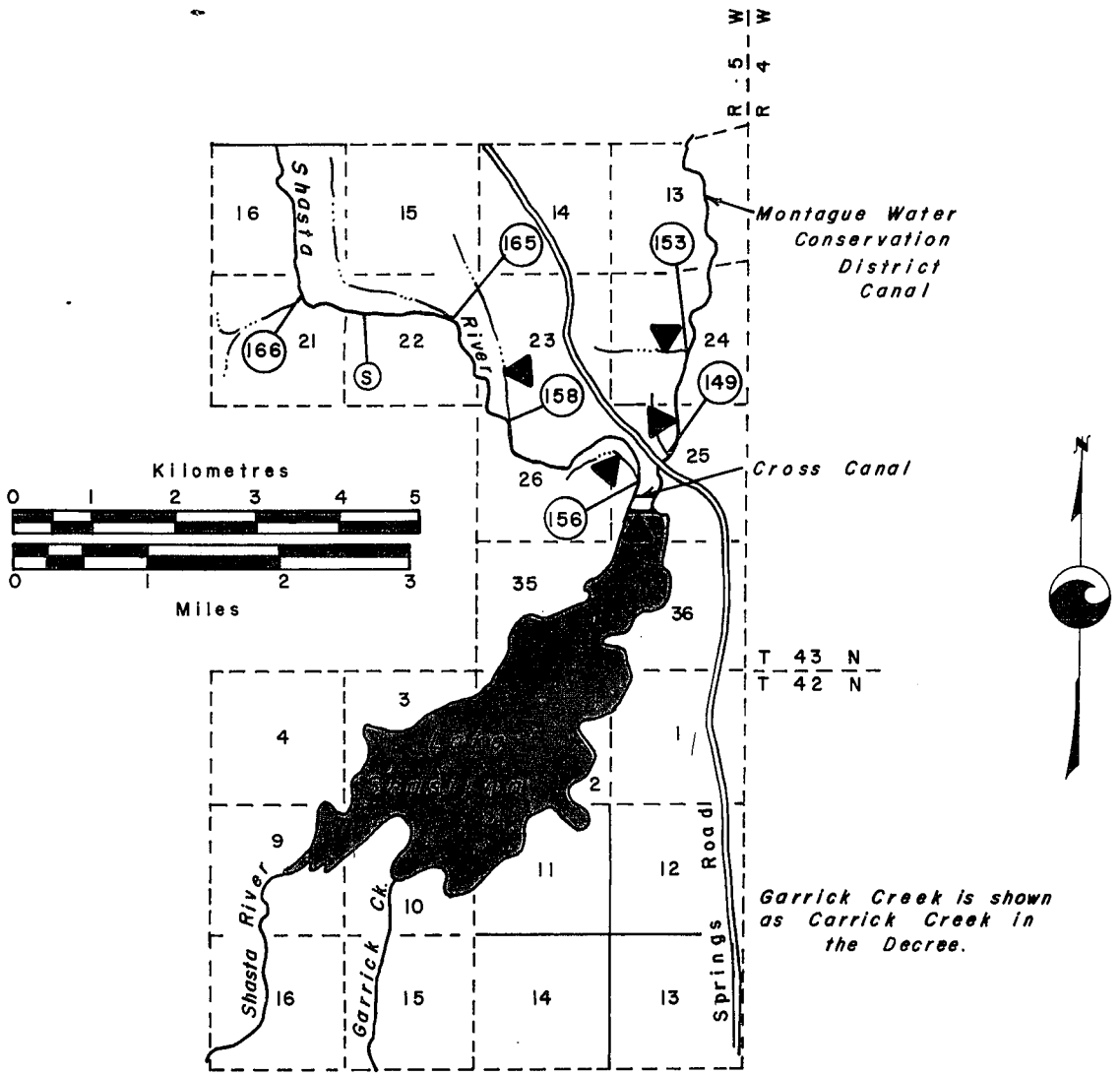
Diversion Number	Name	l/s	cfs	Diversion Number	Name	l/s	cfs
173	Vanderbilt	13.88	0.70	221-227	Gragnani	346.88	17.50
175	Vanderbilt	25.27	1.275	208	Lemos	39.65	1.40
182	Duke North	*	*	209	Bettencourt	25.49	0.90
183	Yreka ditch	30 1.29	15.20	219	Whitsett	24.07	0.85
189	Duke South	*	*	237	Cardoza	84.39	2.98

* Allotment of 118.93 l/s (6.00 cfs) in either ditch.

▲ Watermaster installed recorder station.

DIVERSIONS FROM PARKS CREEK
SHASTA RIVER WATERMASTER SERVICE AREA

Figure 16 d



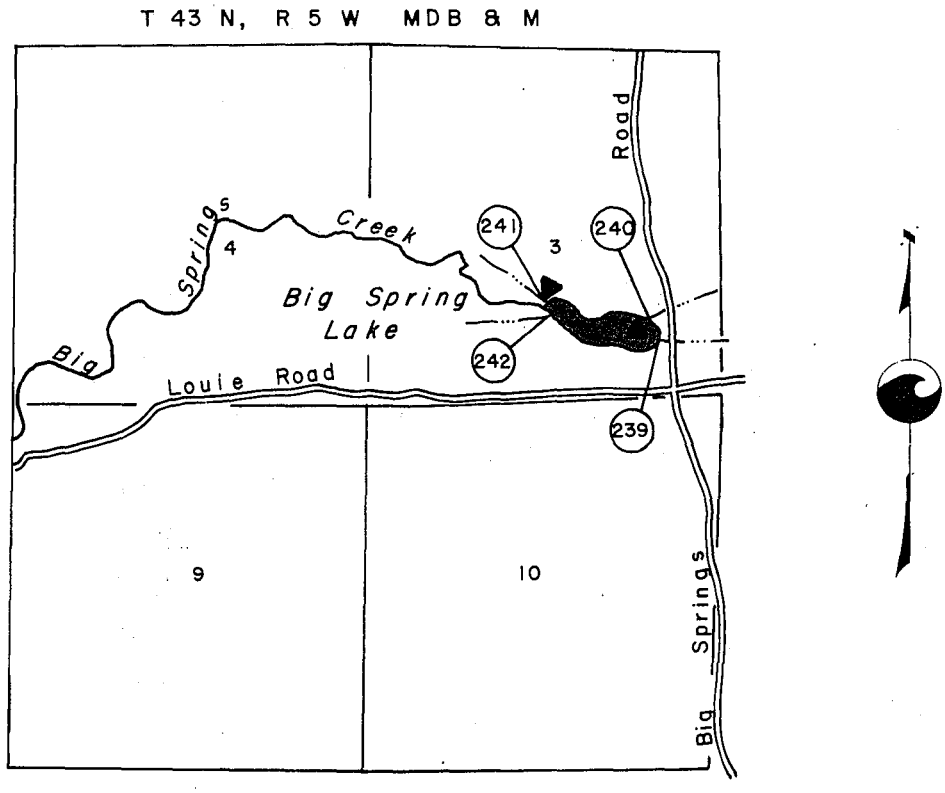
Diversion Number	Name	hm^3	Ac/Ft
149	Flying L Ranch	0.24	.198
153	Taylor ditch	1.48	1 200
156	Seldom-Seen Ranch	1.14	924
158	Ross Homes Inc.	0.57	464
165,166*	Hole-in-the-Ground Ranch	0.74	596
(S)	Clear spring	0.01	5.

* (3 Pumps)

▲ Watermaster installed recorder station.

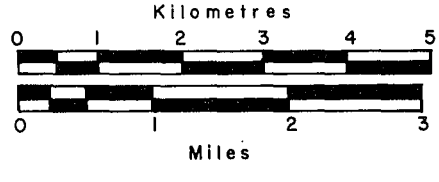
PRIOR RIGHTS BELOW LAKE SHASTINA
SHASTA RIVER WATERMASTER SERVICE AREA

Figure 16e



Diversion Number	Name	l/s	cfs
239	Brahs etal Pump	212.38	7.5
240	Big Springs I.D.	849.51	30.0
241,242	E. Louie ditch	283.17	10.0

▲ Watermaster installed recorder station

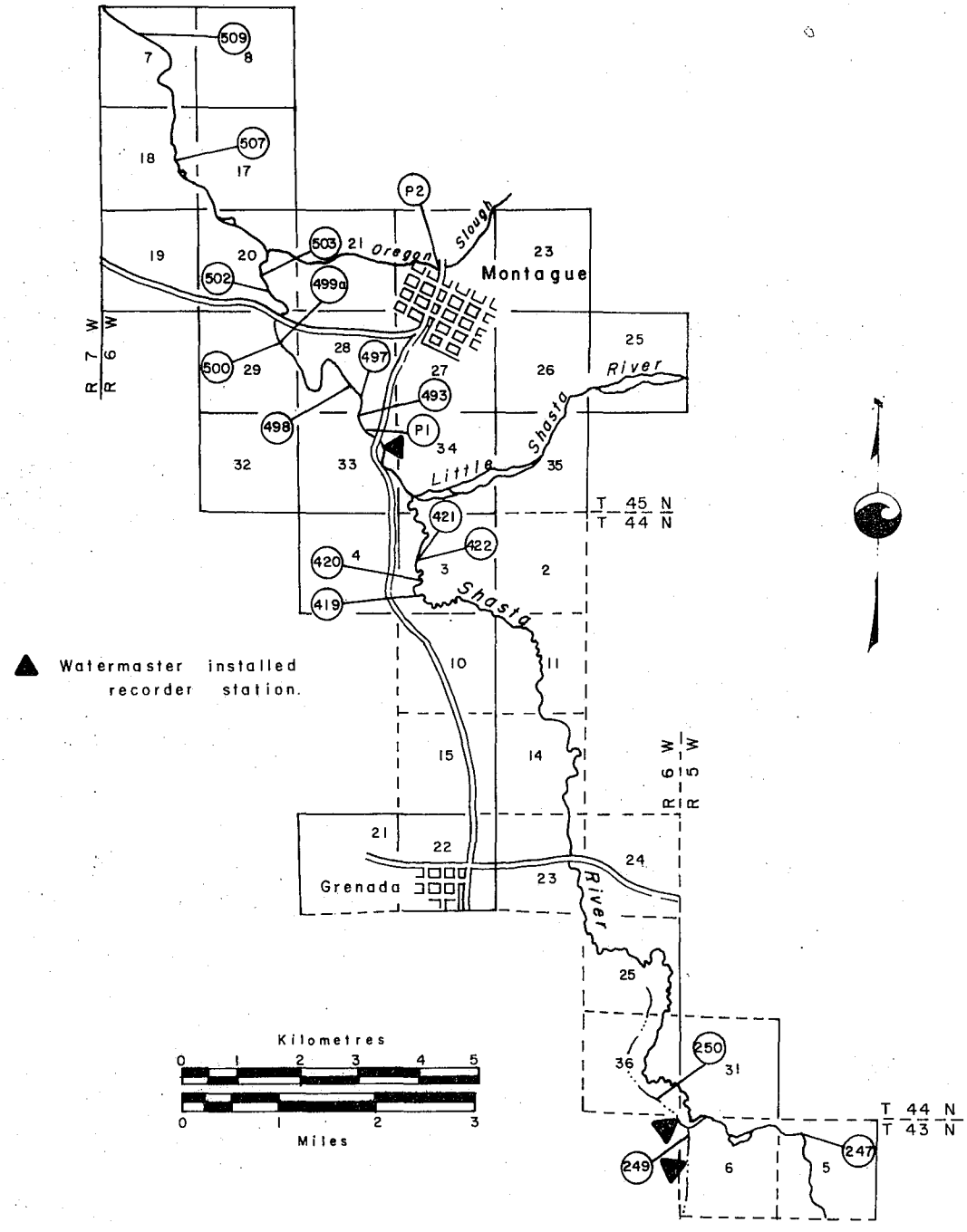


DIVERSIONS FROM BIG SPRINGS LAKE SHASTA RIVER WATERMASTER SERVICE AREA

Diversion Number	Name	l/s	Cfs
247	Nelson (pump)	67.11	2.37
249	Granada Irrigation District Pumps	1 132.68	40.00
250	Huesman Ditch	308.99	10.91*
419	Shasta River Water Users Association Pumps	1 189.31	42.00
420	Banhart	5.67	0.20
421,422	Kuck	63.72	2.25
493	Easton	2.84	0.10
497	Fiock (pump)	132.80	4.69
498	Fiock	33.98	1.20
499a,500	Lemos	19.82	0.70
502	Fiock - Alley	107.61	3.80
503	Fiock	167.07	5.90
507	Fiock	7.07	0.25
509	Peters - Johnson	49.55	1.75
P1	Meamber (pump)	6.23	0.22
P1	Meamber (pump)	28.32	1.00

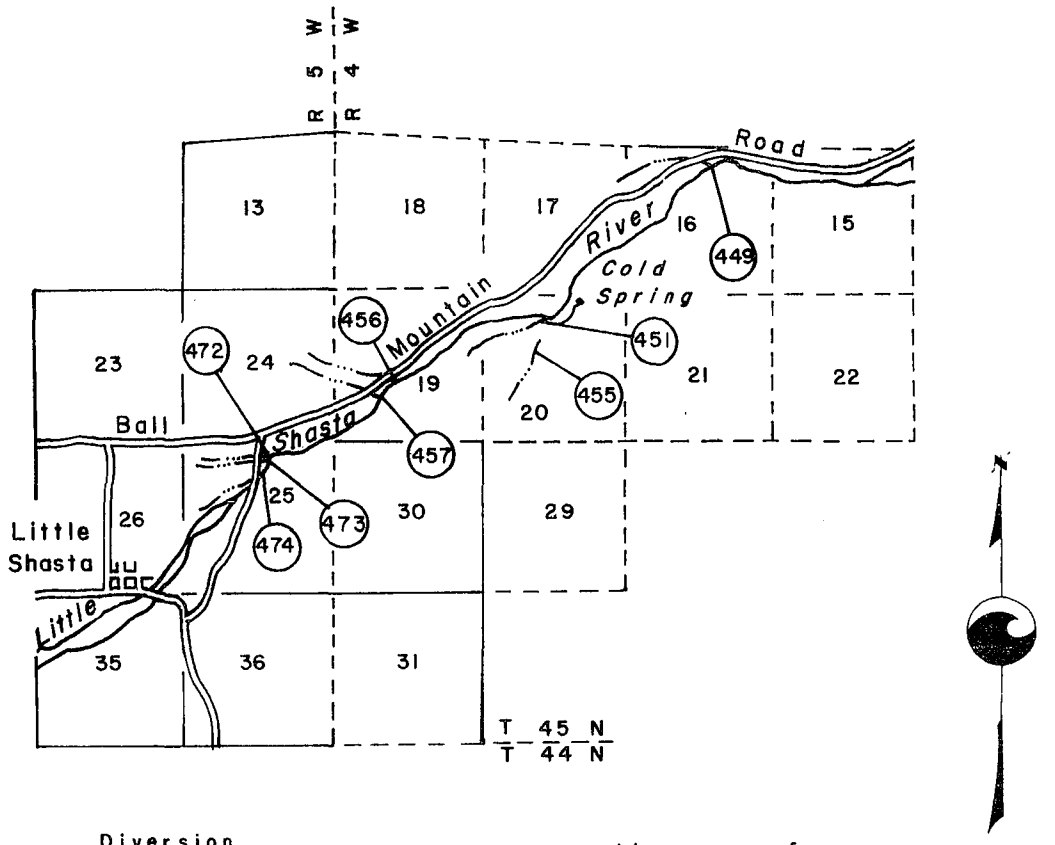
* Plus indefined riparian rights

Figure 16f

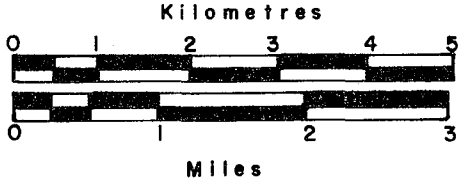


DIVERSIONS FROM LOWER SHASTA RIVER SHASTA RIVER WATERMASTER SERVICE AREA

Figure 16g



Diversion Number	Name	l/s	cfs
449	Harp ditch	45.31	1.60
451	Terwilliger ditch	31.72	1.12
455	Martin ditch	169.90	6.00
456	Dimmick ditch	3.40	0.12
457	S & T ditch	186.89	6.60
472	M & L ditch	555.01	19.60
473	BMS ditch	203.60	7.19
474	HHP ditch	283.17	10.00



DIVERSIONS FROM LITTLE SHASTA RIVER SHASTA RIVER WATERMASTER SERVICE AREA

SOUTH FORK PIT RIVER WATERMASTER SERVICE AREA

The South Fork Pit River service area is located primarily in southeastern Modoc County, with a small portion extending into northeastern Lassen County, Figures 17 through 17e, pages 133 through 138, show the South Fork and its tributaries, with roads, etc.

The major source of water for this service area is the South Fork Pit River and its tributaries which rise on the western slopes of the Warner Mountains. The river flows in a westerly direction, entering South Fork Valley near Likely. It then flows north through the valley to its confluence with the North Fork Pit River just south of Alturas. The South Fork Pit River is joined from the east by Fitzhugh Creek near the middle of the valley and by Pine Creek near Alturas.

The major area of water use is in South Fork Valley between Likely and Alturas. South Fork Valley is about 26 kilometres (16 miles) long and 5 km (3 miles) wide, with the valley floor lying at an elevation of about 1 372 metres (4,500 feet). The valley is bounded on both sides by a rocky plateau that separates it from the surrounding mountains.

Basis of Service

The Pine Creek agreement established water rights on Pine Creek November 22, 1933, and this stream system was added to the South Fork Pit River area on January 12, 1935. Pine Creek Reservoir, a small reservoir above all diversions, was originally used for power generation. This reservoir, now a recreation site, has a small water right but is not in the service area.

A large reservoir, West Valley Reservoir, was built in 1937 to increase the supply and extend the season for irrigation in the South Fork Irrigation District. The water rights for use from West Valley Reservoir total 2 815 cubic hectometres (23,100 acre-feet).

The South Fork Pit River decree and the Pine Creek agreement establish two priorities on the respective systems.

Water Supply

The water supply for Pine Creek is derived mostly from snowmelt runoff. Therefore, runoff is usually small in the early spring, increases to a peak in May as temperatures rise, and then gradually decreases throughout the remainder of the season. Water users supplement their irrigation supplies from other sources whenever possible.

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 diverted into the Payne and French Reservoirs through Payne-French Ditch (Diversion 136) until about June, when the diversion is adjusted to allow sufficient flow 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 imported water is rediverted from North Fork Fitzhugh Creek through the Bowman Ditch to the Bowman Ranch. Return flow from Bowman Ranch to the creek is rediverted through Diversion 136.

The water supply for the South Fork Pit River is derived primarily from snowmelt runoff, supplemented by 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 Pit River. West Valley Reservoir is located on West Valley Creek which enters the river below Jess Valley.

Most of the water users on the South Fork Pit River, except those in Jess

Valley, are in the South Fork Irrigation District. The District stores water in West Valley Reservoir and releases it to the South Fork Pit River as a supplemental supply when the natural flow becomes insufficient to meet demands. This usually occurs during the middle of June. Reservoir releases, together with the natural flow, are distributed by the watermaster in cooperation with the board of directors of the irrigation district. Except for extremely dry years, 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 in the area are presented in Tables 37 through 40, pages 131 and 132.

Method of Distribution

Irrigation of the lands along tributary streams is accomplished by flooding through the use of small lateral ditches. The water is distributed on a continuous-flow basis to each user through gravity-flow diversion systems. In some cases, rotation is practiced among several users.

Most irrigation in the South Fork Pit River area is by the check and border method. The lands receive water essentially on demand by supplementing natural flow with releases from West Valley Reservoir. However, irrigation must be coordinated between the various ranches to eliminate large peak demands from the reservoir and to use the return flow as much as possible. Actual distribution varies each year as there is no specific irrigation schedule in use.

1977 Distribution

Watermaster service began March 14 and continued until October 12. L. L. Bates, Water Resources Engineering Associate, served as watermaster for this season.

The precipitation at Alturas was 225 millimetres (9.87 inches) for the period July 1976 through June 1977, and of this, 102 mm (4 inches) fell in May and June.

Pine Creek. The flow was extremely low all year. The supply receded from 50 to 20 percent of priority requirements. The May-June rains were very beneficial and increased storage in Dorris Reservoir by 2.47 cubic hectometres (2,000 acre-feet).

Fitzhugh Creek. All of the first and 50 percent of second priorities were filled until June 1. From June 1 until the end of the season the supply decreased from 100 to 50 percent of the first priority.

South Fork Pit River. West Valley Reservoir reached the maximum storage of 16.59 hm^3 (13,450 acre-feet) on April 19. The storage was drawn down to 13.44 hm^3 (10,900 acre-feet) by May 10. The spring rains and lack of demand increased storage to 16.54 hm^3 (13,400 acre-feet) on June 1. From then the withdrawal was at a constant rate until all storage was exhausted on September 16. Figure 17e, page 138 shows the reservoir storage for 1977.

SOUTH FORK PIT RIVER WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 37

SOUTH FORK PIT RIVER NEAR LIKELY

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1	125	4.4	113	4.0	3 990	141	2 970	105	2 180	77	3 600	127	2 320	82	1
2	116	4.1	108	3.8	3 400	120	3 570	126	2 120	75	3 960	140	2 180	77	2
3	102	3.6	108	3.8	2 490	88	4 110	145	2 440	86	4 280	151	1 980	70	3
4	125	4.4	125	4.4	2 440	86	4 960	175	2 120	75	4 250	150	1 810	64	4
5	133	4.7	312	11	2 610	92	5 520	195	2 100	74	4 190	148	1 700	60	5
6	116	4.1	623	22	2 720	96	5 210	184	2 010	71	4 130	146	1 530	54	6
7	125	4.4	765	27	2 180	77	5 210	184	1 840	65	4 080	144	1 360	48	7
8	161	5.7	1 330	47	2 010	71	3 880	137	1 840	65	3 510	124	1 220	43	8
9	127	4.5	991	35	2 550	90	3 540	125	1 700	60	3 030	107	1 160	41	9
10	108	3.8	708	25	3 430	121	3 710	131	1 640	58	3 030	107	991	35	10
11	125	4.4	708	25	2 240	79	2 320	82	1 760	62	3 140	111	850	30	11
12	150	5.3	680	24	1 270	45	1 950	69	2 410	85	3 060	108	736	26	12
13	125	4.4	736	26	1 020	36	1 760	62	2 410	85	2 950	104	680	24	13
14	119	4.2	1 160	41	1 390	49	2 120	75	2 410	85	2 920	103	651	23	14
15	119	4.2	1 640	58	1 670	59	2 460	87	2 350	83	2 830	100	651	23	15
16	119	4.2	1 950	69	1 390	49	2 150	76	2 290	81	2 750	97	708	25	16
17	130	4.6	1 870	66	1 760	62	1 730	61	2 290	81	2 750	97	821	29	17
18	116	4.1	1 500	53	1 560	55	1 470	52	2 290	81	2 690	95	708	25	18
19	139	4.9	2 460	87	1 530	54	1 590	56	2 240	79	2 630	93	651	23	19
20	198	7.0	3 120	110	1 530	54	1 530	54	2 550	90	2 490	88	708	25	20
21	156	5.5	2 920	103	1 780	63	1 270	45	2 970	105	2 410	85	850	30	21
22	156	5.5	2 800	99	1 730	61	991	35	2 920	103	2 270	80	736	26	22
23	184	6.5	2 580	91	2 040	72	1 160	41	2 830	100	2 210	78	708	25	23
24	133	4.7	2 350	83	2 040	72	1 810	64	2 800	99	2 180	77	736	26	24
25	125	4.4	2 320	82	1 840	65	1 840	65	3 260	115	2 380	84	680	24	25
26	119	4.2	2 210	78	2 120	75	2 240	79	3 790	134	2 580	91	651	23	26
27	125	4.4	3 230	114	2 520	89	2 610	92	3 710	131	2 290	81	680	24	27
28	116	4.1	3 850	136	2 210	78	2 520	89	3 620	128	2 180	77	736	26	28
29	119	4.2	3 770	133	2 120	75	2 520	89	3 650	129	2 100	74	1 160	41	29
30	133	4.7	3 770	133	2 070	73	2 460	87	3 620	128	2 120	75	1 100	39	30
31	119	4.2			2 490	88			3 600	127	2 380	84			31
Mean	131	4.6	1 690	59.8	2 130	75.3	2 710	95.6	2 570	90.9	2 950	104	1 050	37.0	Mean
Volume															Volume
hm	.350		4.390		5.710		7.010		6.890		7.890		2.720		hm
AF		284		3560		4630		5680		5580		6400		2200	AF

TABLE 38

WEST VALLEY CREEK BELOW WEST VALLEY RESERVOIR

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1			00	0.0*	3 260	115	1 810	64	1 870	66	3 540	125	2 270	80	1
2			00	0.0	2 380	84	1 980	70	1 470	52	3 990	141	2 150	76	2
3			00	0.0	1 810	64	1 980	70	1 470	52	4 390	155	1 980	70	3
4			00	0.0	1 810	64	2 660	94	1 470	52	4 280	151	1 730	61	4
5			00	0.0	1 810	64	3 340	118	1 470	52	4 220	149	1 590	56	5
6			00	0.0	1 810	64	3 340	118	1 470	52	4 190	148	1 390	49	6
7			00	0.0	1 810	64	3 340	118	1 470	52	4 130	146	1 220	43	7
8			00	0.0	1 840	65	1 270	45	1 470	52	3 540	125	1 080	38	8
9			00	0.0	1 840	65	736	26	1 470	52	3 060	108	906	32	9
10			00	0.0	793	28	396	14	1 440	51	3 060	108	793	28	10
11			00	0.0	00	0.0	00	0.0	1 610	57	3 030	107	708	25	11
12			00	0.0	00	0.0	00	0.0	2 240	79	3 030	107	623	22	12
13			00	0.0	00	0.0	00	0.0	2 240	79	2 950	104	566	20	13
14			00	0.0	00	0.0	481	17	2 240	79	2 860	101	510	18	14
15			00	0.0	00	0.0	906	32	2 210	78	2 800	99	510	18	15
16			00	0.0	00	0.0	906	32	2 210	78	2 780	98	453	16	16
17			00	0.0	00	0.0	340	12	2 180	77	2 750	97	340	12	17
18			00	0.0	00	0.0	00	0.0	2 180	77	2 660	94	312	11	18
19			1 160	41	00	0.0	00	0.0	2 180	77	2 610	92	283	10	19
20			1 840	65	00	0.0	00	0.0	2 550	90	2 320	82	283	10	20
21			1 840	65	00	0.0	00	0.0	2 890	102	2 210	78	269	9.5	21
22			1 840	65	00	0.0	00	0.0	2 890	102	2 180	77	263	9.3	22
23			1 840	65	00	0.0	368	13	2 890	102	2 150	76	263	9.3	23
24			1 810	64	00	0.0	1 360	48	2 860	101	2 100	74	246	8.7	24
25			1 810	64	00	0.0	1 360	48	3 170	112	2 070	73	246	8.7	25
26			1 810	64	453	16	1 810	64	3 680	130	2 040	72	252	8.9	26
27			2 660	94	765	27	2 240	79	3 620	128	2 010	71	246	8.7	27
28			3 340	118	765	27	2 240	79	3 570	126	1 930	68	232	8.2	28
29			3 310	117	765	27	2 240	79	3 570	126	1 900	67	227	8.0	29
30			3 310	117	765	27	2 240	79	3 540	125	2 040	72	252	8.9	30
31					1 020	36			3 540	125	2 320	82			31
Mean			886	31.3	764	27.0	1 240	44.0	2 360	83.3	2 880	102	740	26.1	Mean
Volume															Volume
hm			2.300		2.050		3.230		6.320		7.700		1.920		hm
AF				1860		1660		2610		5120		6240		1550	AF

* Beginning of Record

SOUTH FORK PIT RIVER WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 39

FITZHUGH CREEK BELOW DIVERSION NO. 137

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1			11	0.4*	125	4.4	147	5.2	36	1.3	8.5	0.3	11	0.4	1
2			11	0.4	164	5.8	142	5.0	48	1.7	8.5	0.3	11	0.4	2
3			11	0.4	125	4.4	116	4.1	70	2.5	11	0.4	11	0.4	3
4			187	6.6	130	4.6	105	3.7	53	1.9	11	0.4	11	0.4	4
5			224	7.9	136	4.8	93	3.3	48	1.7	11	0.4	17	0.6	5
6			252	8.9	159	5.6	93	3.3	42	1.5	11	0.4	36	1.3	6
7			396	14	153	5.4	130	4.6	36	1.3	11	0.4	36	1.3	7
8			283	10	130	4.6	142	5.0	31	1.1	11	0.4	36	1.3	8
9			229	8.1	204	7.2	181	6.4	31	1.1	11	0.4	31	1.1	9
10			159	5.6	1 390	49	244	8.6	31	1.1	11	0.4	31	1.1	10
11			204	7.2	1 130	40	142	5.0	31	1.1	11	0.4	36	1.3	11
12			198	7.0	708	25	130	4.6	31	1.1	11	0.4	34	1.2	12
13			224	7.9	396	14	105	3.7	31	1.1	11	0.4	36	1.3	13
14			176	6.2	269	9.5	90	3.2	31	1.1	14	0.5	36	1.3	14
15			193	6.8	252	8.9	85	3.0	22	0.8	11	0.4	34	1.2	15
16			204	7.2	283	10	73	2.6	11	0.4	11	0.4	45	1.6	16
17			198	7.0	651	23	85	3.0	11	0.4	11	0.4	110	3.9	17
18			170	6.0	708	25	93	3.3	11	0.4	14	0.5	70	2.5	18
19			147	5.2	510	18	283	10	8.5	0.3	11	0.4	53	1.9	19
20			147	5.2	340	12	142	5.0	8.5	0.3	14	0.5	53	1.9	20
21			142	5.0	283	10	105	3.7	8.5	0.3	14	0.5	65	2.3	21
22			136	4.8	261	9.2	90	3.2	8.5	0.3	11	0.4	59	2.1	22
23			116	4.1	312	11	65	2.3	5.6	0.2	11	0.4	59	2.1	23
24			102	3.6	340	12	51	1.8	5.6	0.2	14	0.5	65	2.3	24
25			102	3.6	269	9.5	51	1.8	5.6	0.2	22	0.8	59	2.1	25
26			93	3.3	244	8.6	45	1.6	5.6	0.2	25	0.9	53	1.9	26
27			65	2.3	244	8.6	45	1.6	5.6	0.2	22	0.8	53	1.9	27
28			70	2.5	198	7.0	42	1.5	5.6	0.2	19	0.7	65	2.3	28
29			70	2.5	181	6.4	36	1.3	5.6	0.2	19	0.7	312	11	29
30			53	1.9	164	5.8	34	1.2	8.5	0.3	17	0.6	204	7.2	30
31					153	5.4			8.5	0.3	17	0.6			31
Mean			153	5.4	342	12.1	106	3.8	22.7	0.8	13.7	0.5	58.2	2.1	Mean
Volume															Volume
hm			.400		.920		.280		.060		.040		.150		hm
AF			320		743		223		49.2		29.7		122		AF

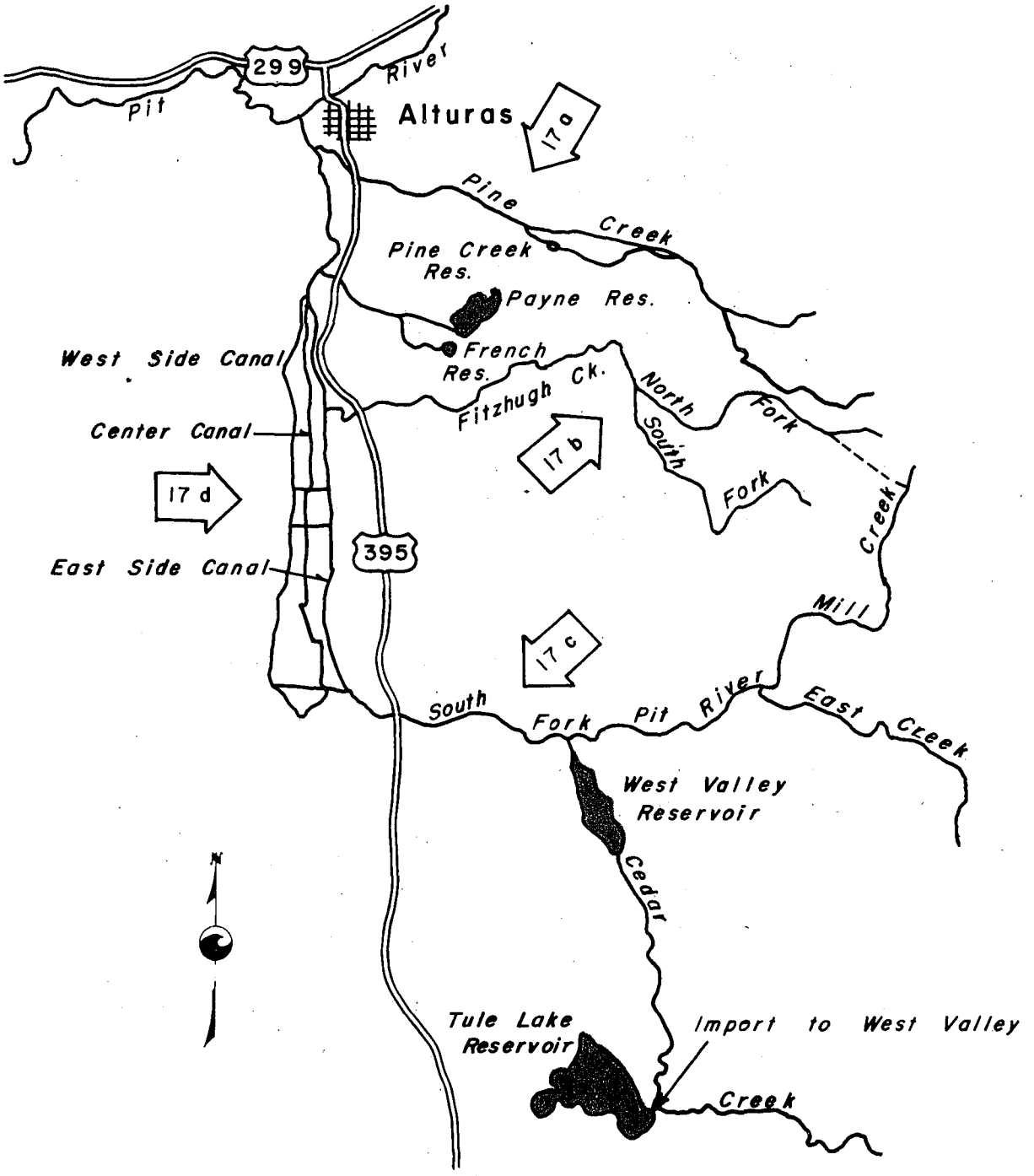
* Beginning of Record

TABLE 40

PINE CREEK NEAR ALTURAS

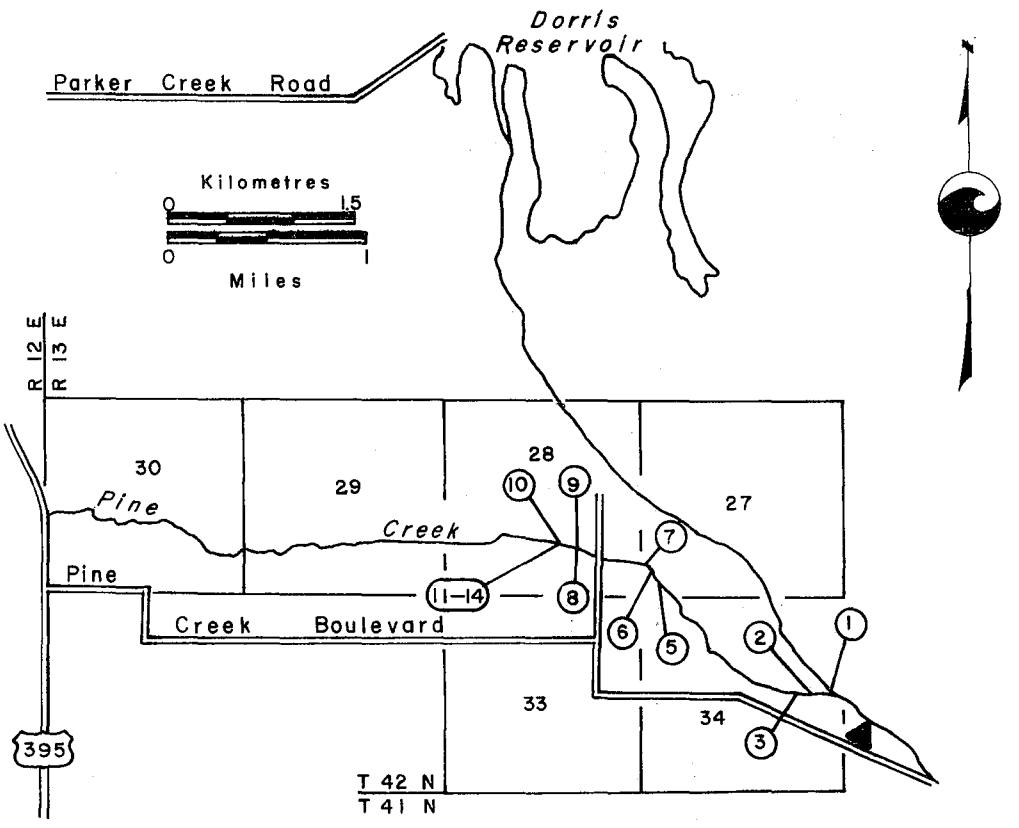
Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1	283	10	249	8.8	368	13	680	24	453	16	246	8.7	210	7.4	1
2	280	9.9	238	8.4	368	13	651	23	453	16	246	8.7	210	7.4	2
3	280	9.9	246	8.7	368	13	680	24	453	16	249	8.8	204	7.2	3
4	283	10	266	9.4	396	14	821	29	425	15	246	8.7	204	7.2	4
5	312	11	278	9.8	425	15	935	33	396	14	229	8.1	204	7.2	5
6	283	10	283	10	425	15	991	35	396	14	210	7.4	204	7.2	6
7	283	10	283	10	425	15	1 080	38	368	13	212	7.5	198	7.0	7
8	283	10	283	10	425	15	1 130	40	368	13	210	7.4	198	7.0	8
9	283	10	275	9.7	680	24	1 080	38	368	13	210	7.4	198	7.0	9
10	283	10	244	8.6	1 780	63	1 080	38	368	13	204	7.2	198	7.0	10
11	312	11	246	8.7	1 130	40	991	35	340	12	207	7.3	198	7.0	11
12	312	11	249	8.8	793	28	935	33	340	12	198	7.0	198	7.0	12
13	340	12	252	8.9	566	20	906	32	340	12	207	7.3	198	7.0	13
14	312	11	241	8.5	566	20	906	32	312	11	224	7.9	190	6.7	14
15	312	11	232	8.2	566	20	850	30	312	11	212	7.5	198	7.0	15
16	283	10	224	7.9	538	19	793	28	312	11	212	7.5	221	7.8	16
17	283	10	255	9.0	963	34	765	27	312	11	212	7.5	229	8.1	17
18	280	9.9	249	8.8	1 080	38	736	26	312	11	210	7.4	215	7.6	18
19	283	10	235	8.3	793	28	736	26	312	11	218	7.7	215	7.6	19
20	283	10	238	8.4	651	23	680	24	312	11	218	7.7	229	8.1	20
21	283	10	249	8.8	680	24	623	22	283	10	215	7.6	215	7.6	21
22	312	11	258	9.1	680	24	566	20	283	10	210	7.4	210	7.4	22
23	283	10	269	9.5	736	26	510	18	283	10	198	7.0	204	7.2	23
24	275	9.7	269	9.5	680	24	538	19	280	9.9	215	7.6	204	7.2	24
25	269	9.5	266	9.4	651	23	510	18	275	9.7	258	9.1	204	7.2	25
26	266	9.4	261	9.2	651	23	510	18	269	9.5	269	9.5	198	7.0	26
27	272	9.6	252	8.9	651	23	510	18	263	9.3	227	8.0	198	7.0	27
28	249	8.8	258	9.1	651	23	481	17	261	9.2	215	7.6	221	7.8	28
29	241	8.5	278	9.8	651	23	453	16	258	9.1	215	7.6	396	14	29
30	283	10	312	11	651	23	453	16	252	8.9	212	7.5	275	9.7	30
31	258	9.1			680	24			246	8.7	210	7.4			31
Mean	285	10.1	258	9.1	667	23.5	753	26.6	329	11.6	220	7.8	215	7.6	Mean
Volume															Volume
hm	.760		.670		1.790		1.950		.880		.590		.560		hm
AF	619		542		1450		1580		714		478		451		AF

Figure 17



INDEX MAP
SOUTH FORK PIT RIVER
WATERMASTER SERVICE AREA

Figure 17a



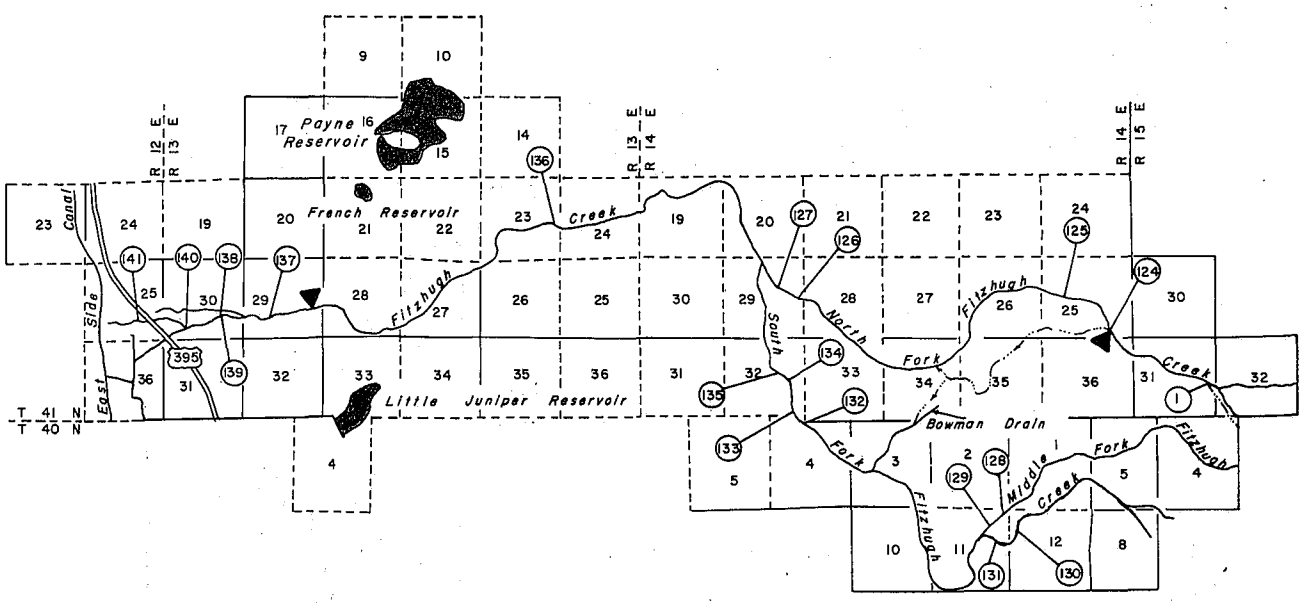
Diversion Number	Name	l/s	cfs	Diversion Number	Name	l/s	cfs
1	Boyle	84.95	3.00	2,3,6-9	Rice	137.34	4.85
	Stevens	94.86	3.35	5	Weber Bros.	231.35	8.17
	Wall	2.83	0.10		Younger	125.16	4.42
	Baqwell	19.82	0.70		Swanson	38.79	1.37
	Sullivan	19.82	0.70	10	Refuge	849.51	30.00
	Ebbe	19.82	0.70	11-14	Swanson	86.08	3.04

Note: Pine Creek channel capacity below No. 5 is about 566.34 l/s (20 cfs). Surplus Pine Creek flow is diverted into Dorris Reservoir.

▲ Watermaster installed recorder station.

DIVERSIONS FROM PINE CREEK SOUTH FORK PIT RIVER WATERMASTER SERVICE AREA

Figure 17b



Diversion Number	Name	l/s	cfs
1	Jobe	66.26	2.34 1/
124	Jobe	16.99*	0.60*
125	Swanson	45.31	1.60
126-127	Weber Bros.	14.16	0.50
128-131	Harris	33.98	1.20
132-135	Weber Bros.	11.89	0.42
	Swanson	7.93	0.28
136	Nevis Corp.	**	**
137-141	Bell	141.59	5.00
142	Akers Land & Cattle Company	152.91	5.40

1/ Water is imported from Mill Creek.

* Plus imported water from Mill Creek.

** Surplus water plus water from Bowman Drain due to imported water from Mill Creek.

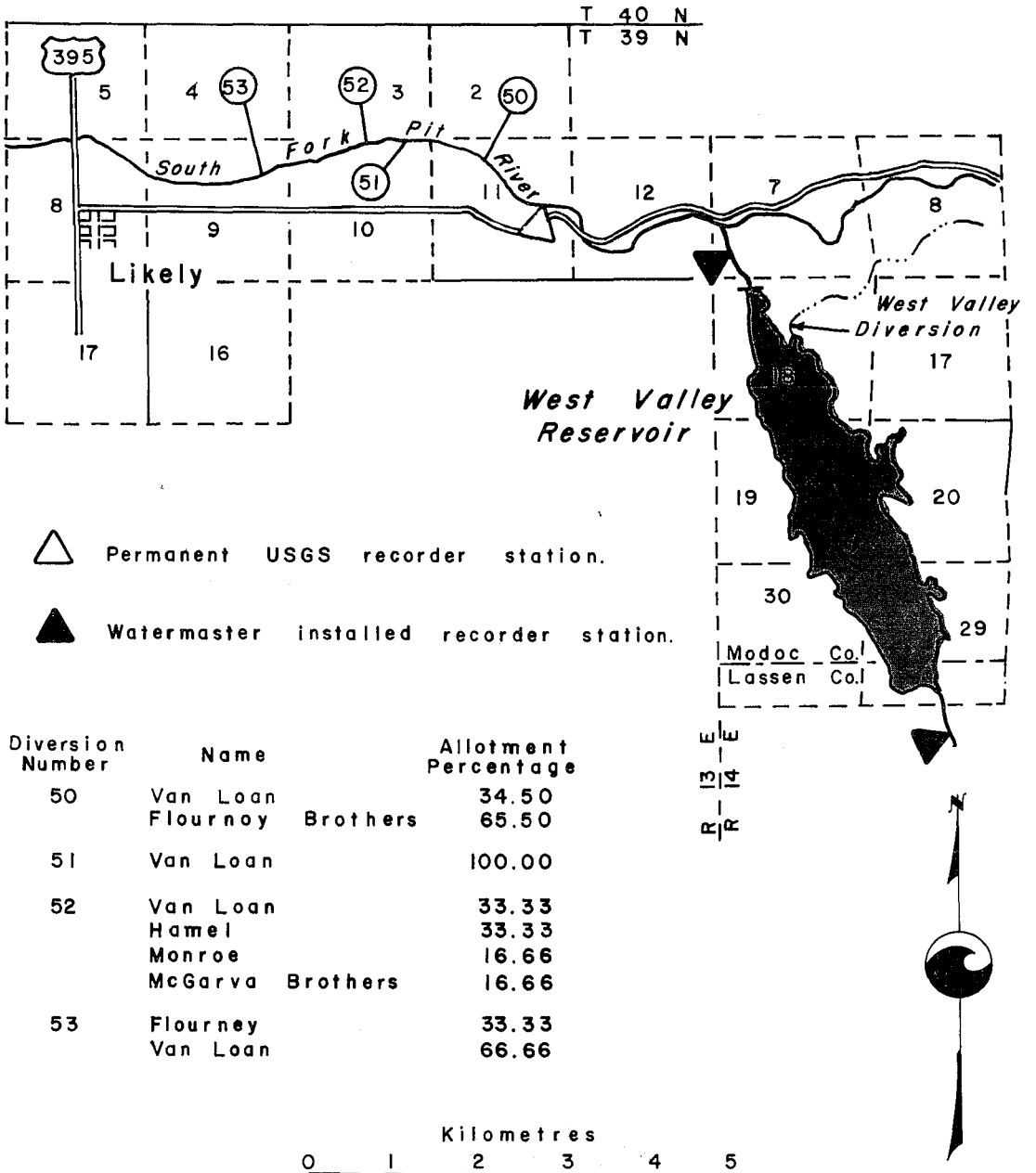
▲ Watermaster installed recorder station.

Kilometres 0 1 2 3 4 5

Miles 0 1 2 3

DIVERSIONS FROM FITZHUGH CREEK SOUTH FORK PIT RIVER WATERMASTER SERVICE AREA

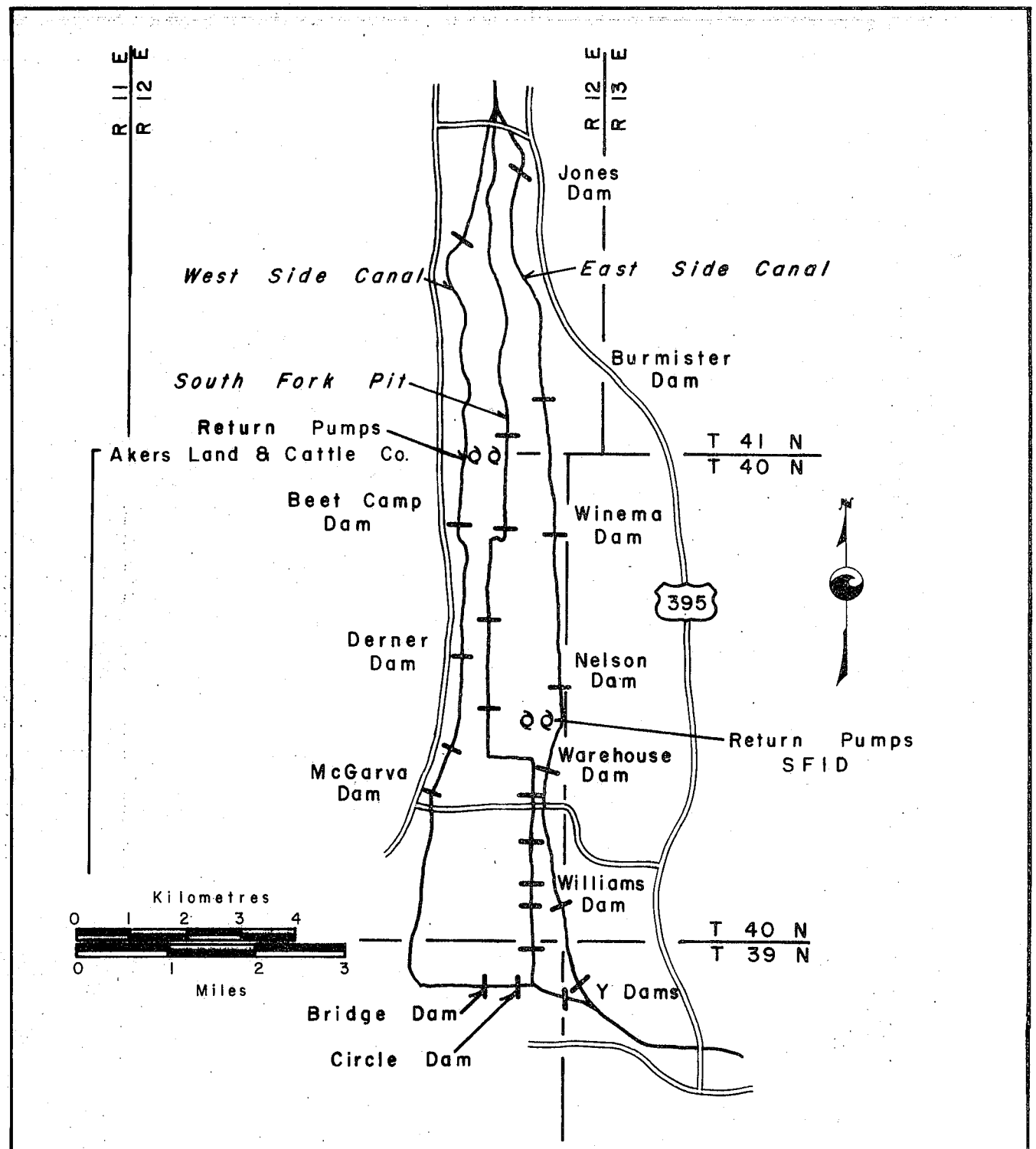
Figure 17c



Diversion Number	Name	Allotment Percentage
50	Van Loan	34.50
	Flournoy Brothers	65.50
51	Van Loan	100.00
52	Van Loan	33.33
	Hamel	33.33
	Monroe	16.66
	McGarva Brothers	16.66
53	Flourney	33.33
	Van Loan	66.66

DIVERSIONS FROM SOUTH FORK PIT RIVER
SOUTH FORK PIT RIVER
WATERMASTER SERVICE AREA

Figure 17 d



DIVERSIONS FROM SOUTH FORK PIT RIVER
SOUTH FORK PIT RIVER
WATERMASTER SERVICE AREA

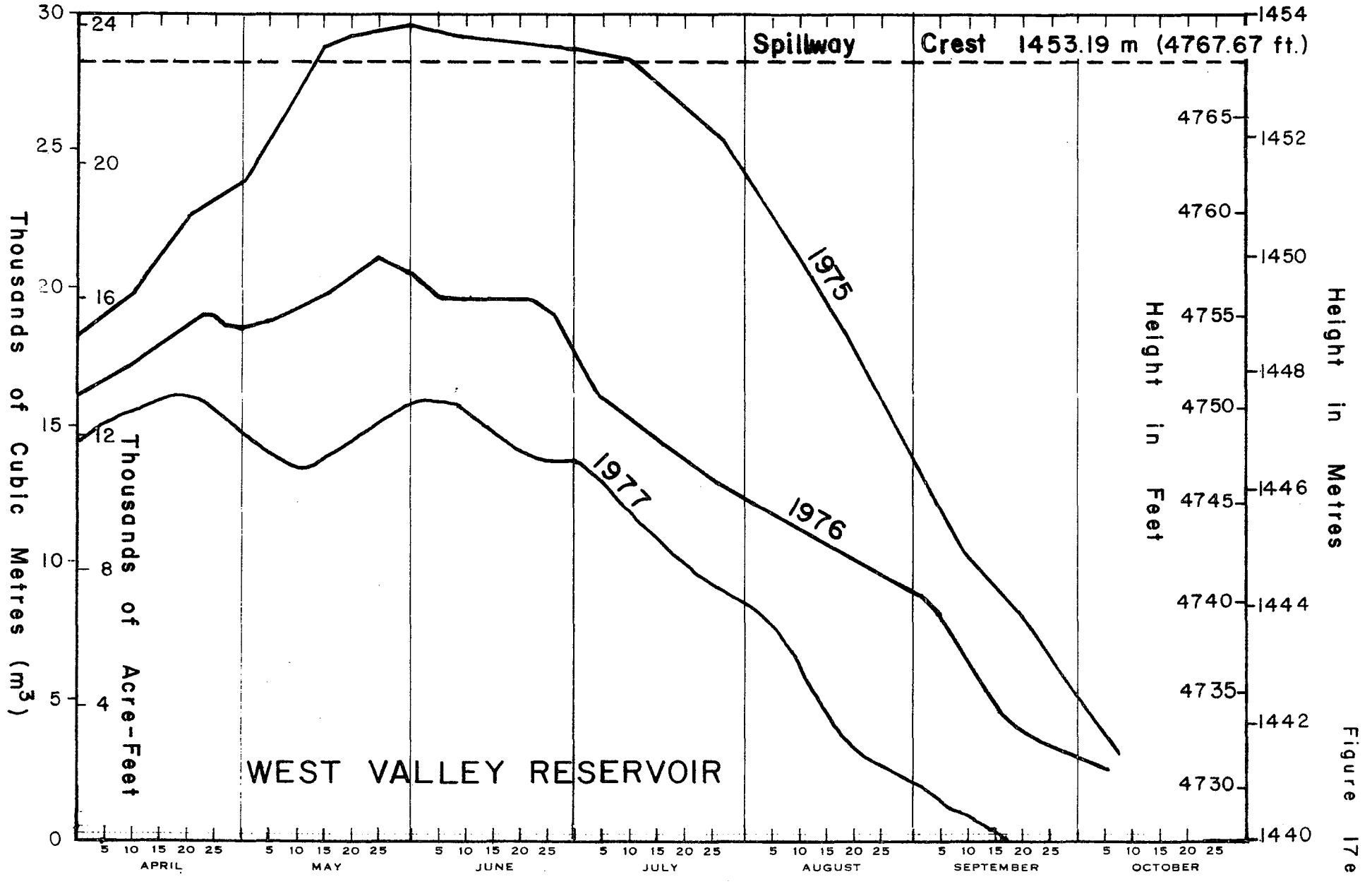

Spillway Crest 1453.19 m (4767.67 ft.)
1975
1976
1977
WEST VALLEY RESERVOIR
Thousands of Cubic Metres (m³)
Thousands of Acre-Feet
Height in Feet
Height in Metres
30
25
20
15
10
5
0
24
20
16
12
8
4
4765
4760
4755
4750
4745
4740
4735
4730
1454
1452
1450
1448
1446
1444
1442
1440
5 10 15 20 25
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER

Figure 17e

SURPRISE VALLEY WATERMASTER SERVICE AREA

The Surprise Valley service area is situated in extreme eastern Modoc County, east of the Warner Mountains. Figure 18, page 149, shows the service area, the streams serving it, and the towns and roads of the valley.

Ten individual stream systems rising on the eastern slope of the Warner Mountains supply water to the area. These streams are fed by snowmelt runoff and traverse a fast, precipitous course down the eastern slope of the Warner Mountains to the valley floor where numerous scattered diversion ditches convey water to the irrigated lands.

Basis of Service

The Surprise Valley watermaster service area was created January 10, 1939, including Mill, Soldier, Pine, Cedar, Deep, Owl, Rader, and Emerson Creeks, all of which previously had watermaster service individually. Service was started on Eagle Creek at that time. Bidwell Creek was added to the service area March 16, 1960. Each of the 10 stream systems are under separate decrees. See Table 41, page 140, for specific data regarding the decrees and water rights on the individual creeks.

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. Due to the steep eastern slope of the Warner Mountains, there are no known economically justified storage sites on the service area streams. Because of the lack of such regulatory storage, the available water supply at any specific diversion point may vary considerably within a few hours. An extreme diurnal temperature variation causes extensive variation in snowmelt runoff. This problem is further aggravated by the relatively short, steep drainage area. In addition, occasional summer thundershowers may cause a creek to discharge a flow of mammoth proportions for several hours. These flashes are apt to cause considerable damage in the form of 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 dishcarge at several stream gaging stations within the service area are presented in Tables 42 through 52, pages 143 through 148.

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 by mutual agreement.

Alfalfa and meadow hay, the major crops grown in the valley, are irrigated by sprinklers and wild flooding, although some lands depend upon subsurface irrigation. A few of these systems work by gravity, but most employ pumps with the surface water supplemented by deep wells. Many additional acres have been put into production during the past few years through the use of deep wells. Only surface water supplies are under state watermaster service.

To facilitate distribution of irrigation water, construction of permanent diversion dams, headgages, and measuring devices has been stressed during recent years. Although these structures do not solve the problems of discharge variation and debris deposition, they do provide significant assistance in solving water measurement and distribution problems. The individual streams and locations of the diversions are shown on Figures 18 through 18j, pages 149 through 162.

TABLE 41

DECREES AND RELATED DATA - SURPRISE VALLEY STREAMS

Stream	Modoc County Superior Court Decree No.	Date	Type[a]	Service Area Created	No. of Water Right Owners	Total l/s	Total Cfs	Remarks
Bidwell	6420	1-13-60	S	3-16-60[b]	46	1 804.92	63.74	(Schedule 3) 3 priorities March 15-July 19. (Schedule 4) 5 priorities July 10-September 30. If no water passing Diversion No. 23 September 30-March 14, 1st priority provisions of Schedule 4 apply.
Mill	3024	12-19-31	CR	12-30-31	38	1 051.41	37.13	One priority on Brown Creek, tributary to Rutherford Creek, 7 priorities on Rutherford Creek, tributary to Mill Creek, 4 priorities on Mill Creek, 1st and 2nd for year-round use, 3rd and 4th April through September.
Soldier	2045	11-28-28	CR	9-11-29	13 4[c]	948.62 123.74	33.50 4.37	Starting March 19 each year, lower users receive water for 4 13-day periods alternating with upper users who receive water for 4 10-day periods, ending June 19. 7 priorities during lower users periods, 8 during upper users periods and 12 for rest of the year. Appropriative License 1566, 1613, 1648, and 1850.
Pine	3391	12-07-36	CR	1-13-37	5 1[c]	[d] 2.26	[d] 0.08	One full rotation totalling 0.85 hm^3 (693 AF). Rotation continues until flow decreases to 113.27 l/s (4 cfs), then all water goes to Cal-Vada Ranch until flow decreases to 45.31 l/s (1.60 cfs), then all water goes to the R. Bardwell Ranch.
Cedar	1206 2343 [d]	5-22-01 2-15-23	CA CA	9-11-29	12	818.36	28.90[d]	Water rights established by these two decrees and an agreement signed by all users. No. 1206 set 1st and 2nd priorities; No. 2443 3rd priority and agreement the 4th. 818.36 l/s (28.90 cfs) includes 141.58 l/s (5.00 cfs) imported from Thoms Creek on west slope of Warner Mountains.
Deep	3101	1-25-34	CR	12-29-34	11	831.67	29.37	Schedule 2 establishes 5 priorities, year-round.
Cottonwood	6903	12-01-64	CA	7-01-77[b]	8	[d]	[d]	Water rights based on a percentage of flow in an equal priority.
Owl	2410	5-29-29	CA	9-11-29	8 1[c]	1 180.82	41.70	21 priorities; all year-round but 8th, under which each of 3 owners receives his allotment for an 8-day period. Appropriative License No. 2842, 15.29 l/s (0.54 cfs).
Rader	3626	6-04-37	CR	6-12-37	6	594.66	21.00	7 priorities. 7th is for surplus water. Diversions No. 1, 3, 6, and 7 have seasonal limitations.
Eagle	2304 3284	4-05-26 11-05-37	CA CR	1-10-39	36	865.65	30.57	Decree No. 3284 added rights in all priority classes, and established 4 classes. 127.42 l/s (4.50 cfs) right of Betford Corp. is for use March 1 to July 1. Eagleville 'town users', Schedule 2 may divert through Gee & Grider ditches March 16 to October 14 each year. Set 1st priority rights of Gee & Grider ditches, Par. XVII & XVIII, for use April 15 to October 1.
Emerson	2840	3-25-30	CR	4-11-30	10	698.01	24.65	4 priorities, 1st is for year-round use, others April 1 to September 30.

a/ S-Statutory, CR-Court Reference, CA-Court Adjudication.
b/ Added to existing Surprise Valley service area.
c/ Appropriative rights junior to the decreed rights.
d/ See remarks.

Although the Owl Creek Flood Control and Water Conservation District did not become official until August 7, 1961, the District's diversion and distribution project was completed in February, 1961. The project reduced the number of diversions from 17 to 2 and the number of ditches from 17 to 8. This makes distribution easier and more equitable. The users say that they receive twice as much water as they did before the project. It is possible to divert and distribute 2 265 litres per second (80 cfs) in the lower seven ditches. 2.26 (m3/s)

1977 Distribution

Watermaster service began in the Surprise Valley area on March 19 and continued until September 30. Charles Hodge, Water Resources Technician II, was watermaster during this period.

Streamflows in the northern and southern half of the valley ranged from 28 to 60 percent of normal, respectively. The 1977 season was one of the driest years for the period of record. There were 16 new wells drilled in Surprise Valley during the 1977 season.

Bidwell Creek. Total stream runoff available from April 1 through September 30 was 4.116 hm^3 (3,337 acre-feet). The only irrigation water available for the entire season occurred the last part of May and the first part of June. There was never enough water to fill first priorities. When Schedule 4 became effective on July 10, there was only 156 l/s (5.5 cfs) in Bidwell Creek above all diversion points.

Mill Creek. Total stream runoff available April 1 through September 30 was 3 587 hm^3 (2,908 acre-feet). First and second priorities were filled to the middle of May. The flow then increased to supply 30 percent of third priority for a short period, then with a steady decrease only first and second priority water was available by the end of June. Only 50 percent of first priorities were filled at the end of July. The flow remained around this amount for the rest of the season. Rutherford and Brown Creeks had no flow at the upper highway.

Soldier Creek. Total stream runoff available March 19 through September 30 was 1.447 hm^3 (1,173 acre-feet). There was no available water for the first lower rotation, and only partial flow when their rotation started May 4, but the flow increased enough for a small amount of water in the East Channel in the afternoons during the middle of May. On June 19 when the season outside the general irrigation season began, there was flow for first priorities and a small amount for second priorities. The flow decreased to 80 percent of first priority by the end of June and only part of the first priorities were filled the rest of the season.

Pine Creek. Total stream runoff available March 20 through September 30 was .613 hm^3 (497 acre-feet). The first rotation lasted from March 20 to May 14; second rotation lasted May 14 to May 27; third rotation could not be filled. No water reached the highway after June 10 and the stream was dry after June 20 above all diversions.

Cedar Creek. Total stream runoff available April 1 through September 30 was .862 hm^3 (699 acre-feet). Water was available for first priority only until May 9, then a very small amount of second priority was filled until May 31, at which time all water was diverted to Diversion No. 1 for the remainder of the season, with the stream being dry at times.

Deep Creek. Total stream runoff available April 1 through September 30 was 1.176 hm^3 (953 acre-feet). The flow in North Deep Creek was 50 percent of first priority for only two days in May, decreasing to 25 percent by June 1, with a steady decline to 5 l/s (0.2 cfs) on September 30. South Deep Creek did not have sufficient flow to fill first priorities until May 10. Partial second priorities were filled May 10 through May 17 only. Stock water only was available after July 10.

Owl Creek. Total stream runoff available April 1 through September 30 was 2.657 hm^3 (2,154 acre-feet). Except for the first 8 days of June, the flow never exceeded the 13th priority. After then the flow steadily decreased to 25 l/s (0.9 cfs) by September.

Radar Creek. Total stream runoff available April 1 through September 30 was 1.811 hm^3 (1,468 acre-feet). The water supply was adequate to fill all first and second priorities and a small amount of third priority during April and May. Sixth priorities were filled only the first 8 days of June, after which time there was a steady recession in flow. From August 1 through September 30 only stock water was available.

Eagle Creek. Total stream runoff available April 1 through September 30 was 2.552 hm^3 (2,069 acre-feet). The flow supplied first and partial second priorities during April and the first 20 days of May. Third priorities were filled only during June 4 through June 8, followed by a steady recession to 30 percent of first priorities.

Emerson Creek. Total stream runoff available April 1 through September 30 was 1.421 hm^3 (1,152 acre-feet). Second priorities were never filled, and after July 8 only partial first priority was filled.

SURPRISE VALLEY WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 42

BIDWELL CREEK NEAR FORT BIDWELL

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1	102	3.6	125	4.4	210	7.4	1 050	37	190	6.7	102	3.6	85	3.0	1
2	99	3.5	125	4.4	187	6.6	1 020	36	269	9.5	93	3.3	82	2.9	2
3	105	3.7	136	4.8	210	7.4	906	32	229	8.1	68	2.4	79	2.8	3
4	105	3.7	181	6.4	187	6.6	963	34	195	6.9	105	3.7	79	2.8	4
5	105	3.7	232	8.2	181	6.4	935	33	184	6.5	108	3.8	79	2.8	5
6	105	3.7	278	9.8	181	6.4	935	33	176	6.2	108	3.8	76	2.7	6
7	105	3.7	312	11	178	6.3	878	31	167	5.9	105	3.7	73	2.6	7
8	113	4.0	312	11	178	6.3	821	29	159	5.6	105	3.7	68	2.4	8
9	119	4.2	244	8.6	263	9.3	708	25	153	5.4	99	3.5	68	2.4	9
10	119	4.2	204	7.2	263	9.3	623	22	147	5.2	93	3.3	65	2.3	10
11	122	4.3	218	7.7	340	12	595	21	142	5.0	93	3.3	65	2.3	11
12	105	3.7	249	8.8	312	11	538	19	136	4.8	93	3.3	68	2.4	12
13	119	4.2	261	9.2	396	14	481	17	133	4.7	90	3.2	65	2.3	13
14	130	4.6	244	8.6	595	21	453	16	127	4.5	90	3.2	65	2.3	14
15	105	3.7	246	8.7	595	21	425	15	122	4.3	87	3.1	68	2.4	15
16	102	3.6	272	9.6	481	17	368	13	119	4.2	85	3.0	96	3.4	16
17	102	3.6	252	8.9	425	15	368	13	119	4.2	82	2.9	102	3.6	17
18	99	3.5	221	7.8	396	14	340	12	116	4.1	82	2.9	85	3.0	18
19	102	3.6	207	7.3	396	14	368	13	119	4.2	99	3.5	116	4.1	19
20	108	3.8	207	7.3	510	18	340	12	113	4.0	90	3.2	133	4.7	20
21	116	4.1	210	7.4	680	24	312	11	110	3.9	90	3.2	99	3.5	21
22	139	4.9	215	7.6	793	28	283	10	108	3.8	79	2.8	90	3.2	22
23	144	5.1	227	8.0	821	29	269	9.5	108	3.8	79	2.8	87	3.1	23
24	130	4.6	244	8.6	765	27	252	8.9	108	3.8	133	4.7	167	5.9	24
25	125	4.4	266	9.4	736	26	235	8.3	102	3.6	178	6.3	108	3.8	25
26	130	4.6	241	8.5	765	27	224	7.9	102	3.6	153	5.4	87	3.1	26
27	133	4.7	212	7.5	736	26	210	7.4	102	3.6	108	3.8	82	2.9	27
28	142	5.0	201	7.1	736	26	198	7.0	99	3.5	102	3.6	110	3.9	28
29	159	5.6	195	6.9	736	26	190	6.7	102	3.6	99	3.5	538	19	29
30	125	4.4	187	6.6	736	26	181	6.4	105	3.7	90	3.2	195	6.9	30
31	125	4.4			878	31			113	4.0	85	3.0			31
Mean	117	4.1	224	7.9	480	16.9	516	18.2	138	4.9	99.4	3.5	106	3.7	Mean
Volume															Volume
hm	.310		.580		1.280		1.340		.370		.270		.280		hm
AF		255		471		1040		1080		299		216		223	AF

TABLE 43

MILL CREEEK ABOVE ALL DIVERSIONS

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1	73	2.6	116	4.1	312	11	736	26	187	6.6	76	2.7	68	2.4	1
2	73	2.6	110	3.9	283	10	708	25	210	7.4	82	2.9	59	2.1	2
3	73	2.6	108	3.8	280	9.9	680	24	178	6.3	82	2.9	59	2.1	3
4	73	2.6	147	5.2	258	9.1	680	24	167	5.9	79	2.8	59	2.1	4
5	73	2.6	215	7.6	249	8.8	680	24	153	5.4	73	2.6	59	2.1	5
6	73	2.6	232	8.2	246	8.7	651	23	147	5.2	70	2.5	59	2.1	6
7	73	2.6	275	9.7	244	8.6	623	22	139	4.9	73	2.6	59	2.1	7
8	73	2.6	283	10	241	8.5	538	19	130	4.6	68	2.4	68	2.4	8
9	73	2.6	258	9.1	312	11	510	18	127	4.5	73	2.6	59	2.1	9
10	73	2.6	221	7.8	396	14	453	16	125	4.4	73	2.6	59	2.1	10
11	73	2.6	215	7.6	396	14	425	15	119	4.2	73	2.6	59	2.1	11
12	73	2.6	215	7.6	425	15	425	15	116	4.1	73	2.6	59	2.1	12
13	73	2.6	215	7.6	538	19	396	14	110	3.9	68	2.4	53	1.9	13
14	73	2.6	215	7.6	623	22	368	13	108	3.8	73	2.6	59	2.1	14
15	73	2.6	215	7.6	566	20	340	12	105	3.7	68	2.4	59	2.1	15
16	73	2.6	218	7.7	481	17	312	11	99	3.5	68	2.4	73	2.6	16
17	73	2.6	229	8.1	453	16	312	11	96	3.4	59	2.1	73	2.6	17
18	73	2.6	232	8.2	425	15	312	11	96	3.4	68	2.4	68	2.4	18
19	73	2.6	224	7.9	453	16	312	11	90	3.2	68	2.4	79	2.8	19
20	73	2.6	232	8.2	481	17	283	10	82	2.9	73	2.6	79	2.8	20
21	87	3.1	238	8.4	566	20	272	9.6	82	2.9	68	2.4	73	2.6	21
22	156	5.5	263	9.3	566	20	252	8.9	76	2.7	68	2.4	68	2.4	22
23	176	6.2	312	11	538	19	238	8.4	73	2.6	59	2.1	68	2.4	23
24	161	5.7	340	12	510	18	224	7.9	70	2.5	79	2.8	68	2.4	24
25	156	5.5	368	13	538	19	210	7.4	68	2.4	105	3.7	59	2.1	25
26	164	5.8	312	11	595	21	201	7.1	68	2.4	93	3.3	53	1.9	26
27	159	5.6	312	11	595	21	190	6.7	76	2.7	73	2.6	53	1.9	27
28	184	6.5	312	11	651	23	181	6.4	85	3.0	68	2.4	215	7.6	28
29	195	6.9	283	10	708	25	173	6.1	85	3.0	68	2.4	176	6.2	29
30	130	4.6	312	11	765	27	167	5.9	82	2.9	68	2.4	93	3.3	30
31	144	5.1			850	30			79	2.8	59	2.1			31
Mean	103	3.6	241	8.5	469	16.6	395	14.0	111	3.9	72.8	2.6	73.6	2.6	Mean
Volume															Volume
hm	.280		.620		1.260		1.020		.300		.200		.190		hm
AF		223		506		1020		830		240		158		154	AF

SURPRISE VALLEY WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 44

SOLDIER CREEK ABOVE ALL DIVERSIONS

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1			59	2.1	150	5.3	246	8.7	39	1.4	25	0.9	14	0.5	1
2			59	2.1	142	5.0	221	7.8	39	1.4	25	0.9	14	0.5	2
3			73	2.6	142	5.0	201	7.1	34	1.2	25	0.9	14	0.5	3
4			142	5.0	150	5.3	181	6.4	34	1.2	25	0.9	14	0.5	4
5			238	8.4	142	5.0	170	6.0	34	1.2	25	0.9	14	0.5	5
6			210	7.4	150	5.3	150	5.3	28	1.0	25	0.9	14	0.5	6
7			258	9.1	142	5.0	142	5.0	28	1.0	25	0.9	14	0.5	7
8			150	5.3	130	4.6	119	4.2	28	1.0	25	0.9	14	0.5	8
9			119	4.2	221	7.8	105	3.7	28	1.0	22	0.8	14	0.5	9
10			105	3.7	190	6.7	105	3.7	25	0.9	22	0.8	14	0.5	10
11			96	3.4	190	6.7	105	3.7	22	0.8	22	0.8	14	0.5	11
12			119	4.2	181	6.4	96	3.4	17	0.6	22	0.8	14	0.5	12
13			96	3.4	246	8.7	90	3.2	22	0.8	22	0.8	14	0.5	13
14			39	1.4	283	10	90	3.2	22	0.8	22	0.8	14	0.5	14
15			65	2.3	232	8.2	90	3.2	22	0.8	22	0.8	14	0.5	15
16			161	5.7	201	7.1	82	2.9	17	0.6	22	0.8	19	0.7	16
17			119	4.2	232	8.2	73	2.6	14	0.5	22	0.8	19	0.7	17
18			119	4.2	246	8.7	73	2.6	14	0.5	22	0.8	17	0.6	18
19	39	1.4*	119	4.2	283	10	73	2.6	14	0.5	22	0.8	25	0.9	19
20	39	1.4	130	4.6	312	11	73	2.6	14	0.5	22	0.8	45	1.6	20
21	39	1.4	130	4.6	368	13	65	2.3	14	0.5	22	0.8	22	0.8	21
22	42	1.5	170	6.0	312	11	65	2.3	14	0.5	22	0.8	22	0.8	22
23	51	1.8	190	6.7	283	10	51	1.8	14	0.5	22	0.8	19	0.7	23
24	59	2.1	190	6.7	283	10	51	1.8	17	0.6	56	2.0	22	0.8	24
25	65	2.3	201	7.1	269	9.5	42	1.5	22	0.8	113	4.0	19	0.7	25
26	73	2.6	142	5.0	258	9.1	42	1.5	25	0.9	56	2.0	17	0.6	26
27	73	2.6	142	5.0	246	8.7	39	1.4	25	0.9	28	1.0	17	0.6	27
28	65	2.3	142	5.0	221	7.8	34	1.2	25	0.9	19	0.7	17	0.6	28
29	65	2.3	130	4.6	210	7.4	34	1.2	25	0.9	17	0.6	17	0.6	29
30	59	2.1	130	4.6	221	7.8	34	1.2	25	0.9	17	0.6	17	0.6	30
31	59	2.1			258	9.1			25	0.9	14	0.5			31
Mean	23.7	0.8	135	4.8	222	7.9	98.3	3.5	23.8	0.8	28.0	1.0	17.8	0.6	Mean
Volume															Volume
hm	.060		.350		.600		.250		.060		.070		.050		hm
AF		51.3		283		483		206		51.6		60.7		37.3	AF

* Beginning of Record

TABLE 45

PINE CREEK AT DIVISION OF NORTH AND SOUTH CHANNELS

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1			19	0.7	28	1.0	45	1.6	00	0.0	00	0.0	00	0.0	1
2			17	0.6	28	1.0	39	1.4	00	0.0	00	0.0	00	0.0	2
3			22	0.8	28	1.0	34	1.2	00	0.0	00	0.0	00	0.0	3
4			65	2.3	34	1.2	28	1.0	00	0.0	00	0.0	00	0.0	4
5			125	4.4	36	1.3	22	0.8	00	0.0	00	0.0	00	0.0	5
6			136	4.8	56	2.0	22	0.8	00	0.0	00	0.0	00	0.0	6
7			150	5.3	56	2.0	22	0.8	00	0.0	00	0.0	00	0.0	7
8			130	4.6	53	1.9	22	0.8	00	0.0	00	0.0	00	0.0	8
9			87	3.1	181	6.4	22	0.8	00	0.0	00	0.0	00	0.0	9
10			62	2.2	229	8.1	19	0.7	00	0.0	00	0.0	00	0.0	10
11			70	2.5	229	8.1	19	0.7	00	0.0	00	0.0	00	0.0	11
12			102	3.6	283	10	17	0.6	00	0.0	00	0.0	00	0.0	12
13			90	3.2	623	22	8.5	0.3	00	0.0	00	0.0	00	0.0	13
14			70	2.5	566	20	5.6	0.2	00	0.0	00	0.0	00	0.0	14
15			85	3.0	312	11	2.8	0.1	00	0.0	00	0.0	00	0.0	15
16			99	3.5	272	9.6	00	0.0	00	0.0	00	0.0	00	0.0	16
17			68	2.4	195	6.9	00	0.0	00	0.0	00	0.0	00	0.0	17
18			51	1.8	153	5.4	00	0.0	00	0.0	00	0.0	00	0.0	18
19	11	0.4*	45	1.6	139	4.9	00	0.0	00	0.0	00	0.0	00	0.0	19
20	11	0.4	51	1.8	133	4.7	00	0.0	00	0.0	00	0.0	00	0.0	20
21	11	0.4	45	1.6	122	4.3	00	0.0	00	0.0	00	0.0	00	0.0	21
22	11	0.4	45	1.6	127	4.5	00	0.0	00	0.0	00	0.0	00	0.0	22
23	11	0.4	51	1.8	144	5.1	00	0.0	00	0.0	00	0.0	00	0.0	23
24	11	0.4	39	1.4	127	4.5	00	0.0	00	0.0	00	0.0	00	0.0	24
25	11	0.4	39	1.4	116	4.1	00	0.0	00	0.0	00	0.0	00	0.0	25
26	11	0.4	34	1.2	93	3.3	00	0.0	00	0.0	00	0.0	00	0.0	26
27	11	0.4	31	1.1	90	3.2	00	0.0	00	0.0	00	0.0	00	0.0	27
28	17	0.6	22	0.8	62	2.2	00	0.0	00	0.0	00	0.0	00	0.0	28
29	22	0.8	22	0.8	56	2.0	00	0.0	00	0.0	00	0.0	00	0.0	29
30	19	0.7	22	0.8	51	1.8	00	0.0	00	0.0	00	0.0	00	0.0	30
31	19	0.7			48	1.7			00	0.0	00	0.0			31
Mean	5.8	0.2	63.4	2.2	151	5.3	11.1	0.4							Mean
Volume															Volume
hm	.020		.160		.400		.030								hm
AF		12.7		133		327		23.4							AF

* Beginning of Record

SURPRISE VALLEY WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 46

CEDAR CREEK NEAR CEDARVILLE

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1	19	0.7	93	3.3	76	2.7	147	5.2	17	0.6	00	0.0	5.6	0.2	1
2	19	0.7	96	3.4	90	3.2	147	5.2	17	0.6	00	0.0	5.6	0.2	2
3	22	0.8	108	3.8	85	3.0	159	5.6	14	0.5	00	0.0	5.6	0.2	3
4	25	0.9	110	3.9	102	3.6	136	4.8	14	0.5	00	0.0	2.8	0.1	4
5	25	0.9	79	2.8	119	4.2	99	3.5	14	0.5	00	0.0	00	0.0	5
6	28	1.0	68	2.4	125	4.4	90	3.2	14	0.5	00	0.0	00	0.0	6
7	28	1.0	87	3.1	133	4.7	90	3.2	14	0.5	00	0.0	00	0.0	7
8	34	1.2	90	3.2	136	4.8	82	2.9	11	0.4	00	0.0	00	0.0	8
9	39	1.4	85	3.0	156	5.5	73	2.6	11	0.4	00	0.0	00	0.0	9
10	39	1.4	73	2.6	159	5.6	68	2.4	11	0.4	00	0.0	00	0.0	10
11	42	1.5	76	2.7	167	5.9	59	2.1	8.5	0.3	00	0.0	00	0.0	11
12	45	1.6	73	2.6	207	7.3	56	2.0	8.5	0.3	00	0.0	00	0.0	12
13	45	1.6	70	2.5	312	11	48	1.7	8.5	0.3	00	0.0	00	0.0	13
14	45	1.6	65	2.3	312	11	42	1.5	8.5	0.3	00	0.0	00	0.0	14
15	45	1.6	68	2.4	283	10	39	1.4	8.5	0.3	00	0.0	00	0.0	15
16	48	1.7	76	2.7	218	7.7	36	1.3	5.6	0.2	00	0.0	00	0.0	16
17	51	1.8	70	2.5	187	6.6	36	1.3	5.6	0.2	00	0.0	8.5	0.3	17
18	51	1.8	59	2.1	181	6.4	34	1.2	5.6	0.2	00	0.0	5.6	0.2	18
19	53	1.9	53	1.9	193	6.8	36	1.3	5.6	0.2	00	0.0	8.5	0.3	19
20	56	2.0	56	2.0	207	7.3	36	1.3	5.6	0.2	00	0.0	14	0.5	20
21	62	2.2	53	1.9	207	7.3	31	1.1	5.6	0.2	00	0.0	14	0.5	21
22	76	2.7	53	1.9	204	7.2	31	1.1	5.6	0.2	00	0.0	11	0.4	22
23	82	2.9	59	2.1	215	7.6	28	1.0	5.6	0.2	00	0.0	11	0.4	23
24	76	2.7	62	2.2	215	7.6	25	0.9	5.6	0.2	00	0.0	14	0.5	24
25	82	2.9	65	2.3	212	7.5	22	0.8	5.6	0.2	5.6	0.2	11	0.4	25
26	87	3.1	56	2.0	201	7.1	19	0.7	5.6	0.2	17	0.6	8.5	0.3	26
27	90	3.2	53	1.9	193	6.8	19	0.7	5.6	0.2	11	0.4	8.5	0.3	27
28	85	3.0	48	1.7	181	6.4	17	0.6	2.8	0.1	8.5	0.3	17	0.6	28
29	85	3.0	45	1.6	176	6.2	17	0.6	2.8	0.1	8.5	0.3	53	1.9	29
30	87	3.1	45	1.6	164	5.8	17	0.6	2.8	0.1	5.6	0.2	22	0.8	30
31	90	3.2			153	5.4			00	0.0	5.6	0.2			31
Mean	54.0	1.9	70.2	2.5	180	6.3	58.3	2.1	8.3	0.3	2.0	0.1	7.6	0.3	Mean
Volume															Volume
hm	.140		.180		.480		.150		.020		.010		.020		hm
AF		117		147		390		123		18.0		4.4		16.1	AF

THE 1976 TABLE FOR CEDAR CREEK NEAR CEDARVILLE WAS PRINTED IN ERROR
THE CORRECTED 1976 TABLE IS BELOW

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1	144	5.1	278	9.8	510	18	161	5.7	34	1.2	19	0.7	5.6	0.2	1
2	130	4.6	275	9.7	566	20	156	5.5	31	1.1	14	0.5	5.6	0.2	2
3	113	4.0	312	11	566	20	150	5.3	28	1.0	17	0.6	5.6	0.2	3
4	105	3.7	396	14	538	19	144	5.1	28	1.0	17	0.6	5.6	0.2	4
5	96	3.4	425	15	538	19	139	4.9	25	0.9	14	0.5	5.6	0.2	5
6	96	3.4	425	15	510	18	130	4.6	22	0.8	14	0.5	5.6	0.2	6
7	105	3.7	425	15	510	18	125	4.4	19	0.7	11	0.4	5.6	0.2	7
8	122	4.3	425	15	510	18	122	4.3	22	0.8	11	0.4	5.6	0.2	8
9	142	5.0	425	15	510	18	119	4.2	19	0.7	11	0.4	5.6	0.2	9
10	178	6.3	396	14	538	19	119	4.2	19	0.7	8.5	0.3	5.6	0.2	10
11	187	6.6	396	14	481	17	116	4.1	17	0.6	8.5	0.3	8.5	0.3	11
12	147	5.2	368	13	425	15	113	4.0	17	0.6	8.5	0.3	5.6	0.2	12
13	150	5.3	368	13	425	15	110	3.9	17	0.6	5.6	0.2	5.6	0.2	13
14	150	5.3	396	14	396	14	105	3.7	17	0.6	14	0.5	14	0.5	14
15	159	5.6	396	14	340	12	99	3.5	14	0.5	79	2.8	79	2.8	15
16	221	7.8	368	13	312	11	93	3.3	14	0.5	45	1.6	28	1.0	16
17	312	11	340	12	312	11	87	3.1	19	0.7	22	0.8	19	0.7	17
18	340	12	368	13	283	10	82	2.9	65	2.3	19	0.7	17	0.6	18
19	283	10	368	13	283	10	79	2.8	28	1.0	17	0.6	14	0.5	19
20	263	9.3	481	17	283	10	73	2.6	19	0.7	14	0.5	14	0.5	20
21	244	8.6	481	17	261	9.2	70	2.5	17	0.6	14	0.5	11	0.4	21
22	255	9.0	510	18	246	8.7	70	2.5	17	0.6	19	0.7	8.5	0.3	22
23	266	9.4	510	18	241	8.5	68	2.4	17	0.6	19	0.7	11	0.4	23
24	269	9.5	680	24	232	8.2	48	1.7	17	0.6	14	0.5	11	0.4	24
25	266	9.4	623	22	227	8.0	39	1.4	14	0.5	11	0.4	8.5	0.3	25
26	263	9.3	481	17	218	7.7	36	1.3	11	0.4	11	0.4	8.5	0.3	26
27	252	8.9	425	15	207	7.3	36	1.3	11	0.4	11	0.4	11	0.4	27
28	235	8.3	396	14	190	6.7	34	1.2	8.5	0.3	11	0.4	11	0.4	28
29	235	8.3	425	15	178	6.3	34	1.2	8.5	0.3	8.5	0.3	8.5	0.3	29
30	261	9.2	453	16	173	6.1	31	1.1	11	0.4	8.5	0.3	8.5	0.3	30
31	283	10			167	5.9			11	0.4	8.5	0.3			31
Mean	202	7.1	421	14.8	361	12.7	93.2	3.3	20.2	0.7	16.5	0.6	12.1	0.4	Mean
Volume															Volume
hm	.540		1.090		.970		.240		.050		.040		.030		hm
AF		439		883		782		196		43.8		35.9		25.4	AF

SURPRISE VALLEY WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 47

NORTH DEEP CREEK ABOVE ALL DIVERSIONS

Day	March l/s	March cfs	April l/s	April cfs	May l/s	May cfs	June l/s	June cfs	July l/s	July cfs	August l/s	August cfs	September l/s	September cfs	Day
1			11	0.4*	22	0.8	59	2.1	14	0.5	5.6	0.2	5.6	0.2	1
2			11	0.4	17	0.6	59	2.1	14	0.5	5.6	0.2	5.6	0.2	2
3			11	0.4	11	0.4	59	2.1	14	0.5	5.6	0.2	5.6	0.2	3
4			11	0.4	11	0.4	51	1.8	11	0.4	5.6	0.2	5.6	0.2	4
5			17	0.6	11	0.4	45	1.6	11	0.4	5.6	0.2	5.6	0.2	5
6			31	1.1	17	0.6	45	1.6	11	0.4	5.6	0.2	5.6	0.2	6
7			36	1.3	17	0.6	42	1.5	11	0.4	5.6	0.2	5.6	0.2	7
8			48	1.7	17	0.6	34	1.2	11	0.4	5.6	0.2	5.6	0.2	8
9			42	1.5	42	1.5	34	1.2	11	0.4	5.6	0.2	5.6	0.2	9
10			42	1.5	102	3.6	34	1.2	11	0.4	5.6	0.2	5.6	0.2	10
11			42	1.5	122	4.3	34	1.2	11	0.4	5.6	0.2	5.6	0.2	11
12			36	1.3	136	4.8	34	1.2	8.5	0.3	2.8	0.1	5.6	0.2	12
13			42	1.5	127	4.5	28	1.0	8.5	0.3	5.6	0.2	5.6	0.2	13
14			36	1.3	116	4.1	25	0.9	8.5	0.3	5.6	0.2	5.6	0.2	14
15			42	1.5	108	3.8	25	0.9	8.5	0.3	2.8	0.1	5.6	0.2	15
16			53	1.9	102	3.6	19	0.7	5.6	0.2	2.8	0.1	11	0.4	16
17			42	1.5	87	3.1	19	0.7	5.6	0.2	2.8	0.1	11	0.4	17
18			36	1.3	82	2.9	17	0.6	5.6	0.2	5.6	0.2	8.5	0.3	18
19			31	1.1	82	2.9	17	0.6	8.5	0.3	2.8	0.1	8.5	0.3	19
20			31	1.1	87	3.1	17	0.6	5.6	0.2	2.8	0.1	11	0.4	20
21			31	1.1	93	3.3	17	0.6	5.6	0.2	2.8	0.1	8.5	0.3	21
22			31	1.1	93	3.3	17	0.6	5.6	0.2	2.8	0.1	8.5	0.3	22
23			31	1.1	93	3.3	17	0.6	5.6	0.2	2.8	0.1	8.5	0.3	23
24			31	1.1	73	2.6	14	0.5	5.6	0.2	8.5	0.3	8.5	0.3	24
25			31	1.1	53	1.9	14	0.5	5.6	0.2	11	0.4	8.5	0.3	25
26			28	1.0	59	2.1	14	0.5	5.6	0.2	8.5	0.3	5.6	0.2	26
27			22	0.8	59	2.1	17	0.6	5.6	0.2	5.6	0.2	5.6	0.2	27
28			17	0.6	59	2.1	17	0.6	5.6	0.2	5.6	0.2	5.6	0.2	28
29			11	0.4	59	2.1	17	0.6	5.6	0.2	5.6	0.2	5.6	0.2	29
30			11	0.4	59	2.1	17	0.6	5.6	0.2	5.6	0.2	5.6	0.2	30
31					59	2.1			5.6	0.2	5.6	0.2			31
Mean			30.2	1.1	67.3	2.4	28.8	1.0	8.4	0.3	5.2	0.2	6.9	0.2	Mean
Volume															Volume
hm			.080		.180		.070		.020		.010		.020		hm
AF				63.5		146		60.5		18.2		11.3		14.5	AF

* Beginning of Record

TABLE 48

SOUTH DEEP CREEK ABOVE ALL DIVERSIONS

Day	March l/s	March cfs	April l/s	April cfs	May l/s	May cfs	June l/s	June cfs	July l/s	July cfs	August l/s	August cfs	September l/s	September cfs	Day
1			39	1.4*	56	2.0	108	3.8	36	1.3	11	0.4	8.5	0.3	1
2			39	1.4	51	1.8	99	3.5	31	1.1	11	0.4	8.5	0.3	2
3			45	1.6	45	1.6	90	3.2	31	1.1	11	0.4	8.5	0.3	3
4			45	1.6	56	2.0	82	2.9	28	1.0	11	0.4	8.5	0.3	4
5			45	1.6	56	2.0	70	2.5	28	1.0	8.5	0.3	8.5	0.3	5
6			90	3.2	56	2.0	70	2.5	25	0.9	8.5	0.3	8.5	0.3	6
7			130	4.6	56	2.0	76	2.7	22	0.8	8.5	0.3	8.5	0.3	7
8			116	4.1	56	2.0	70	2.5	17	0.6	8.5	0.3	8.5	0.3	8
9			76	2.7	130	4.6	70	2.5	11	0.4	8.5	0.3	8.5	0.3	9
10			62	2.2	218	7.7	68	2.4	8.5	0.3	5.6	0.2	8.5	0.3	10
11			62	2.2	283	10	62	2.2	8.5	0.3	5.6	0.2	8.5	0.3	11
12			76	2.7	283	10	62	2.2	8.5	0.3	5.6	0.2	8.5	0.3	12
13			76	2.7	283	10	56	2.0	8.5	0.3	8.5	0.3	8.5	0.3	13
14			70	2.5	275	9.7	51	1.8	8.5	0.3	11	0.4	8.5	0.3	14
15			82	2.9	238	8.4	45	1.6	8.5	0.3	8.5	0.3	8.5	0.3	15
16			90	3.2	201	7.1	42	1.5	8.5	0.3	8.5	0.3	19	0.7	16
17			70	2.5	181	6.4	42	1.5	5.6	0.2	8.5	0.3	19	0.7	17
18			62	2.2	147	5.2	42	1.5	5.6	0.2	8.5	0.3	11	0.4	18
19			51	1.8	130	4.6	42	1.5	5.6	0.2	8.5	0.3	11	0.4	19
20			51	1.8	147	5.2	42	1.5	11	0.4	8.5	0.3	19	0.7	20
21			51	1.8	173	6.1	42	1.5	11	0.4	5.6	0.2	11	0.4	21
22			51	1.8	164	5.8	36	1.3	11	0.4	8.5	0.3	11	0.4	22
23			56	2.0	147	5.2	36	1.3	11	0.4	5.6	0.2	11	0.4	23
24			51	1.8	147	5.2	36	1.3	8.5	0.3	11	0.4	11	0.4	24
25			56	2.0	130	4.6	31	1.1	5.6	0.2	62	2.2	11	0.4	25
26			51	1.8	139	4.9	31	1.1	5.6	0.2	22	0.8	8.5	0.3	26
27			45	1.6	139	4.9	36	1.3	11	0.4	8.5	0.3	8.5	0.3	27
28			45	1.6	130	4.6	36	1.3	11	0.4	8.5	0.3	8.5	0.3	28
29			42	1.5	125	4.4	36	1.3	17	0.6	8.5	0.3	8.5	0.3	29
30			42	1.5	116	4.1	36	1.3	17	0.6	8.5	0.3	8.5	0.3	30
31					108	3.8			17	0.6	8.5	0.3			31
Mean			62.6	2.2	144	5.1	55.3	2.0	14.4	0.5	10.8	0.4	10.3	0.4	Mean
Volume															Volume
hm			.160		.390		.140		.040		.030		.030		hm
AF				131		313		116		31.3		23.4		21.6	AF

* Beginning of Record

SURPRISE VALLEY WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 49

OWL CREEK BELOW ALLEN-ARRECHE DITCH

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1			42	1.5*	235	8.3	708	25	108	3.8	39	1.4	34	1.2	1
2			42	1.5	212	7.5	708	25	133	4.7	39	1.4	34	1.2	2
3			42	1.5	210	7.4	708	25	139	4.9	39	1.4	28	1.0	3
4			102	3.6	241	8.5	736	26	119	4.2	36	1.3	28	1.0	4
5			161	5.7	215	7.6	793	28	105	3.7	36	1.3	28	1.0	5
6			181	6.4	212	7.5	736	26	96	3.4	36	1.3	28	1.0	6
7			193	6.8	195	6.9	680	24	87	3.1	36	1.3	28	1.0	7
8			193	6.8	187	6.6	595	21	87	3.1	34	1.2	28	1.0	8
9			125	4.4	272	9.6	510	18	85	3.0	34	1.2	28	1.0	9
10			99	3.5	453	16	425	15	85	3.0	34	1.2	28	1.0	10
11			85	3.0	340	12	340	12	82	2.9	34	1.2	25	0.9	11
12			136	4.8	312	11	368	13	82	2.9	34	1.2	25	0.9	12
13			130	4.6	425	15	368	13	79	2.8	34	1.2	25	0.9	13
14			127	4.5	396	14	340	12	76	2.7	34	1.2	25	0.9	14
15			176	6.2	272	9.6	312	11	70	2.5	34	1.2	25	0.9	15
16			221	7.8	241	8.5	283	10	65	2.3	34	1.2	28	1.0	16
17			193	6.8	229	8.1	283	10	59	2.1	34	1.2	42	1.5	17
18			164	5.8	218	7.7	272	9.6	53	1.9	34	1.2	56	2.0	18
19			159	5.6	224	7.9	249	8.8	51	1.8	31	1.1	56	2.0	19
20			167	5.9	283	10	207	7.3	51	1.8	31	1.1	125	4.4	20
21			153	5.4	453	16	193	6.8	51	1.8	31	1.1	53	1.9	21
22			159	5.6	453	16	176	6.2	48	1.7	31	1.1	56	2.0	22
23			195	6.9	368	13	167	5.9	48	1.7	31	1.1	53	1.9	23
24			232	8.2	340	12	159	5.6	48	1.7	102	3.6	51	1.8	24
25			238	8.4	312	11	156	5.5	45	1.6	130	4.6	45	1.6	25
26			232	8.2	340	12	147	5.2	45	1.6	164	5.8	42	1.5	26
27			244	8.6	340	12	142	5.0	45	1.6	136	4.8	39	1.4	27
28			263	9.3	340	12	130	4.6	42	1.5	85	3.0	39	1.4	28
29			255	9.0	368	13	125	4.4	42	1.5	56	2.0	39	1.4	29
30			235	8.3	453	16	113	4.0	42	1.5	34	1.2	39	1.4	30
31					595	21			39	1.4	34	1.2			31
Mean			165	5.8	314	11.1	371	13.1	71.5	2.5	49.6	1.8	39.7	1.4	Mean
Volume															Volume
hm			.430		.840		.960		.190		.130		.100		hm
AF				346		681		779		155		108		83.5	AF

* Beginning of Record

TABLE 50

RADER CREEK ABOVE ALL DIVERSIONS

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1			34	1.2*	113	4.0	623	22	108	3.8	34	1.2	22	0.8	1
2			36	1.3	102	3.6	595	21	136	4.8	34	1.2	22	0.8	2
3			39	1.4	102	3.6	595	21	125	4.4	28	1.0	22	0.8	3
4			42	1.5	102	3.6	623	22	108	3.8	28	1.0	22	0.8	4
5			51	1.8	99	3.5	680	24	99	3.5	28	1.0	22	0.8	5
6			73	2.6	99	3.5	708	25	93	3.3	28	1.0	22	0.8	6
7			90	3.2	90	3.2	736	26	85	3.0	28	1.0	19	0.7	7
8			113	4.0	85	3.0	538	19	79	2.8	25	0.9	19	0.7	8
9			90	3.2	102	3.6	481	17	73	2.6	25	0.9	19	0.7	9
10			79	2.8	113	4.0	368	13	68	2.4	25	0.9	19	0.7	10
11			68	2.4	113	4.0	232	8.2	62	2.2	25	0.9	17	0.6	11
12			73	2.6	125	4.4	224	7.9	62	2.2	25	0.9	17	0.6	12
13			73	2.6	153	5.4	215	7.6	62	2.2	25	0.9	17	0.6	13
14			73	2.6	176	6.2	207	7.3	62	2.2	25	0.9	17	0.6	14
15			113	4.0	159	5.6	198	7.0	62	2.2	25	0.9	17	0.6	15
16			147	5.2	144	5.1	190	6.7	62	2.2	25	0.9	22	0.8	16
17			125	4.4	130	4.6	181	6.4	62	2.2	25	0.9	19	0.7	17
18			108	3.8	113	4.0	173	6.1	59	2.1	25	0.9	19	0.7	18
19			85	3.0	119	4.2	167	5.9	59	2.1	25	0.9	19	0.7	19
20			85	3.0	125	4.4	156	5.5	56	2.0	25	0.9	22	0.8	20
21			79	2.8	255	9.0	153	5.4	56	2.0	34	1.2	19	0.7	21
22			85	3.0	261	9.2	147	5.2	56	2.0	28	1.0	19	0.7	22
23			113	4.0	238	8.4	142	5.0	56	2.0	25	0.9	19	0.7	23
24			170	6.0	198	7.0	133	4.7	51	1.8	51	1.8	19	0.7	24
25			187	6.6	198	7.0	127	4.5	51	1.8	102	3.6	19	0.7	25
26			198	7.0	198	7.0	122	4.3	51	1.8	73	2.6	19	0.7	26
27			181	6.4	184	6.5	113	4.0	45	1.6	45	1.6	19	0.7	27
28			159	5.6	170	6.0	108	3.8	45	1.6	39	1.4	19	0.7	28
29			136	4.8	227	8.0	99	3.5	39	1.4	34	1.2	19	0.7	29
30			125	4.4	283	10	93	3.3	39	1.4	28	1.0	19	0.7	30
31					481	17			39	1.4	22	0.8			31
Mean			101	3.6	163	5.8	304	10.7	68.4	2.4	33.1	1.2	20.1	0.7	Mean
Volume															Volume
hm			.260		.440		.790		.180		.090		.050		hm
AF				213		354		639		148		71.8		42.2	AF

* Beginning of Record

SURPRISE VALLEY WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 51

EAGLE CREEK AT EAGLEVILLE

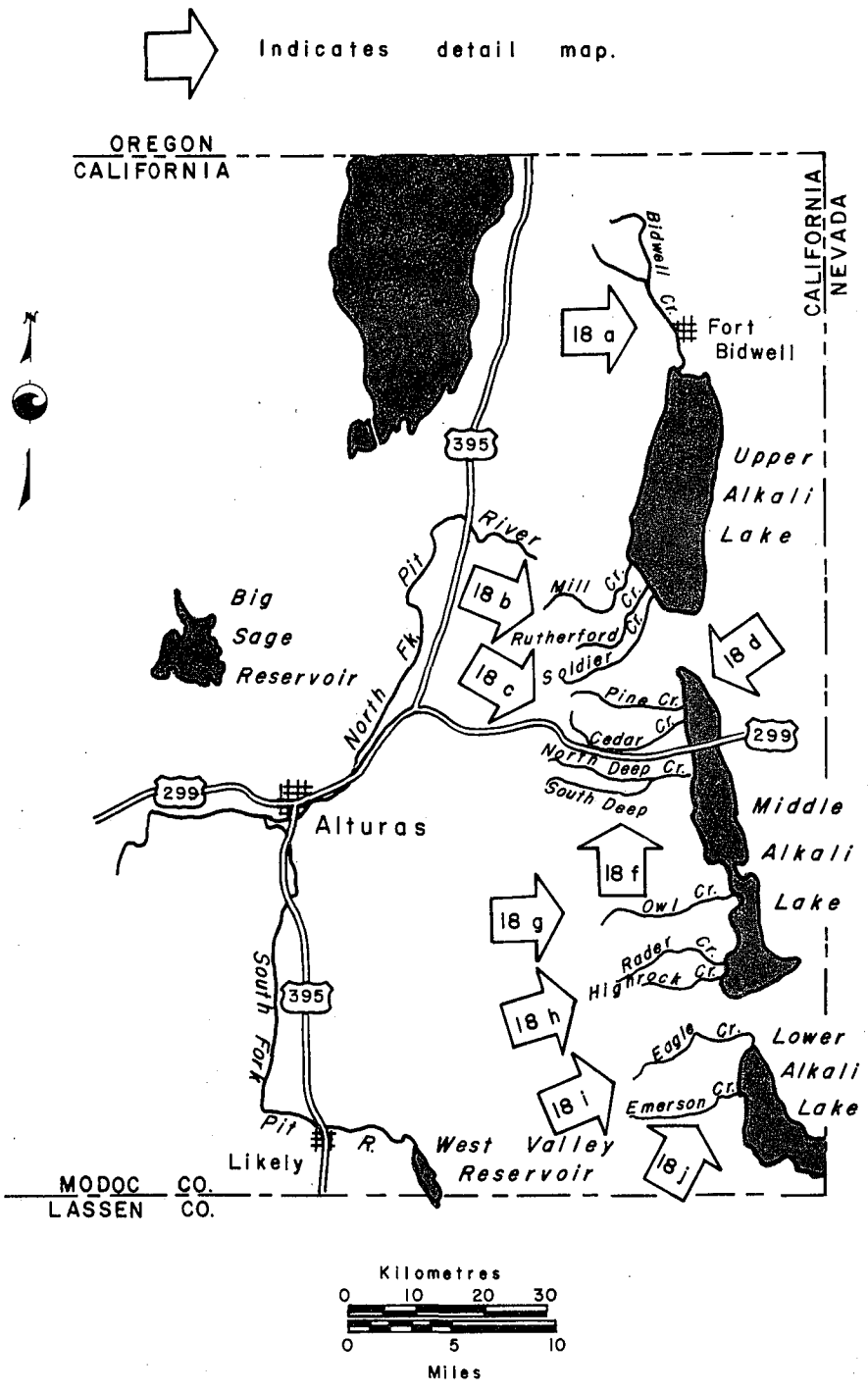
Day	March l/s	March cfs	April l/s	April cfs	May l/s	May cfs	June l/s	June cfs	July l/s	July cfs	August l/s	August cfs	September l/s	September cfs	Day
1	25	0.9	48	1.7	238	8.4	708	25	139	4.9	42	1.5	39	1.4	1
2	25	0.9	48	1.7	198	7.0	651	23	170	6.0	48	1.7	39	1.4	2
3	25	0.9	53	1.9	178	6.3	651	23	150	5.3	48	1.7	36	1.3	3
4	25	0.9	87	3.1	161	5.7	708	25	130	4.6	42	1.5	36	1.3	4
5	25	0.9	136	4.8	173	6.1	765	27	119	4.2	42	1.5	34	1.2	5
6	25	0.9	164	5.8	161	5.7	821	29	110	3.9	42	1.5	34	1.2	6
7	25	0.9	210	7.4	147	5.2	821	29	105	3.7	39	1.4	31	1.1	7
8	25	0.9	195	6.9	142	5.0	765	27	99	3.5	39	1.4	34	1.2	8
9	25	0.9	153	5.4	156	5.5	651	23	96	3.4	36	1.3	34	1.2	9
10	51	1.8	130	4.6	139	4.9	566	20	93	3.3	36	1.3	31	1.1	10
11	48	1.7	127	4.5	142	5.0	481	17	90	3.2	36	1.3	31	1.1	11
12	48	1.7	144	5.1	147	5.2	425	15	85	3.0	31	1.1	31	1.1	12
13	39	1.4	144	5.1	190	6.7	368	13	85	3.0	36	1.3	31	1.1	13
14	36	1.3	142	5.0	221	7.8	340	12	82	2.9	39	1.4	28	1.0	14
15	34	1.2	167	5.9	173	6.1	340	12	79	2.8	34	1.2	31	1.1	15
16	34	1.2	212	7.5	170	6.0	312	11	73	2.6	31	1.1	48	1.7	16
17	34	1.2	227	8.0	159	5.6	312	11	70	2.5	34	1.2	56	2.0	17
18	34	1.2	170	6.0	150	5.3	312	11	65	2.3	34	1.2	45	1.6	18
19	34	1.2	181	6.4	156	5.5	283	10	62	2.2	36	1.3	42	1.5	19
20	34	1.2	170	6.0	215	7.6	258	9.1	62	2.2	45	1.6	53	1.9	20
21	48	1.7	164	5.8	312	11	224	7.9	62	2.2	39	1.4	53	1.9	21
22	99	3.5	170	6.0	340	12	193	6.8	62	2.2	31	1.1	48	1.7	22
23	102	3.6	198	7.0	312	11	153	5.4	59	2.1	31	1.1	48	1.7	23
24	90	3.2	227	8.0	283	10	164	5.8	53	1.9	68	2.4	48	1.7	24
25	82	2.9	252	8.9	275	9.7	153	5.4	53	1.9	147	5.2	42	1.5	25
26	76	2.7	235	8.3	278	9.8	142	5.0	53	1.9	102	3.6	42	1.5	26
27	65	2.3	246	8.7	263	9.3	133	4.7	51	1.8	48	1.7	42	1.5	27
28	62	2.2	258	9.1	258	9.1	125	4.4	48	1.7	28	1.0	102	3.6	28
29	59	2.1	261	9.2	275	9.7	119	4.2	51	1.8	34	1.2	176	6.2	29
30	59	2.1	249	8.8	340	12	116	4.1	48	1.7	45	1.6	113	4.0	30
31	53	1.9			538	19			45	1.6	42	1.5			31
Mean	47.0	1.7	172	6.1	222	7.8	402	14.2	82.5	2.9	45.0	1.6	48.9	1.7	Mean
Volume															Volume
hm	.130		.450		.600		1.040		.220		.120		.130		hm
AF	102		362		482		844		179		97.7		103		AF

TABLE 52

EMERSON CREEK ABOVE ALL DIVERSIONS

Day	March l/s	March cfs	April l/s	April cfs	May l/s	May cfs	June l/s	June cfs	July l/s	July cfs	August l/s	August cfs	September l/s	September cfs	Day
1	51	1.8	70	2.5	125	4.4	241	8.5	113	4.0	42	1.5	53	1.9	1
2	48	1.7	68	2.4	105	3.7	241	8.5	130	4.6	45	1.6	53	1.9	2
3	51	1.8	70	2.5	99	3.5	229	8.1	87	3.1	51	1.8	48	1.7	3
4	51	1.8	79	2.8	102	3.6	235	8.3	73	2.6	45	1.6	45	1.6	4
5	53	1.9	93	3.3	93	3.3	218	7.7	65	2.3	45	1.6	45	1.6	5
6	53	1.9	116	4.1	85	3.0	210	7.4	62	2.2	45	1.6	45	1.6	6
7	53	1.9	181	6.4	82	2.9	238	8.4	59	2.1	48	1.7	42	1.5	7
8	59	2.1	144	5.1	79	2.8	235	8.3	53	1.9	22	0.8	42	1.5	8
9	62	2.2	122	4.3	110	3.9	218	7.7	53	1.9	31	1.1	39	1.4	9
10	93	3.3	96	3.4	122	4.3	184	6.5	53	1.9	34	1.2	39	1.4	10
11	161	5.7	87	3.1	125	4.4	176	6.2	51	1.8	36	1.3	34	1.2	11
12	65	2.3	102	3.6	122	4.3	147	5.2	48	1.7	36	1.3	34	1.2	12
13	99	3.5	93	3.3	150	5.3	133	4.7	48	1.7	42	1.5	34	1.2	13
14	263	9.3	87	3.1	195	6.9	119	4.2	48	1.7	45	1.6	34	1.2	14
15	65	2.3	99	3.5	178	6.3	110	3.9	45	1.6	42	1.5	34	1.2	15
16	65	2.3	127	4.5	142	5.0	102	3.6	42	1.5	45	1.6	45	1.6	16
17	68	2.4	116	4.1	133	4.7	105	3.7	39	1.4	45	1.6	45	1.6	17
18	76	2.7	99	3.5	127	4.5	110	3.9	39	1.4	51	1.8	39	1.4	18
19	62	2.2	96	3.4	136	4.8	116	4.1	39	1.4	51	1.8	39	1.4	19
20	68	2.4	93	3.3	159	5.6	105	3.7	39	1.4	53	1.9	45	1.6	20
21	76	2.7	93	3.3	210	7.4	93	3.3	39	1.4	59	2.1	39	1.4	21
22	85	3.0	102	3.6	212	7.5	82	2.9	39	1.4	53	1.9	39	1.4	22
23	85	3.0	108	3.8	204	7.2	76	2.7	39	1.4	53	1.9	39	1.4	23
24	82	2.9	116	4.1	190	6.7	70	2.5	36	1.3	56	2.0	39	1.4	24
25	76	2.7	125	4.4	181	6.4	68	2.4	39	1.4	87	3.1	36	1.3	25
26	76	2.7	110	3.9	207	7.3	65	2.3	39	1.4	110	3.9	36	1.3	26
27	76	2.7	96	3.4	187	6.6	65	2.3	42	1.5	70	2.5	36	1.3	27
28	96	3.4	93	3.3	176	6.2	70	2.5	42	1.5	62	2.2	45	1.6	28
29	93	3.3	110	3.9	178	6.3	65	2.3	45	1.6	62	2.2	65	2.3	29
30	62	2.2	108	3.8	193	6.8	65	2.3	45	1.6	59	2.1	45	1.6	30
31	76	2.7			221	7.8			42	1.5	56	2.0			31
Mean	79.3	2.8	104	3.7	149	5.3	140	4.9	53.1	1.9	51.4	1.8	42.2	1.5	Mean
Volume															Volume
hm	.210		.270		.400		.360		.140		.140		.110		hm
AF	172		217		324		294		115		112		88.6		AF

Figure 18



INDEX MAP
SURPRISE VALLEY WATERMASTER SERVICE AREA

Diversion Number		March 15 to July 9		July 10 to Sept 30	
		l/s	Cfs	l/s	Cfs
4	Fort Bidwell Cattle Prod. Co.	133.37	4.71	133.37	4.71
5	G. Peterson	10.76	0.38	9.91	0.35
	C. Bucher	12.74	0.45	9.91	0.35
	J. Moore	1.98	0.07	1.98	0.07
6	J. Moore	5.10	0.18	5.10	0.18
7	G. Peterson	14.16	0.50	11.33	0.40 1/
8	Fort Bidwell Cattle Prod. Co.	205.30	7.25	205.30	7.25
	Town Users	1.42	0.05	1.42	0.05
9	J. McAuliffe	216.06	7.63	216.06	7.63
	Town Users	6.23	0.22	4.81	0.17
10	F. Carey	173.58	6.13	173.58	6.13
	C. Bucher	19.82	0.70	19.82	0.70 2/
	P. Peterson	12.46	0.44	12.46	0.44
	Town Users	7.36	0.26	7.36	0.26
11	C. Bucher	10.76	0.38	1/	1/
12	U. S. Indian Service	13.03	0.46	5.66	0.20 3/
	Town Users	7.36	0.26	7.36	0.26
13	Fee Ranch Inc.	148.38	5.24	148.38	5.24
	Town Users	12.46	0.44	12.46	0.44
15	Fee Ranch Inc.	253.15	8.94	253.15	8.94
	L. Sagehorn	139.89	4.94	139.89	4.94 2/
	J. O'Callaghan	81.55	2.88	81.55	2.88 2/
	G. Toney	11.89	0.42	11.89	0.42 2/
	Town Users	0.85	0.03	0.85	0.03
17	E. Kober	1.42	0.05	1.42	0.05
19	J. F. Cole	120.63	4.26	120.63	4.26
20	L. Sagehorn	31.15	1.10	31.15	1.10
	F. Carey	26.90	0.95	26.90	0.95 2/
21	L. Sagehorn	39.36	1.39	39.36	1.39
	F. Carey	13.59	0.48	13.59	0.48
22	J. O'Callaghan	10.76	0.38	10.76	0.38
23	L. Sagehorn	50.69	1.79	50.69	1.79
XX	L. Sagehorn	4/	4/	4/	4/

1/ Two 36 hour periods of 56.63 l/s (2.00 cfs).

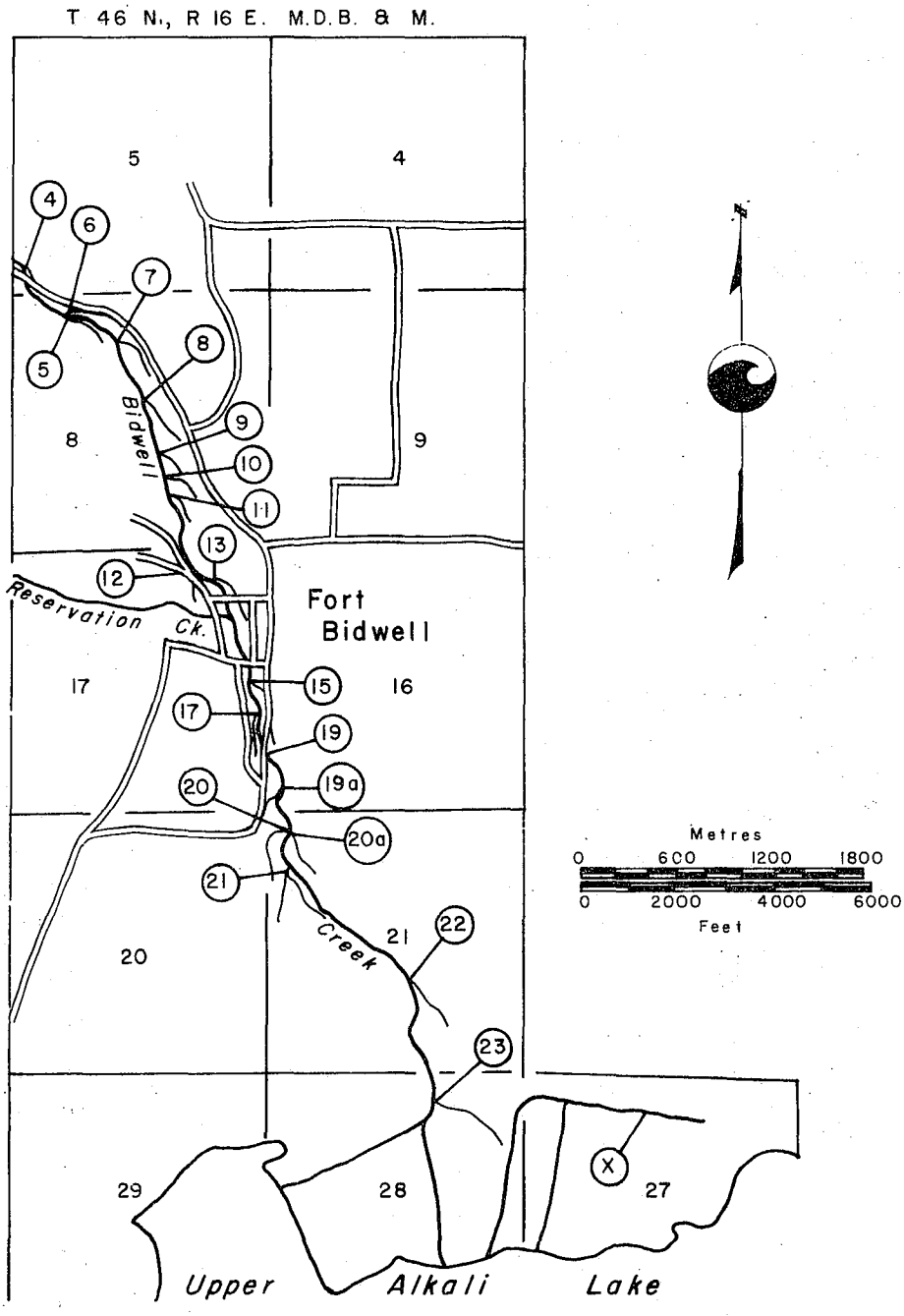
2/ Includes 2.83 l/s (0.10 cfs) stockwater right not to be diverted from creek.

3/ Reservation Creek - U. S. Indian Service entire flow.

4/ If flow is less than 108.17 l/s (3.82 cfs) deficiency is made up by additional diversions through (15) if Fee Ranch Inc. allotment is satisfied.

NOTE: Diversions 1, 2, and 3 are not shown as they are not part of the watermaster service area.

Figure 18a

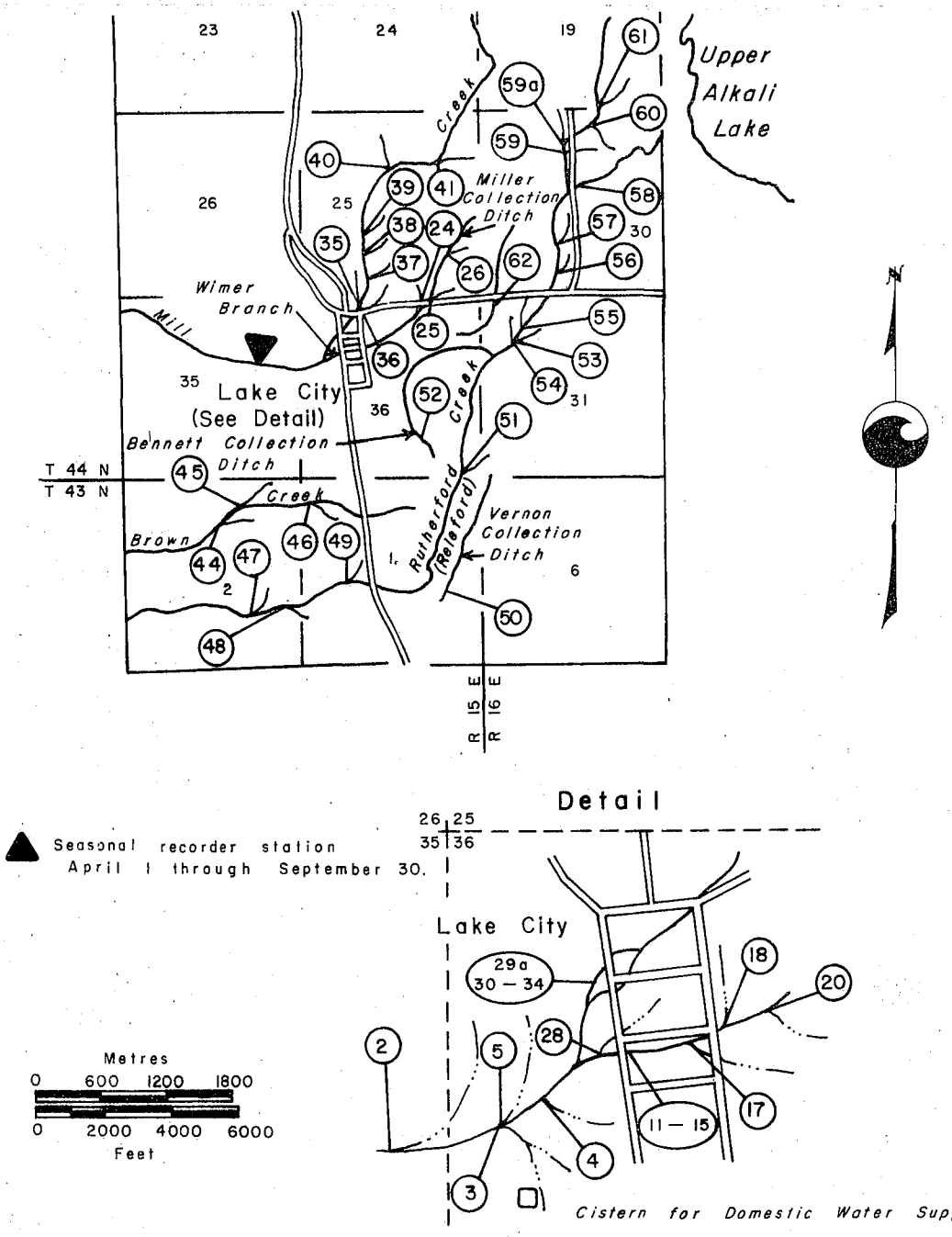


DIVERSIONS FROM BIDWELL CREEK
SURPRISE VALLEY WATERMASTER SERVICE AREA

Diversion Number	Name	l/s	Cfs
2	C. Dixon	10.76	0.38
	H. Smith	6.80	0.24
3	N. Bettendorff	39.08	1.38
	R. McDaniels	3.68	0.13
	Domestic Users	1.70	0.06
4	R. Dreyer	1.98	0.07
	J. Fogerty	7.08	0.25
	M. Larson	7.36	0.26
5	C. Dixon	5.10	0.18
11-13,15,28	Town Users	54.37	1.92
17	N. Bettendorff	56.92	2.01
18	Town Users	9.34	0.33
20	V. Wimer	52.39	1.85
24	T. Dunton	41.06	1.45
26	E. Darst	52.39	1.85
29A,30-34	Town Users	46.16	1.63
Channel	Cockrells Inc.	291.67	10.30
Channel	G. W. Warrens	52.39	1.85
44-46	W. Gorzell	22.65	0.80
47	M. Toney	0.28	0.01
	W. Gorzell	16.28	0.575
	C. Gorzell	7.79	0.275
	N. Bettendorff	8.50	0.30
48	F. Hedgpeth	16.99	0.60
48-49	M. Toney	46.44	1.64
54	Cockrells Inc.	11.33	0.40
55-57	Cockrells Inc.	21.24	0.75[1/]
58	Cockrells Inc.	2.83	0.10[1/]
58-59	W. Odbert	25.49	0.90[1/]
59A	Cockrells Inc.	9.91	0.35[1/]
61	G. W. Warrens	18.41	0.65
62	S. Burger	46.72	1.65[2/]
3/	Cockrells Inc.	19.82	0.70

1/ Water derived from Hay Collecting Ditch to be deducted from decreed amount of direct diversion from Rutherford Creek.
2/ Not under Watermaster Report.
3/ Channel of Rutherford Creek.

Figure 18 b



DIVERSIONS FROM MILL CREEK, BROWN CREEK, AND RUTHERFORD (RELEFORD) CREEK SURPRISE VALLEY WATERMASTER SERVICE AREA

Diversion Number	Name	Decreed Right l/s	Decreed Right Cfs	Appropriative Right l/s	Appropriative Right Cfs
1	R. Pratt et al	135.92	4.80		
	O. Radenbaugh	104.77	3.70		
	G. Heard	41.05	1.45	24.63	0.87
1 &/or 2	C. Pratt	84.95	3.00	49.55	1.75
3	G. Carter	58.04	2.05		
	T. Lake	1.41	0.05		
4	J. Weber	121.76	4.30		
5	E. Eaton	62.29	2.20	35.39	1.25
9	C. Miura			14.15	0.50
11	C. Stopp	8.49	0.30		
15	A. White	202.18	7.14[1/]		
16	H. Harris	29.16	1.03		
	R. Keller	35.11	1.24		
17	A. White	20.67	0.73		
19	Cockrells Inc.	57.76	2.04[2/]		
26	Cockrells Inc.	63.71	2.25		

1/ Includes 79.57 l/s (2.81 cfs) allotted to Diversion No. 13 which now diverts at Diversion No. 15.

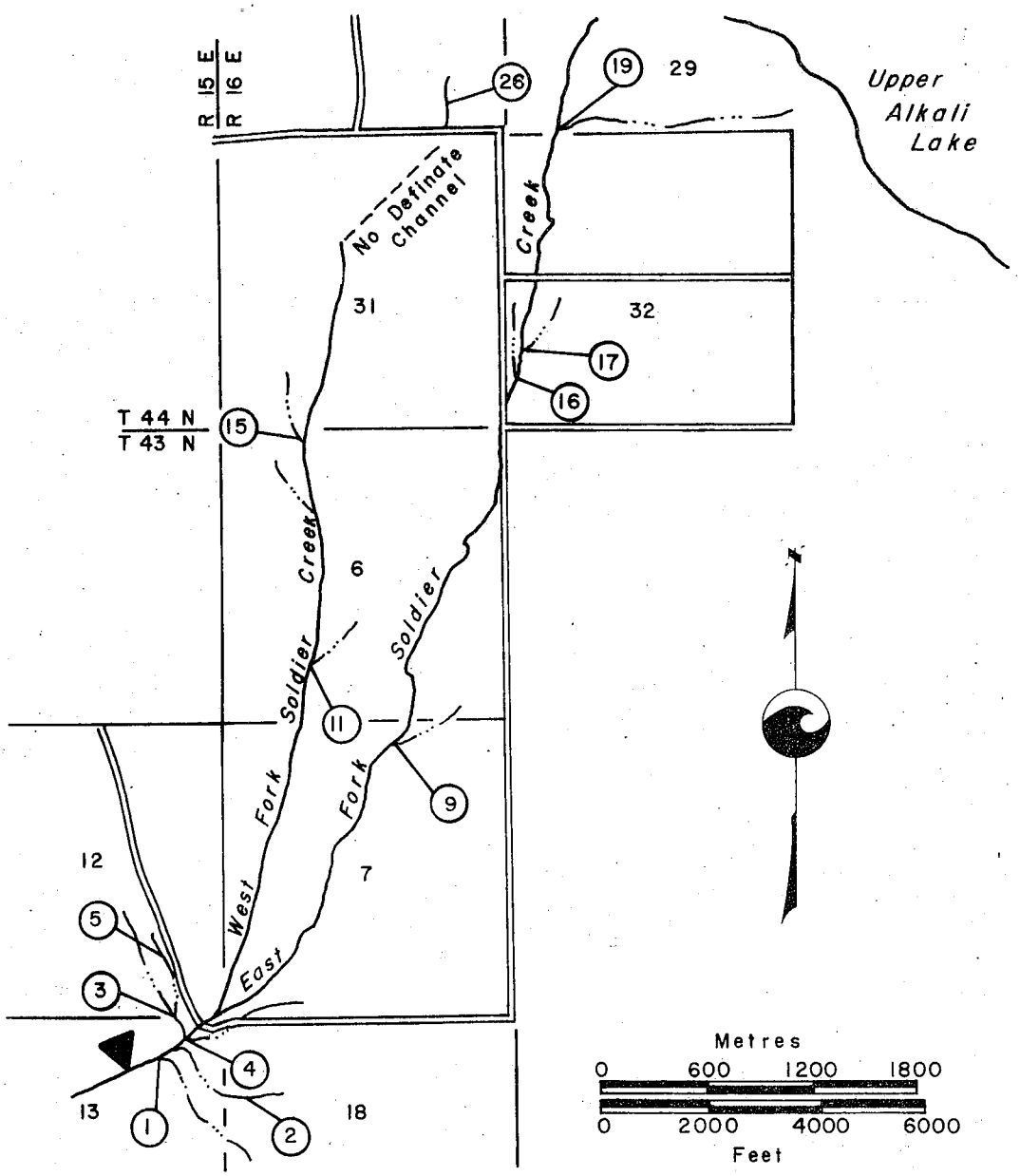
2/ Plus any surplus flow that can be beneficially put to use.

Diversions Number 1 through 5 are Upper Users.

Diversions Number 11 through 26 are Lower Users.

All decreed rights must be satisfied before the appropriative right may be exercised.

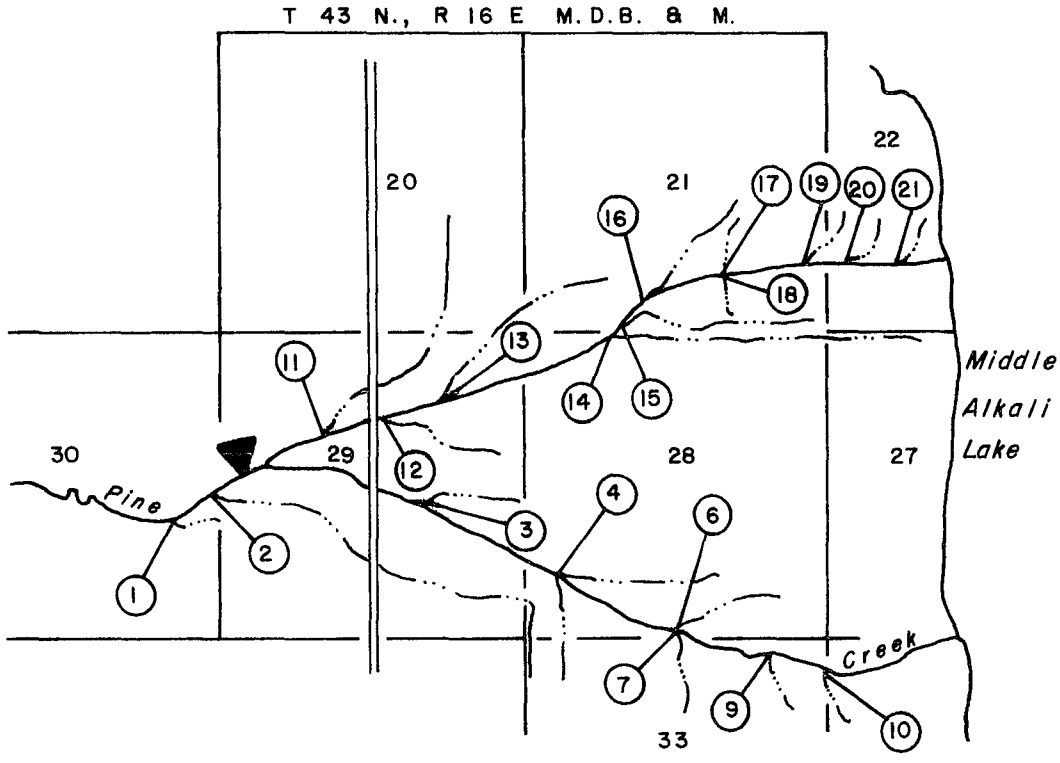
Figure 18c



▲ Watermaster installed recorder station

DIVERSIONS FROM SOLDIER CREEK
SURPRISE VALLEY WATERMASTER SERVICE AREA

Figure 18d



Rotation Allotments	Name	hm^3	A/F
1, 11, 13–21	W. Baker	0.43	345.5
3, 14	C. Marx	0.07	60.0
3, 6–10	C. Hill	0.26	206.6
2, 4	R. Bordwell	0.10	78.4
12	C. Hill	0.00	2.5

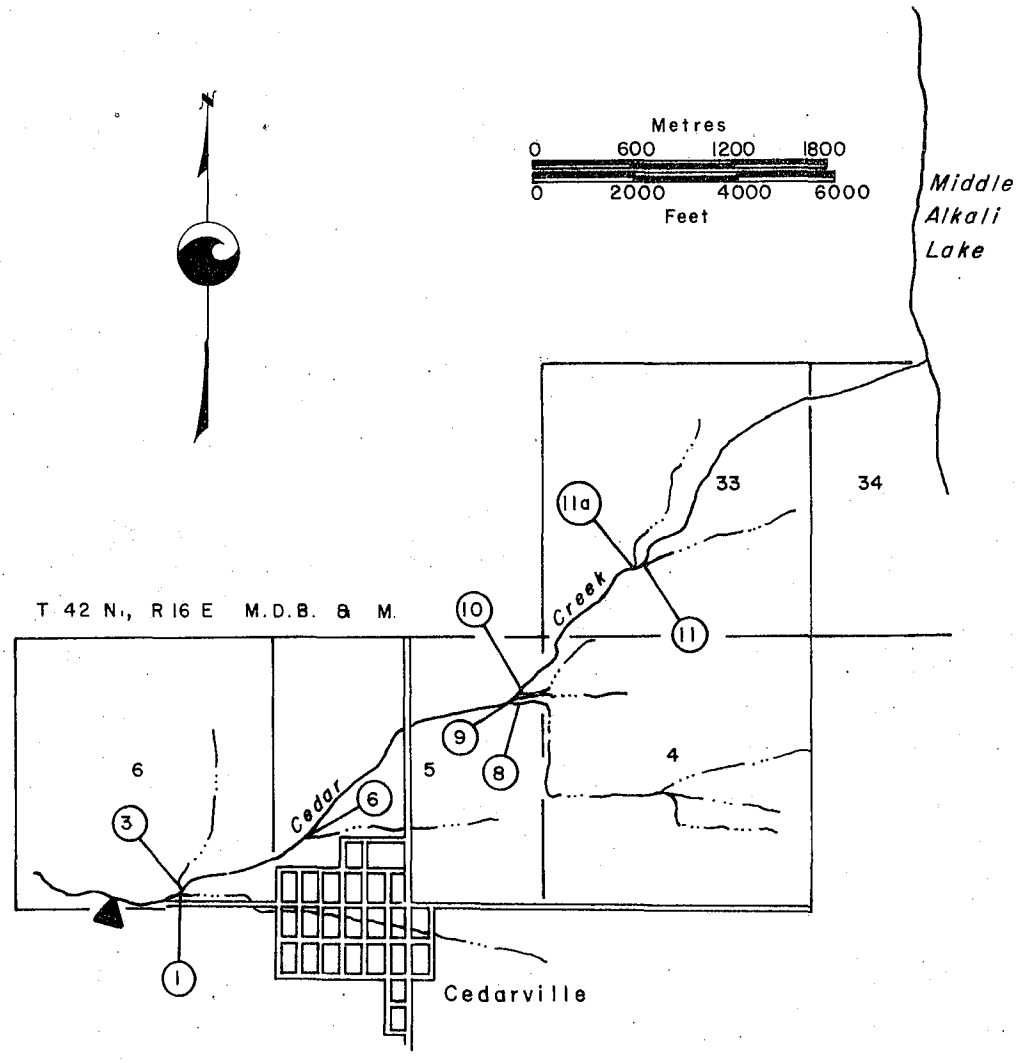
Total of first and second rotation is .74 hm^3 (603.0 A/F).

▲ Watermaster installed recorder station.

Metres
0 600 1200 1800
0 2000 4000 6000
Feet

DIVERSIONS FROM PINE CREEK SURPRISE VALLEY WATERMASTER SERVICE AREA

Figure 18 e



Diversion Number	Name	l/s	cfs
1	J. Weber	141.59	5.00
3	G. Clark	75.04	2.65
	Laxague Bros.	14.16	0.50
6	A. Wylie W. Warrens	168.49	5.95
8	B. Bunyard	65.13	2.30
	C. Kemble	39.64	1.40
	D. Ferguson	22.65	0.80

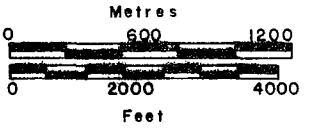
Diversion Number	Name	l/s	cfs
9	L. Sharrow	42.48	1.50
10	R. Seibal	73.62	2.60
11,11a	G. Ash	113.27	4.00
Channel	F. Areche	31.15	1.10
Channel	C. Hill	31.15	1.10

The total, 818.36 l/s (28.90 cfs), includes 141.59 l/s (5.00 cfs) imported from Thoms Creek.

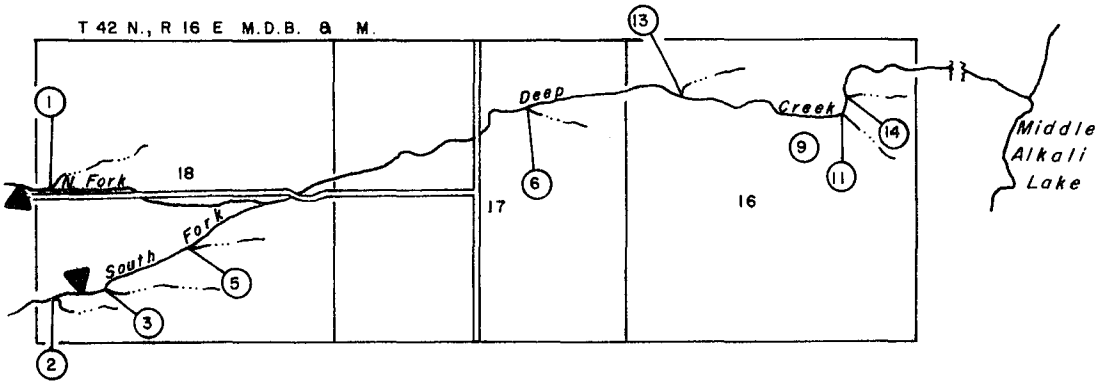
▲ Watermaster installed recorder station.

DIVERSIONS FROM CEDAR CREEK
SURPRISE VALLEY WATERMASTER SERVICE AREA

Figure 18f



▲ Seasonal recorder (April 1 thru September 30).

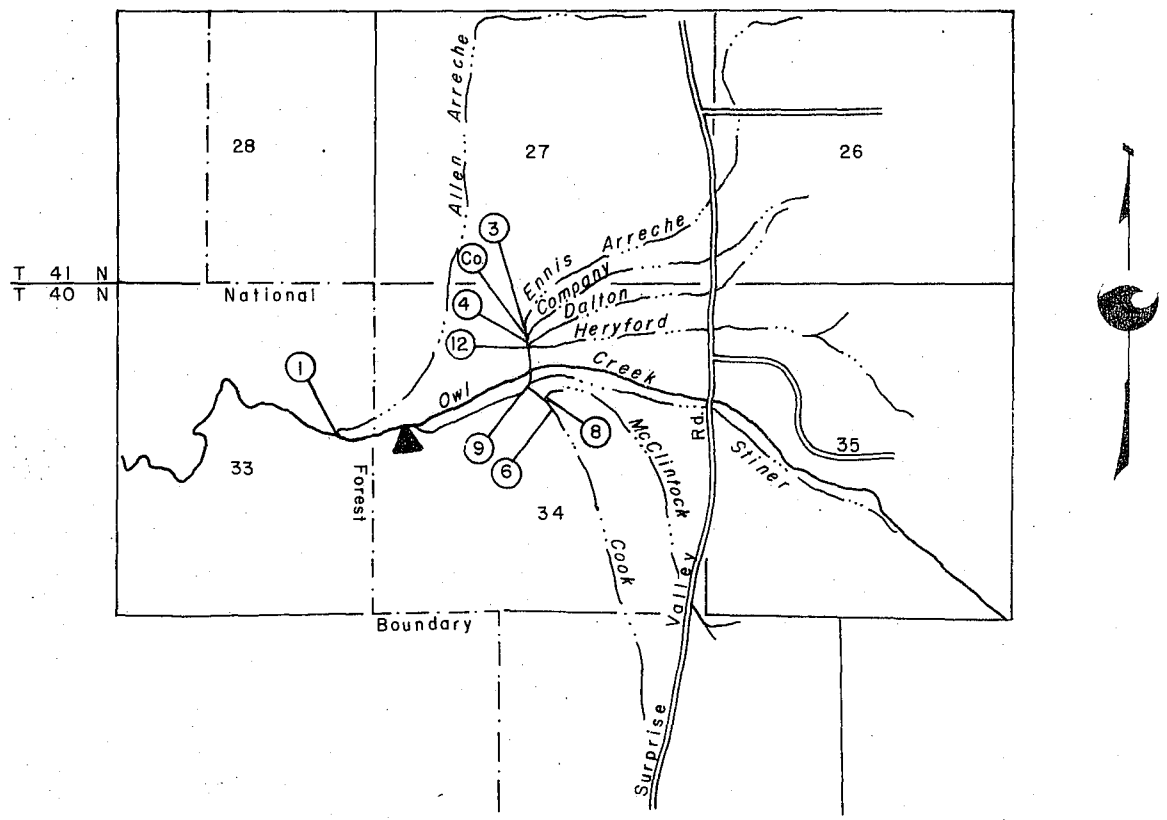


Diversion Number	Name	l/s	cfs
1	G. Hicks	2.83	0.10
	B. Bush	4.53	0.16
	W. Hussa	170.18	6.01
	D. Rosendahl	57.48	2.03
	M. Gooch	9.62	0.34
	F. Page	4.53	0.16
2	J. Laxague	18.40	0.65
3	D. Rosendahl	32.28	1.14
4	F. Queirola	93.44	3.30
	J Weber	94.29	3.33
5	M. Mauser	28.31	1.00
6	D. Rosendahl	11.32	0.40
9	J. Weber	121.76	4.30
	F. Queirolo	28.31	1.00
11*	J. Laxague	29.73	1.05
13	D. Rosendahl	22.65	0.80
14	W. Hussa	77.87	2.75
	R. Bordwell	24.06	0.85

* May also be used in diversion number 2.

DIVERSIONS FROM DEEP CREEK
SURPRISE VALLEY WATERMASTER SERVICE AREA

Figure 18 g



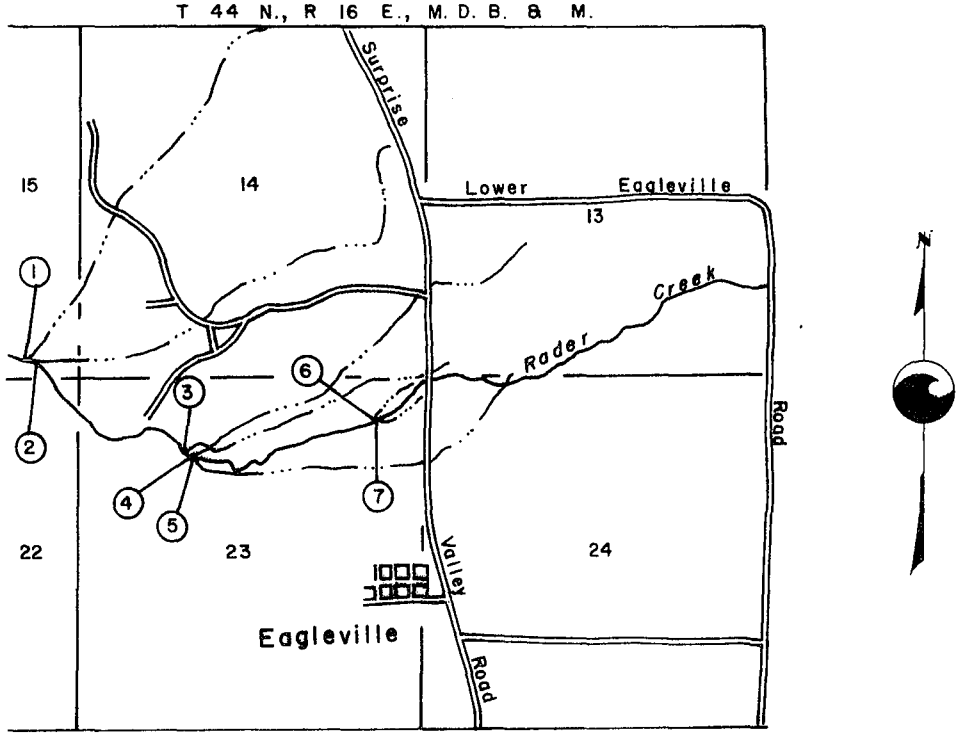
Diversion Number	Name	l/s	cfs	Diverson Number	Name	l/s	cfs
1	W. Cockrell	69.94	2.47	Co.	J. Bandy	51.25	1.81
	J. Stevenson	51.25	1.81		H. Stanley	28.03	0.99
3	E. Davis	32.84	1.16	6,8	Cockrell's Inc.	498.94	17.62
	J. Stevenson	63.71	2.25	9	E. Berryessa	105.05	3.71
4	J. Stevenson	88.91	3.14	12	E. Berryessa	155.17	5.48
Co.	S. Stevenson	35.67	1.26				

▲ Watermaster installed recorder station.

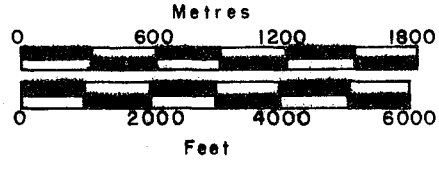
Metres
0 600 1200 1800
0 2000 4000 6000
Feet

DIVERSIONS FROM OWL CREEK
SURPRISE VALLEY WATERMASTER SERVICE AREA

Figure 18 h



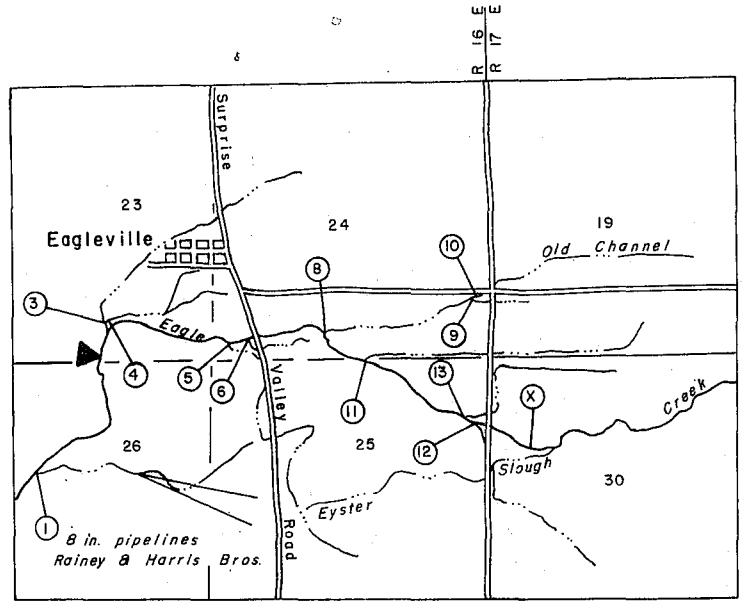
Diversion Number	Name	l/s	cfs
1	L. Cockrell	*	*
2	Lazy S. J. Ranch Inc.	99.10	3.50
3	K. Minto	67.67	2.39
4	White Pine Lumber Co.	254.85	9.00
5	White Pine Lumber Co.	66.54	2.35
6	C. Minnette	2.26	0.08
7	R. Reeves	2.26	0.08



* 1/7 of total flow from May 20, until water will not reach place of use.

DIVERSIONS FROM RADER CREEK SURPRISE VALLEY WATERMASTER SERVICE AREA

Figure 18i



Diversion Number	Name	l/s	cfs
1	Harris Brothers	11.61	0.41
	R. Morgan	10.20	0.36
	C. Rainey	14.45	0.51
3	13 Town users	27.75	0.98
	White Pine Lumber Co.	141.59	5.00
4	15 Town users	38.52	1.36
	White Pine Lumber Co.	33.98	1.20
5	Harris Brothers	14.16	0.50
6, 8	White Pine Lumber Co.	75.04	2.65
9	Lazy S. J. Ranch Inc.	4.25	0.15
10	M. Stevenson	89.20	3.15 *
11	White Pine Lumber Co.	15.58	0.55
	Lazy S. J. Ranch Inc.	55.22	1.95
12	J. Grove	5.67	0.20
	M. Miura	19.83	0.70
13	J. Grove	5.67	0.20
X	Harris Brothers	189.73	6.70 * *

* Minus any water received from Prior collecting ditch.

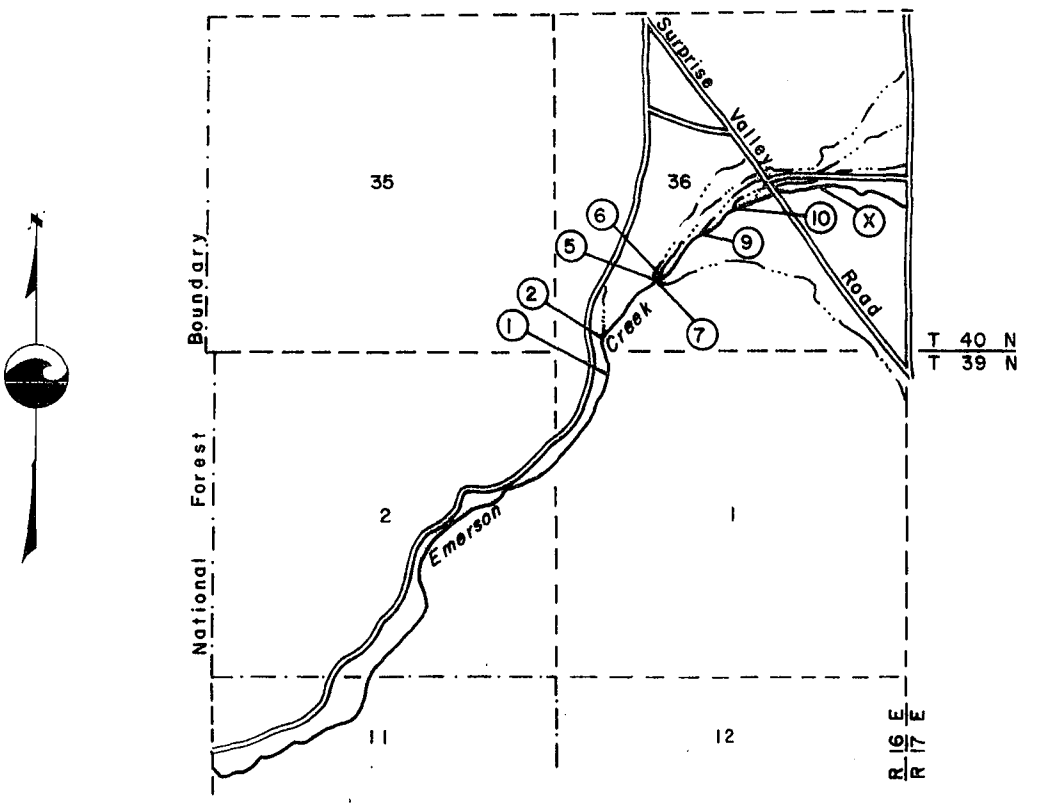
* * Any water over 19.83 l/s, (0.70 cfs) from Eyster Slough must be deducted from this.

▲ DWR permanate recorder station.

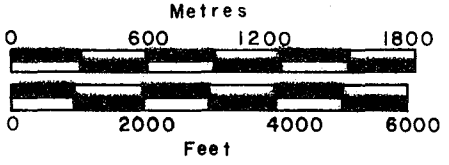
Metres
0 600 1200
0 2000 4000
Feet

DIVERSIONS FROM EAGLE CREEK SURPRISE VALLEY WATERMASTER SERVICE AREA

Figure 18 j



Diversion Number	Name	l/s	cfs	Diversion Number	Name	l/s	cfs
1	C. Raney	56.63	2.00	6	J. Miura	63.71	2.25
2	Harris Bros.	56.63	2.00	7	E. Berryessa	145.65	5.15
	D. Romagnoli	5.66	0.20	9	W. Warrens	45.30	1.60
5	J. Biconda	93.44	3.30	10	J. Espil	50.97	1.80
6	Lazy S. J. Ranch Incorporated	16.99	0.60	X	D. Grove	162.82	5.75



DIVERSIONS FROM EMERSON CREEK SURPRISE VALLEY WATERMASTER SERVICE AREA

SUSAN RIVER WATERMASTER SERVICE AREA

The Susan River service area is situated in southern Lassen County in the vicinity of Susanville. The primary area of water use is in Honey Lake Valley between Susanville and the northwest shore of Honey Lake, a distance of about 40 kilometres (25 miles). The valley floor is at an elevation of about 1 219 metres (4,000 feet). The source of supply is composed of three stream systems: the Susan River, Baxter Creek, and Parker Creek, with their respective tributaries.

The Susan River originates on the east slope of the Sierra Nevada immediately east of Lassen National Park at an elevation of about 2 408 m (7,900 feet). Its channel runs easterly from Silver Lake through McCoy Flat Reservoir, the town of Susanville, and then to Honey Lake.

The 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 and Lassen Creeks rise on the north slope of Diamond Mountain at an elevation of about 2 316 m (7,600 feet). The watersheds of Piute and Willow Creeks are on the south slopes of Round Valley Mountain at lower elevations.

A short distance below its confluence with Willow Creek, the Susan River divides into three channels: Tanner Slough Channel on the north, Old Channel in the middle, and Dill Slough Channel on the south. Hartson Slough and Whitehead Slough divert from Dill Slough on its south bank farther downstream.

The Baxter Creek stream system is in Honey Lake Valley on the east slope of the Sierra Nevada, about 16 kilometres (10 miles) southeast of Susanville. The principal creeks in the system are: Baxter Creek, which rises in the extreme western portion of the basin and flows in an easterly direction, and Elesian, Sloss, and Bankhead Creeks, tributaries of Baxter Creek from the south.

Parker Creek is also in Honey Lake Valley on the east slope of the Sierra Nevada, about 24 km (15 miles) southeast of Susanville. It rises on the east slope of Diamond Mountain and flows in an easterly direction for about 8 km (5 miles) into Honey Lake.

Maps of the Susan River service area, showing the stream systems, diversions, etc., are presented as Figures 19 through 19f, pages 169 through 178.

Basis of Service

The waters of Susan River and its tributaries are distributed in accordance with the water rights defined in Decree No. 4573, Lassen County Superior Court, entered on April 18, 1940. Schedule 3 of the decree defines the rights to the use of water from Willow Creek in Willow Creek Valley, Lower Willow Creek, and the Susan River delta below the Colony Dam. Schedule 4 of the decree defines the rights to the use of water from Gold Run, Piute, Hills, Holtzclaw, and Lassen Creeks above their confluence with the Susan River. Schedules 5 and 6 of the decree define the rights to the use of water from the Susan River exclusive of its tributaries. The decree establishes three priority classes each on Susan River and Gold Run Creek, two on Willow Creek, and one each on Piute and Hills Creeks.

The water of Baxter Creek and its tributaries is distributed in accordance with the water rights defined in the statutory adjudication as set forth in Decree No. 8174, Lassen County Superior Court, dated December 15, 1955. Schedule 3 of the decree defines the rights to the use of water from Sloss and Bankhead Creeks and Schedule 4 the rights to the use of water from Baxter and Elesian Creeks. The

Baxter Creek rights are divided into five priority classes.

The water of Parker Creek and its tributaries is distributed in accordance with the water rights defined by a statutory adjudication as set forth in Decree No. 8175, Lassen County Superior Court, dated December 15, 1955. Schedule 3 of the decree defines the rights to the use of water from Parker Creek, with four priority classes.

The Susan River watermaster service area was created by order of the Division of Water Resources on November 10, 1941. The Baxter and Parker Creek stream systems were added to the Susan River service area on February 16, 1956.

Water Supply

The water supply in the Susan River service area is obtained 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 is usually depleted by May 1. Irrigation requirements from this portion of the stream system are then almost entirely dependent on the flow of springs that are relatively constant throughout the year.

Under average flow conditions, Lassen, Gold Run, Baxter, and Parker Creeks and the Susan River above Susanville are sustained by snowmelt runoff until early June. The flow from perennial springs in this portion of the system is comparatively small.

The Lassen Irrigation Company stores supplemental water in Hog Flat and McCoy Flat Reservoirs, 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 company.

Records of daily mean discharge of the several stream gaging stations in the service area are presented in Tables 53 through 57, pages 166 through 168.

Method of Distribution

Irrigation in the Susan River service area is accomplished by placing dams in the main channels, thus raising the water level for subsequent diversion into canals and ditches. These diversion dams are relatively large on the Susan River Channel and generally much smaller on the various creeks. Wild flooding is the most common method of irrigation in practice. Portions of the irrigated lands have been leveled, permitting a more efficient use of water by using border checks and furrows. Subirrigation occurs in some areas incidental to surface irrigation or as a result of seepage from ditches and creek channels.

The Lassen Irrigation Company is allowed to use its three reservoirs, McCoy Flat, Hog Flat and Lake Leavitt, to store water as follows: (a) between March 1 and July 1 when the flow in the river just above its confluence with Willow Creek is more than 566 litres per second (20 cubic feet per second), and (b) at all other times when the flow at the same point is 142 1/3 (5 cubic feet per second) in spite of the allotments outlined in Schedules 3, 6, and users of third priority class in Schedule 5 of the Susan River decree.

1977 Distribution

Watermaster service began in the Susan River service area on February 10 and continued until December 14, including construction work, with Virgil Buechler, Water Resources Technician II, as watermaster.

The available water supply throughout the service area was the lowest on record. There was no storage in Hog or McCoy Flat Reservoirs in 1977. Ranchers in the area reported about 50 percent of of normal yields from the alfalfa crops,

which were aided by rain storms in May and June just as the crops were starting to stress from drought conditions.

These storms helped the rangeland immensely, providing about normal range feed. The irrigated pastures were very poor, as they received no irrigation, and the small storms provided no increase in streamflow runoff.

Parker Creek. First priority water rights were served for a very short period this spring, diminishing to a spring-fed trickle for the uppermost users.

Baxter Creek. Baxter Creek runoff was extremely low, providing no first priority water. The entire flow of less than 28.31 1/s (1 cubic foot per second), was in the Long Ditch from the beginning of the season. Baxter Creek at Long Ditch dried up in late June.

Lassen-Holtzclaw Creeks. The flows in this stream never exceeded first priority rights, held entirely by the Tangeman Ranch, so no regulation was required. The creek went dry in May.

Hills Creek. Water reached the automatic divide, Diversion No. 220, for a short period in the spring, providing a little storage in the Emerson Reservoir. The creek dried up in April.

Gold Run Creek. The creek averaged 48.1 1/s (1.70 cfs) to March 16, peaked at 60.0 1/s (2.12 cfs) March 17, 1977, then gradually decreased until it dried up July 13. This is the first time of record that the creek has dried up completely.

Piute Creek. The available water supply, which is spring fed, was sufficient to satisfy all allotments during the year. Some surplus provided the Old Channel users approximately 50 percent of their stock water, first priority.

Willow Creek. The flow in Willow Creek was sufficient to supply all allotments throughout the season. Eagle Lake dropped .57 m (1.86 feet) in elevation from December 1, 1976 to December 1, 1977. Eagle Lake contributes to the springs that feed Willow Creek, which was high enough to supply all of its users as well as a minimum of 340 1/s (12 cfs) to the Lower Susan River users.

Susan River. There was an insufficient water supply in the Susan River to fill any of the allotments of Schedule 6. The A & B Canal users received some of their Schedule 5 second priority for only a short period in June. The Susan River peaked at 510 1/s (18 cfs) March 13, and gradually decreased to 57 1/s (2 cfs) July 10, where it remained through September.

Lassen Irrigation Company Reservoirs.

The Susan River decree allows the Lassen Irrigation Company's McCoy Flat and Lake Leavitt Reservoirs to store surplus water during the winter and spring months. Once filled, or when a shortage occurs among downstream water right owners, the natural flow in the Susan River above McCoy Flat Reservoir must be released.

No measurable flow was recorded into McCoy or Hog Flat Reservoirs, and .74 hm^3 (600 acre-feet) was measured into Lake Leavitt. The Lassen Irrigation Company Board of Directors voted to keep the .74 hm^3 in Lake Leavitt; therefore, no water was delivered to the Lassen Irrigation Company users.

The Company was able to clean the A & B Canal from Johnstonville Dam to Lake Leavitt as well as the lower canals below Lake Leavitt, which should help the irrigation deliveries next year.

Lower Susan River. Schedule 3 averaged 481 1/s (17 cfs) with a minimum of 340 1/s (12 cfs) the entire season, which satisfied all of the first and second priorities. Most of this water was supplied by excess flows in Willow Creek.

Special Occurrences

An unusually large number of new wells were drilled and heavy pumping lowered the ground water level, which was of concern to the local people.

A $100 reward was posted by the water users for information leading to the arrest and conviction of vandals or illegal water users.

Elesian Valley users agreed to a 21-day rotation of the available water rather than regulating it on the de-creed continuous flow basis.

CETA crews were used to clean the Old Channel of debris and willows.

Federal funds paid 80 percent of the cost of two water conservation projects.

Pooling agreements were signed and work completed for Woodstock Dam maintenance and repair, which consisted of removal of the abandoned fish ladder, riprap on the embankments, and a new cutoff wall excavated and filled with riprap and gunited concrete.

The second project was a concrete diversion dam built in the Lower Susan River at the flood control diversion.

On Hills Creek a new diversion weir was installed at the upper split.

A new cutoff wall and concrete lip was built in the John Espil's upper diversion dam in the A & B Canal.

Lassen Irrigation Company cleaned the A & B Canal from Johnstonville to Lake Leavitt. Some realignment of the canal was made.

SUSAN RIVER WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 53

SUSAN RIVER AT SUSANVILLE

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1	340	12	312	11	244	8.6	164	5.8	116	4.1	42	1.5	53	1.9	1
2	340	12	283	10	244	8.6	159	5.6	119	4.2	45	1.6	51	1.8	2
3	340	12	283	10	229	8.1	156	5.5	119	4.2	48	1.7	51	1.8	3
4	340	12	312	11	272	9.6	150	5.3	119	4.2	45	1.6	53	1.9	4
5	340	12	396	14	252	8.9	122	4.3	119	4.2	45	1.6	53	1.9	5
6	368	13	481	17	235	8.3	119	4.2	116	4.1	45	1.6	53	1.9	6
7	368	13	453	16	241	8.5	122	4.3	110	3.9	53	1.9	51	1.8	7
8	368	13	481	17	249	8.8	127	4.5	105	3.7	51	1.8	56	2.0	8
9	510	18	453	16	283	10	204	7.2	82	2.9	48	1.7	56	2.0	9
10	453	16	368	13	340	12	340	12	59	2.1	51	1.8	56	2.0	10
11	396	14	340	12	312	11	227	8.0	65	2.3	48	1.7	48	1.7	11
12	368	13	340	12	312	11	153	5.4	62	2.2	48	1.7	48	1.7	12
13	340	12	368	13	283	10	161	5.7	56	2.0	48	1.7	53	1.9	13
14	312	11	368	13	269	9.5	150	5.3	62	2.2	48	1.7	45	1.6	14
15	340	12	340	12	255	9.0	133	4.7	62	2.2	48	1.7	48	1.7	15
16	368	13	368	13	263	9.3	170	6.0	68	2.4	48	1.7	53	1.9	16
17	368	13	368	13	275	9.7	312	11	65	2.3	51	1.8	68	2.4	17
18	340	12	312	11	263	9.3	252	8.9	59	2.1	65	2.3	65	2.3	18
19	340	12	283	10	269	9.5	235	8.3	59	2.1	62	2.2	99	3.5	19
20	312	11	283	10	238	8.4	198	7.0	70	2.5	70	2.5	119	4.2	20
21	312	11	244	8.6	210	7.4	178	6.3	73	2.6	82	2.9	113	4.0	21
22	312	11	244	8.6	210	7.4	139	4.9	59	2.1	56	2.0	119	4.2	22
23	368	13	235	8.3	218	7.7	161	5.7	59	2.1	53	1.9	102	3.6	23
24	396	14	238	8.4	210	7.4	133	4.7	56	2.0	56	2.0	142	5.0	24
25	368	13	241	8.5	210	7.4	144	5.1	53	1.9	79	2.8	125	4.4	25
26	368	13	241	8.5	210	7.4	133	4.7	59	2.1	85	3.0	93	3.3	26
27	396	14	229	8.1	235	8.3	119	4.2	56	2.0	68	2.4	122	4.3	27
28	312	11	229	8.1	212	7.5	102	3.6	48	1.7	62	2.2	85	3.0	28
29	312	11	218	7.7	193	6.8	102	3.6	39	1.4	56	2.0	116	4.1	29
30	312	11	221	7.8	190	6.7	110	3.9	42	1.5	53	1.9	125	4.4	30
31	312	11			173	6.1			42	1.5	53	1.9			31
Mean	355	12.6	318	11.2	245	8.7	166	5.9	73.8	2.6	55.5	2.0	77.6	2.7	Mean
Volume hm	.950		.820		.660		.430		.200		.150		.200		Volume hm
AF		771		667		532		348		160		120		163	AF

SUSAN RIVER WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 54

GOLD RUN CREEK NEAR SUSANVILLE

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1			113	4.0	122	4.3	79	2.8	34	1.2	00	0.0	00	0.0	1
2			99	3.5	119	4.2	56	2.0	28	1.0	00	0.0	00	0.0	2
3			113	4.0	85	3.0	48	1.7	14	0.5	00	0.0	00	0.0	3
4			99	3.5	85	3.0	42	1.5	5.6	0.2	00	0.0	00	0.0	4
5			90	3.2	85	3.0	34	1.2	5.6	0.2	00	0.0	00	0.0	5
6			85	3.0	85	3.0	28	1.0	5.6	0.2	00	0.0	00	0.0	6
7			125	4.4	70	2.5	31	1.1	2.8	0.1	00	0.0	00	0.0	7
8			122	4.3	85	3.0	99	3.5	2.8	0.1	00	0.0	00	0.0	8
9			99	3.5	119	4.2	79	2.8	2.8	0.1	00	0.0	2.8	0.1	9
10			85	3.0	113	4.0	56	2.0	2.8	0.1	00	0.0	2.8	0.1	10
11			99	3.5	99	3.5	53	1.9	2.8	0.1	00	0.0	2.8	0.1	11
12			119	4.2	85	3.0	51	1.8	2.8	0.1	00	0.0	5.6	0.2**	12
13			125	4.4	119	4.2	51	1.8	00	0.0	00	0.0			13
14			122	4.3	119	4.2	51	1.8	00	0.0	00	0.0			14
15			125	4.4	125	4.4	51	1.8	00	0.0	00	0.0			15
16	85	3.0*	153	5.4	119	4.2	99	3.5	00	0.0	00	0.0			16
17	85	3.0	150	5.3	113	4.0	56	2.0	00	0.0	00	0.0			17
18	85	3.0	125	4.4	113	4.0	56	2.0	00	0.0	00	0.0			18
19	85	3.0	127	4.5	99	3.5	56	2.0	00	0.0	00	0.0			19
20	85	3.0	122	4.3	119	4.2	51	1.8	00	0.0	00	0.0			20
21	85	3.0	125	4.4	122	4.3	31	1.1	00	0.0	00	0.0			21
22	85	3.0	127	4.5	122	4.3	28	1.0	00	0.0	00	0.0			22
23	85	3.0	127	4.5	119	4.2	22	0.8	00	0.0	00	0.0			23
24	85	3.0	142	5.0	119	4.2	19	0.7	00	0.0	00	0.0			24
25	85	3.0	125	4.4	113	4.0	19	0.7	00	0.0	00	0.0			25
26	99	3.5	125	4.4	99	3.5	19	0.7	00	0.0	00	0.0			26
27	99	3.5	122	4.3	119	4.2	17	0.6	00	0.0	00	0.0			27
28	99	3.5	119	4.2	85	3.0	14	0.5	00	0.0	00	0.0			28
29	113	4.0	119	4.2	99	3.5	5.6	0.2	00	0.0	00	0.0			29
30	127	4.5	113	4.0	85	3.0	8.5	0.3	00	0.0	00	0.0			30
31	127	4.5			79	2.8			00	0.0	00	0.0			31
Mean	48.8	1.7	118	4.2	105	3.7	44.0	1.6	3.6	0.1	00	0.0	0.5	0.0	Mean
Volume															Volume
hm	.130		.310		.280		.110		.010		.000		.001		hm
AF		106		248		227		92.4		7.7		.0		1.0	AF

* Beginning of Record
** End of Record

TABLE 55

SUSAN RIVER BELOW JOHNSTONVILLE BRIDGE

Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1					56	2.0									1
2	85	3.0													2
3															3
4			56	2.0											4
5															5
6							22	0.8	14	0.5					6
7									70	2.5					7
8									34	1.2					8
9									14	0.5					9
10															10
11			113	4.0											11
12															12
13					70	2.5			2.8	0.1					13
14	99	3.5													14
15															15
16							19	0.7							16
17											00	0.0			17
18	56	2.0													18
19			56	2.0											19
20															20
21	99	3.5	283	10											21
22															22
23															23
24															24
25	142	5.0	42	1.5											25
26															26
27			42	1.5											27
28															28
29													00	0.0	29
30															30
31															31
Mean															Mean
Volume															Volume
hm															hm
AF															AF

Note: Instantaneous Observations

SUSAN RIVER WATERMASTER SERVICE AREA
1977 Daily Mean Discharge

TABLE 56

WILLOW CREEK NEAR SUSANVILLE

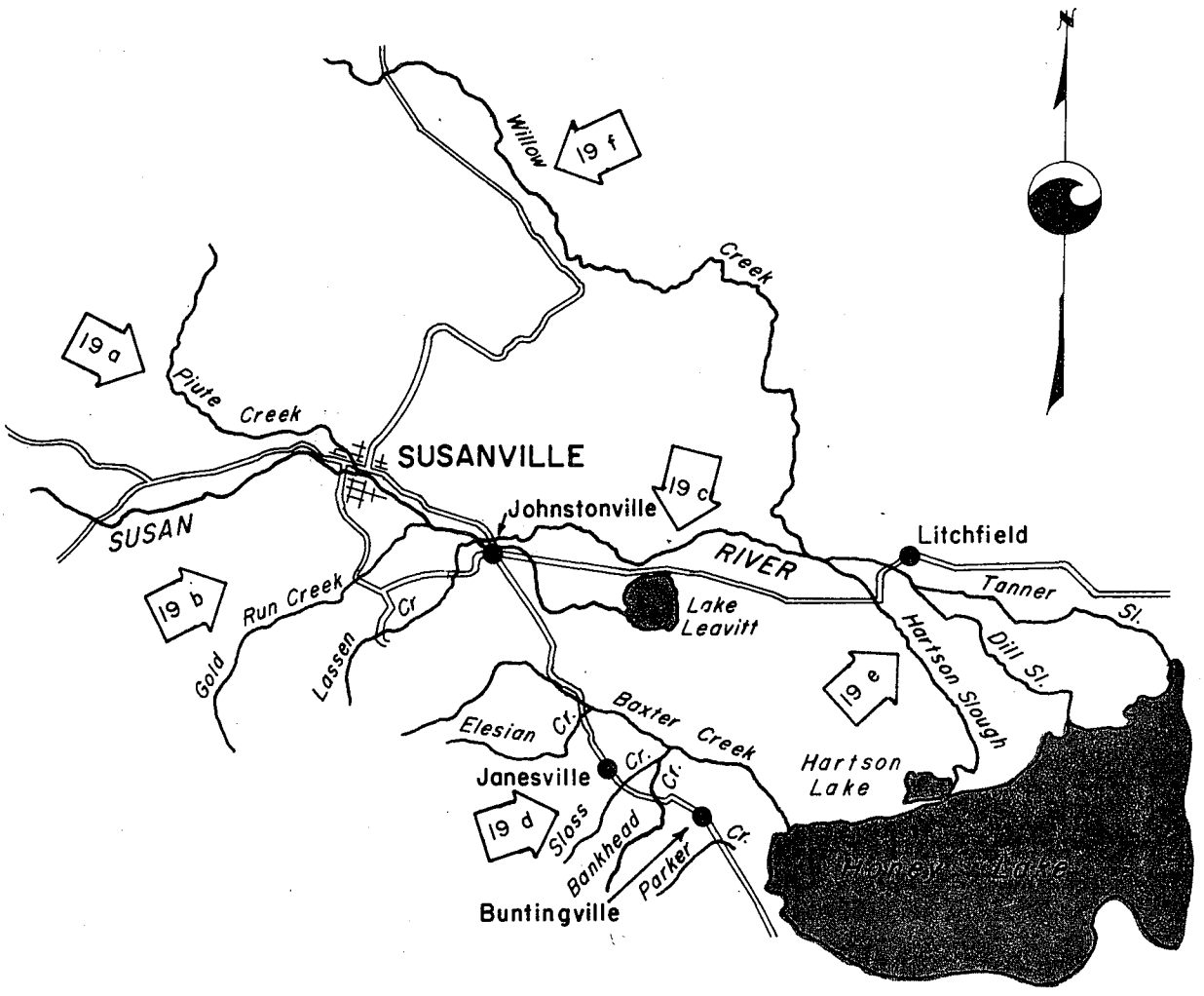
Day	March		April		May		June		July		August		September		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1	906	32	765	27	453	16	396	14	368	13	368	13	396	14	1
2	708	25	736	26	481	17	396	14	340	12	368	13	396	14	2
3	793	28	708	25	510	18	396	14	340	12	368	13	368	13	3
4	708	25	708	25	566	20	396	14	340	12	368	13	368	13	4
5	736	26	651	23	566	20	396	14	340	12	368	13	340	12	5
6	680	24	623	22	566	20	396	14	340	12	368	13	340	12	6
7	680	24	623	22	566	20	396	14	340	12	368	13	340	12	7
8	708	25	595	21	595	21	396	14	340	12	368	13	340	12	8
9	821	29	651	23	623	22	481	17	340	12	368	13	340	12	9
10	793	28	623	22	680	24	793	28	368	13	340	12	340	12	10
11	878	31	595	21	680	24	680	24	425	15	340	12	340	12	11
12	935	33	566	20	736	26	538	19	453	16	340	12	340	12	12
13	935	33	595	21	736	26	453	16	453	16	340	12	340	12	13
14	878	31	595	21	736	26	396	14	453	16	340	12	340	12	14
15	850	30	538	19	765	27	396	14	425	15	340	12	340	12	15
16	850	30	368	13	821	29	396	14	425	15	340	12	368	13	16
17	821	29	396	14	793	28	453	16	425	15	340	12	368	13	17
18	765	27	396	14	708	25	566	20	425	15	340	12	368	13	18
19	765	27	368	13	736	26	595	21	396	14	340	12	368	13	19
20	736	26	368	13	708	25	566	20	396	14	340	12	368	13	20
21	680	24	340	12	651	23	538	19	396	14	368	13	368	13	21
22	680	24	312	11	595	21	510	18	368	13	368	13	368	13	22
23	680	24	312	11	566	20	481	17	368	13	368	13	368	13	23
24	736	26	312	11	538	19	481	17	368	13	368	13	368	13	24
25	765	27	340	12	510	18	453	16	368	13	368	13	368	13	25
26	765	27	340	12	481	17	425	15	368	13	368	13	368	13	26
27	765	27	340	12	425	15	396	14	340	12	368	13	368	13	27
28	765	27	368	13	425	15	396	14	340	12	368	13	396	14	28
29	736	26	368	13	425	15	368	13	368	13	368	13	396	14	29
30	736	26	396	14	425	15	368	13	368	13	368	13	396	14	30
31	736	26			396	14			368	13	368	13			31
Mean	774	27.3	497	17.5	596	21.0	463	16.4	379	13.4	358	12.6	362	12.8	Mean
Volume															Volume
hm	2.070		1.290		1.600		1.200		1.020		.960		.940		hm
AF		1680		1040		1290		973		823		777		761	AF

TABLE 57

OPERATION OF McCOY AND HOG FLAT RESERVOIRS

Day	McCoy Flat Res. Inflow from Susan River		McCoy Flat Res. Releases to Susan River		Hog Flat Res. Releases to Susan River		Transfer of Lassen Irrig. Dist. Water from McCoy Flat and Hog Flat Res. to Lake Leavitt		Day
	l/s	cfs	l/s	cfs	l/s	cfs	l/s	cfs	
1									1
2									2
3									3
4									4
5									5
6									6
7									7
8									8
9									9
10									10
11									11
12									12
13									13
14	McCOY FLAT AND HOG FLAT RESERVOIRS								14
15	DID NOT STORE WATER IN 1977								15
16	DUE TO INSUFFICIENT STREAMFLOW								16
17									17
18									18
19									19
20									20
21									21
22									22
23									23
24									24
25									25
26									26
27									27
28									28
29									29
30									30
31									31
Mean									Mean
Volume									Volume
hm									hm
AF									AF

Figure 19



Indicates Detail Maps.

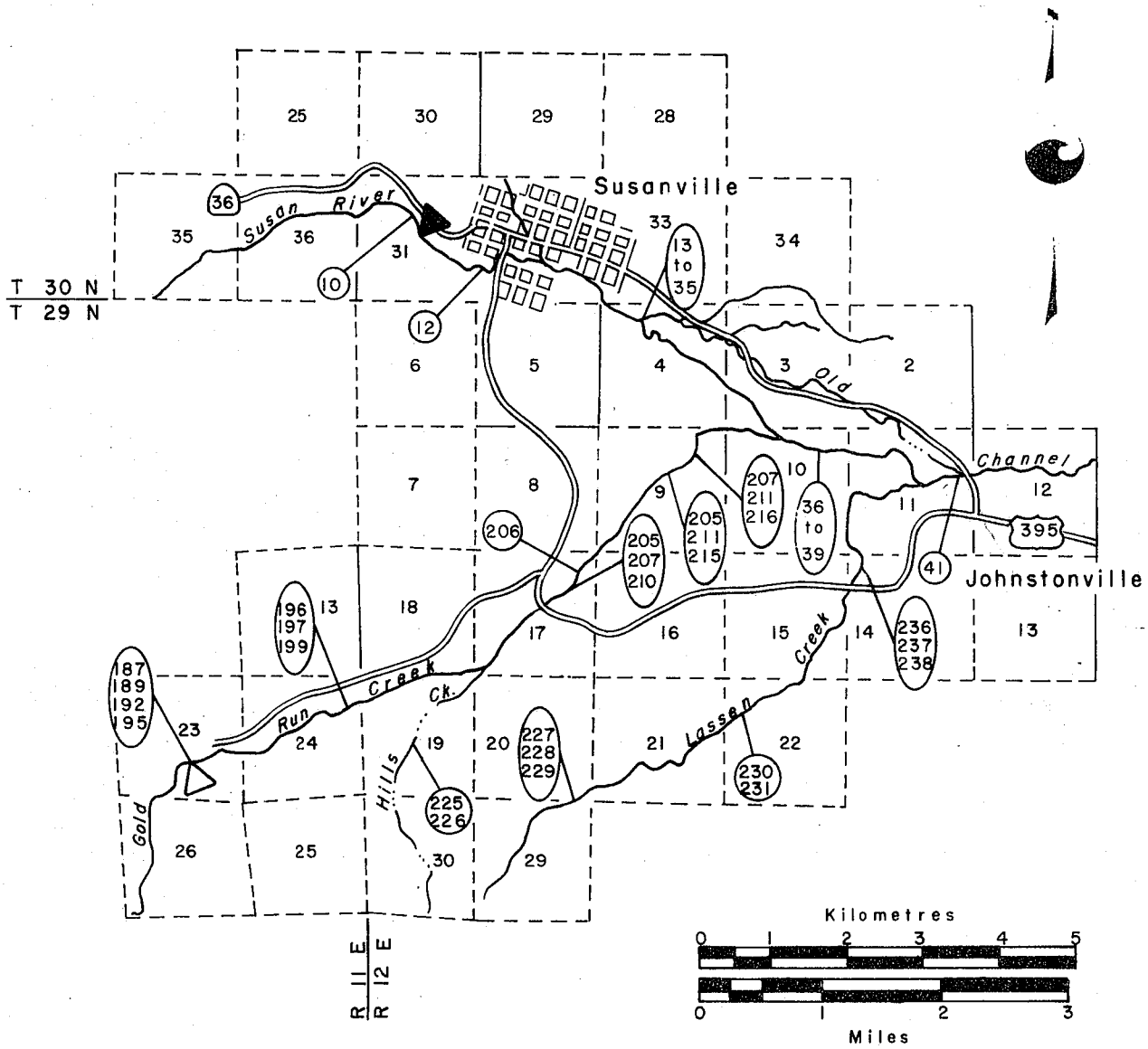
INDEX MAP
SUSAN RIVER WATERMASTER SERVICE AREA

Diversion Number	Name	l/s	Cfs
10	Ramsey Ditch	181.23	6.40
12	Federal Government Sv. Ditch	92.31	3.26
13-35	Old Channel	484.22	17.10
36-39	Lassen 7-D Ranch Inc	137.34	4.85
41	Occidental et al	453.07	16.00*
187,189 192,195	Satica Ditch	109.02	3.85
196,197 199	Sella Ditch	74.19	2.62
205,207 210	Satica	101.94	3.60
205,211 215	Pyle	138.75	4.90
206	Mallery, M.		**
207,211 216,219	Lassen 7-D Ranch Inc	109.02	3.85
207,211 216,219	Mallery, R.	107.60	3.80
220	Emerson Hills Ditch	109.02	3.85
225-226	Nagle	69.38	2.45
227-229	Tangleman	130.26	4.60
230-231	Mallery	76.46	2.70
230,240	Lassen 7-D Ranch Inc	76.46	2.70

* Does not include Lassen I. D. water rights to Lake Leavitt.

** 48% of Gold Run Creek at 206.

Figure 19a



DIVERSIONS FROM SUSAN RIVER
SUSAN RIVER WATERMASTER SERVICE AREA

ALLOCATIONS FROM BAXTER CREEK AND ELESIAN CREEK

Diversion Number	Name	l/s	Cfs
3-5	Dickson	70.79	2.50
6-8,12	Gray Eagle Corp.	24.92	0.88
11	Burnett, Baker	5.66	0.20
8-10,12	Mallery	91.47	3.23
8,12-16	Mallery	98.83	3.49
16	Gray Eagle Corp.	14.72	0.52
17-18	Faith Ranch	4.53	0.16
20	Bailey	48.42	1.71
17,21,26-27	Bass	116.10	4.10
17,22-24,28,32-33	Smith	79.85	2.82
17,22-24,28,32-33	Kanaval	129.69	4.58
36,39	Peterson	40.21	1.42
70	Ahern	0.57	0.02
71-72	A & K Company	48.42	1.71
75,77,79-80	Blickenstaff	18.12	0.64
78	U.S. Hertz Inc.	29.73	1.05
81,83	Blickenstaff	81.55	2.88
73,75	Garza	33.13	1.17
74,76	Hemphill	55.50	1.96
75,77	Dieter	55.22	1.95
75,77,80	Dieter	8.50	0.30
77,79	Mulroney	50.98	1.80
78	Mulroney	18.97	0.67
78	Cummings	4.25	0.15
81,83	Blankenship	14.16	0.50
84,90	Dow	50.97	1.80
85,89	Marsters, McDonald	45.31	1.60

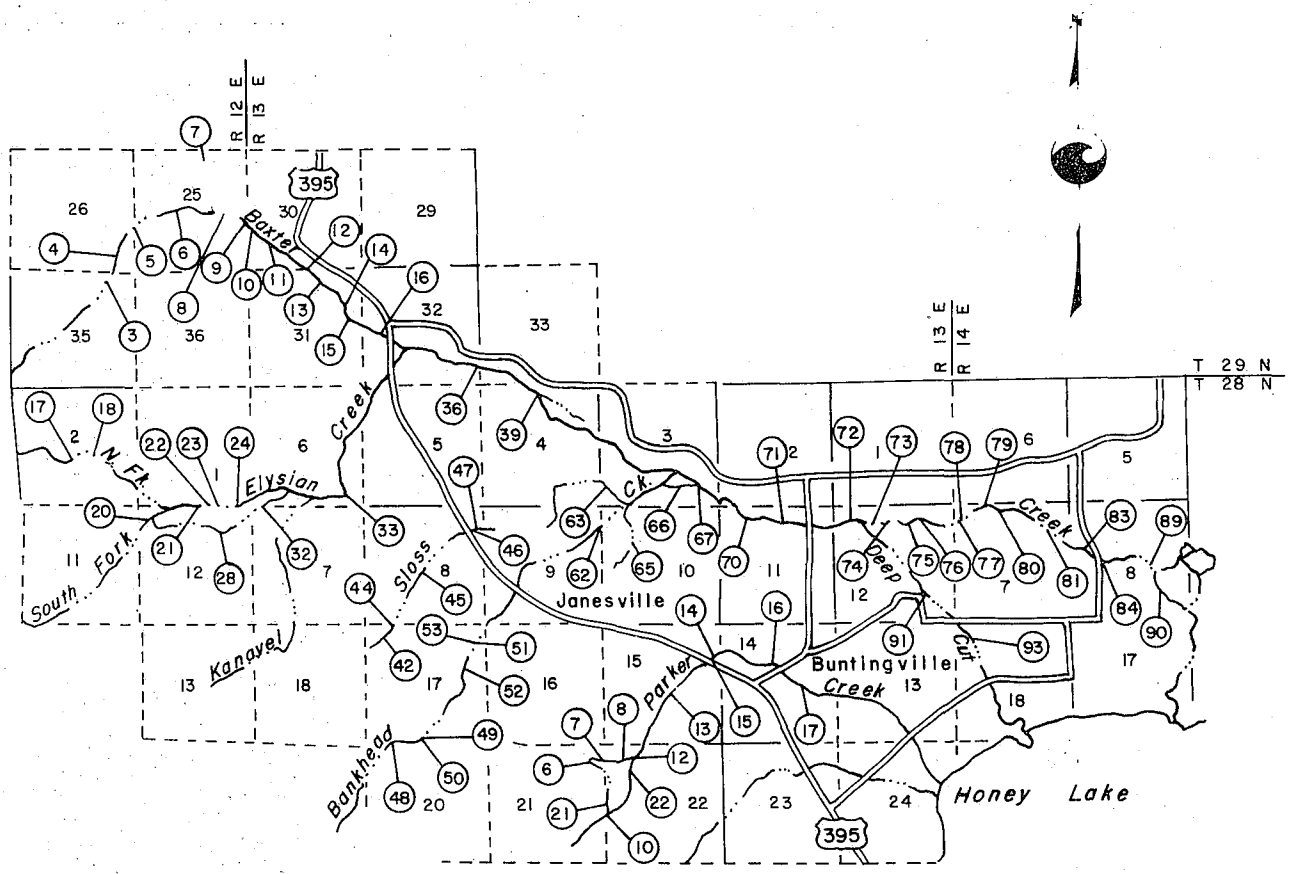
ALLOCATIONS FROM SLOSS AND BANKHEAD CREEKS

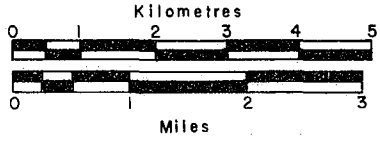
42	Mossman	0.57	0.02
44	Doyle	0.06	0.002
45	Snipes	2.27	0.08
46	Grover	33.98	1.20
46-47	Peterson	33.98	1.20
48-50	Row	4.25	0.15
51	de Rocher	2.27	0.08
52-53,55	White	13.59	0.48
56,62	Ashmore	15.01	0.53
63,65	Dow	80.13	2.83
66-67	Myers	7.36	0.26
91,93	Bailey	85.52	3.02

DIVERSIONS FROM PARKER CREEK

6-12	Butler	25.20	0.89
13-15	Hoffman	92.31	3.26
15	Flux	39.08	1.38
16-17	Bailey	58.33	2.06

Figure 19b

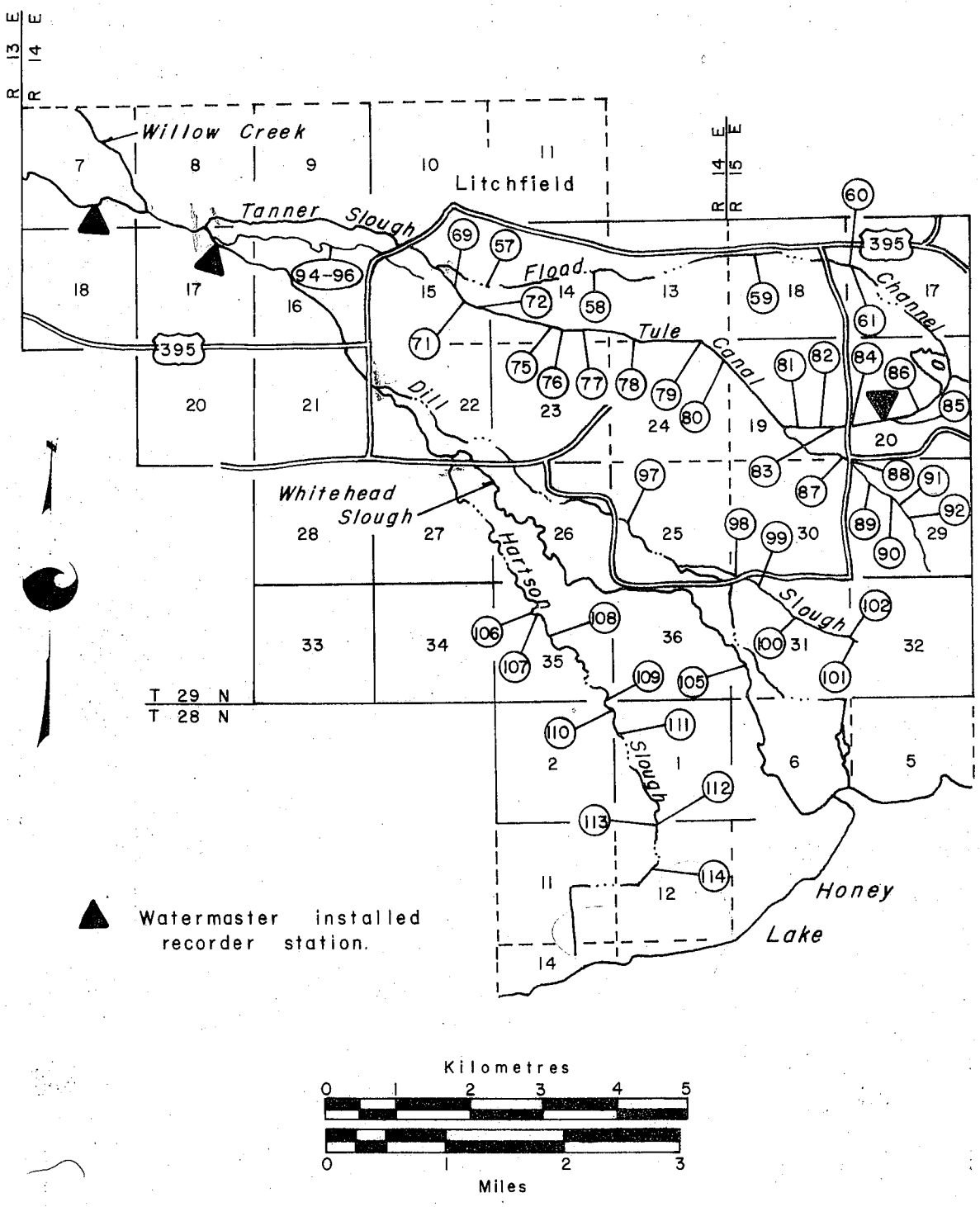




DIVERSIONS FROM BAXTER CREEK AND PARKER CREEK SUSAN RIVER WATERMASTER SERVICE AREA

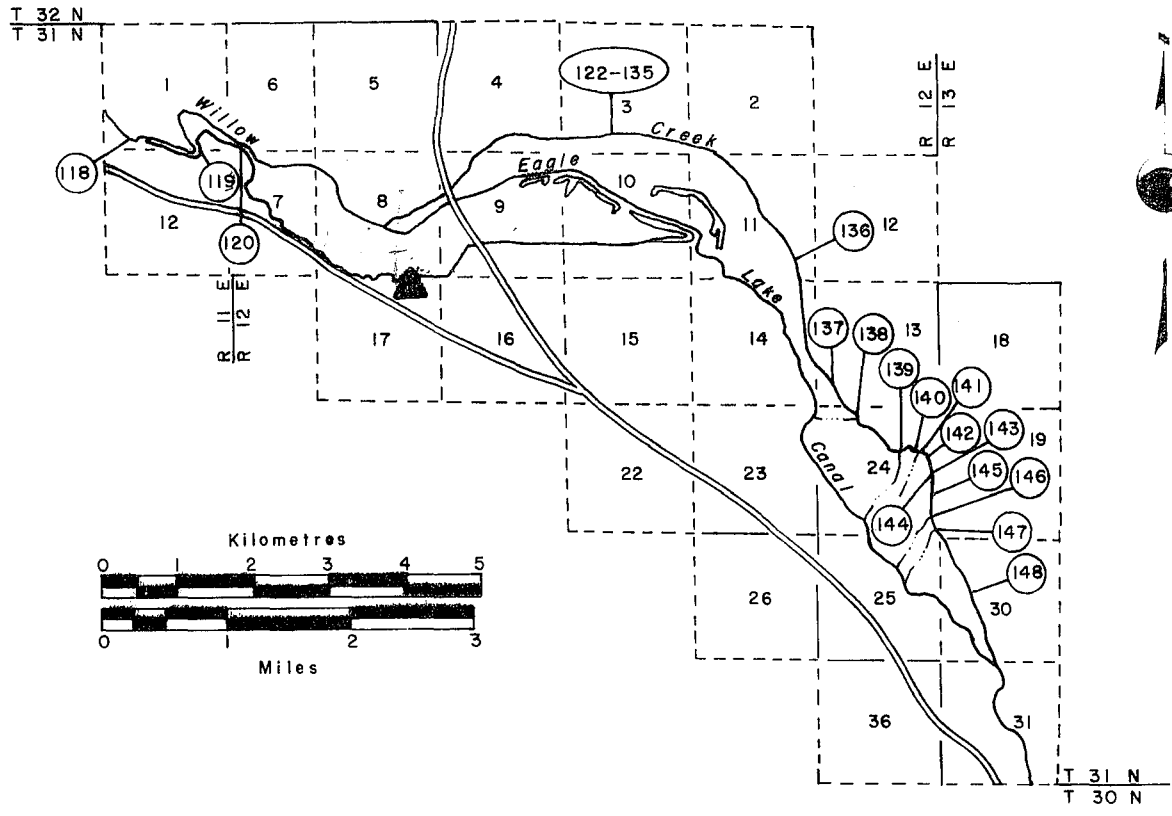
Diversion Number	Name	l/s	Cfs
56,94,96	Smith et al	444.06	3.95
57-58,69 72	Smith	212.38	7.50
58-61, 79-81,84	Mapes	376.33	13.29
71,75-78	McClelland	304.41	10.75
81-83	DeWitt, W. Theodore, J.	49.55 53.24	1.75 1.88
82,87-89 91-92	Wells	106.19	3.75
82,87-89 91-92	DeWitt F.	106.19	3.75
85-86	Calif. Dept. of Fish and Game	543.69	19.20
90-92	Calif. Dept. of Fish and Game	64.00	2.26
90-92	Brown et al	963	0.34
97	Tanner	141.59	5.00
98,100-101	Dow	141.59	5.00
99	Honey Lake Ranch	212.38	7.50
102	Honey Lake Ranch	154.33	5.45
106,109 111	Roberts	31.15	1.10
106,109 111	Tanner	72.21	2.55
107-108	Roberts	33.98	1.20
110-111	Wolf	43.89	1.55
110, 112-114	Calif. Dept. of Fish and Game	87.78	3.10

Figure 19c



DIVERSIONS FROM SUSAN RIVER
SUSAN RIVER WATERMASTER SERVICE AREA

Figure 19 d



Diversion Number	Name	l/s	cfs
118,119	Murrer	59.47	2.10
	Barron	59.47	2.10
120	Murrer	28.32	1.00
122,135	Barron	421.92	14.90
136–143, 145	Hansan Ranch	138.75	4.90
144–147	Hagata	63.71	2.25
147,148	Hagata	55.22	1.95

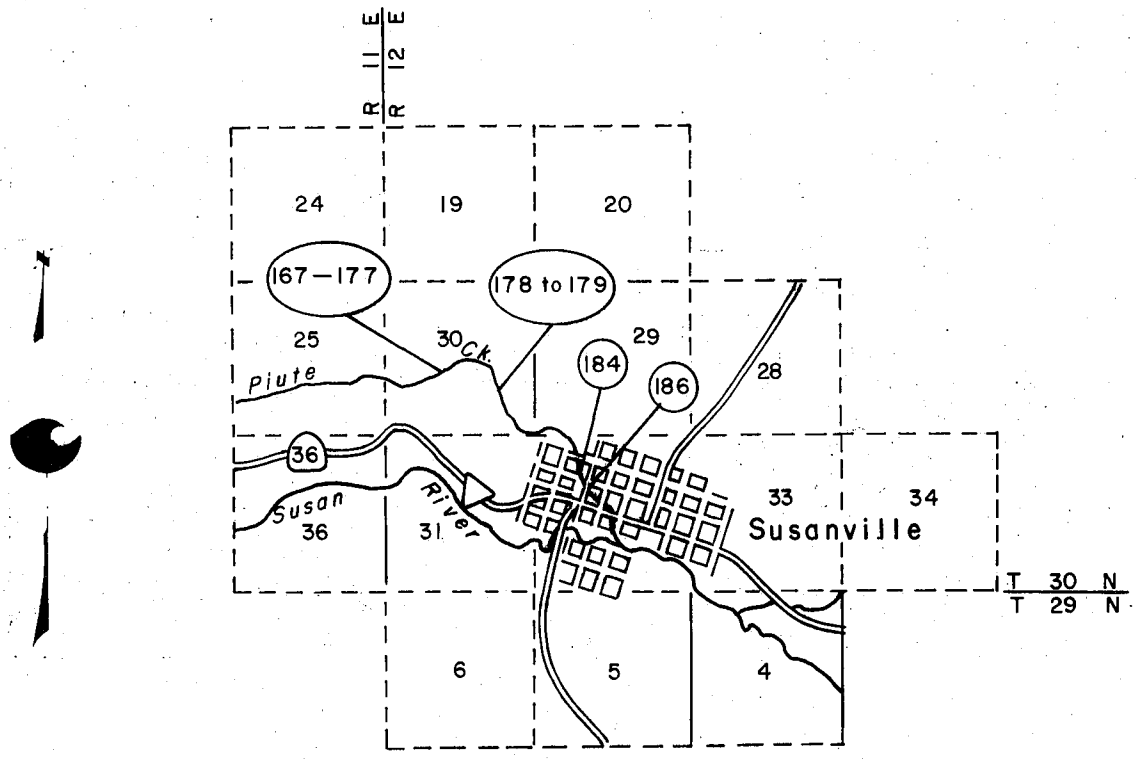
* Allotments to be measured as the average difference during any seven-day period between the water available for use on the acreage to be supplied and the water passing off the acreage

NOTE. The Barron Ranch also diverts from the Old Eagle Lake Canal. It must release to downstream users 38 percent of second priority water avaailable to it over any seven (7) day period If deficiency exists the Watermaster obtains required flow by increasing Barron Reservoir releases accordingly.

▲ Watermaster installed Recorder Station

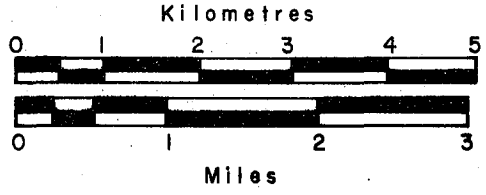
DIVERSIONS FROM WILLOW CREEK SUSAN RIVER WATERMASTER SERVICE AREA

Figure 19 e



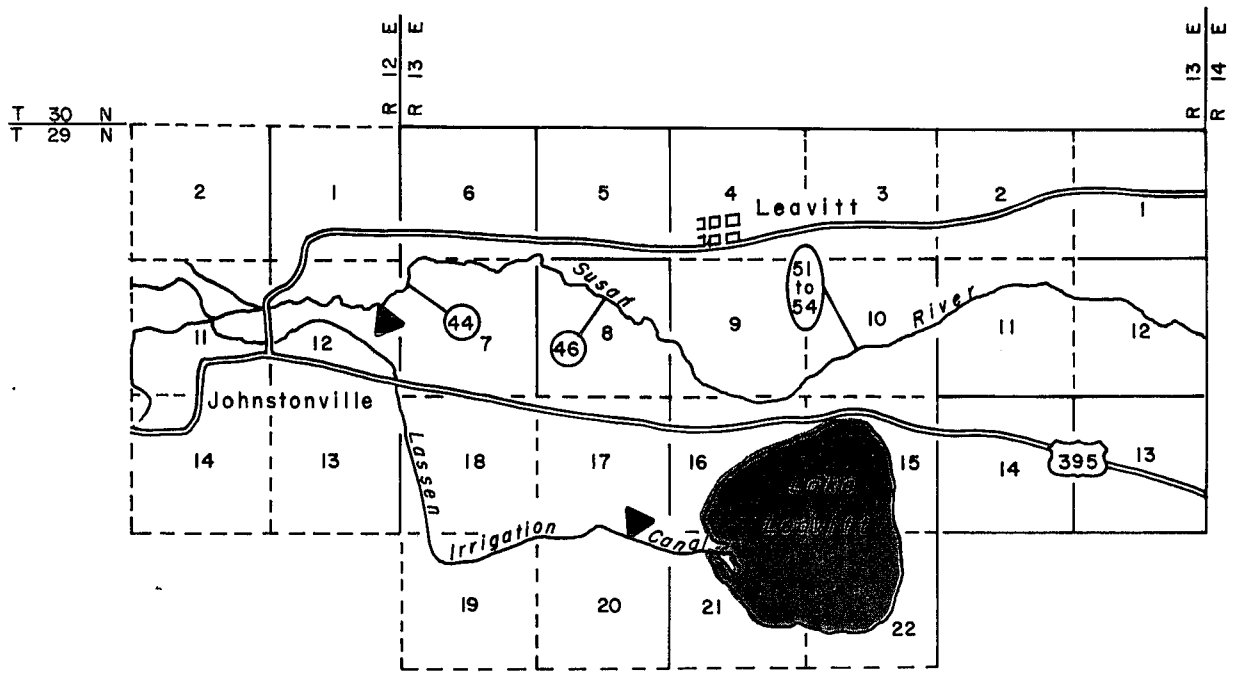
Diverson Number	Name	l/s	cfs
167–177	California Pacific Utility	70.79	2.50
178–179	Marmo Ditch	4.53	0.16
184	Susanville, City of	3.11	0.11
186	Susanville Elementary School	1.98	0.07

△ U.S.G.S. Permanent Recorder Station.



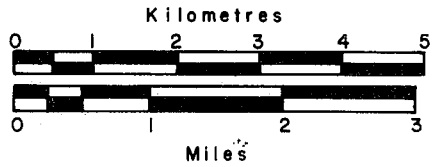
DIVERSIONS FROM PIUTE CREEK
SUSAN RIVER WATERMASTER SERVICE AREA

Figure 19 f



Diversion Number	Name	l/s	cfs
44	Farris-McAllister Dam	211.53	7.47
46	Roberts Dam	141.02	4.98
51-54	Roberts-Chapplus Dam	339.80	12.00

▲ Watermaster installed recorder station.



DIVERSIONS FROM SUSAN RIVER
SUSAN RIVER WATERMASTER SERVICE AREA

WILLOW CREEK WATERMASTER SERVICE AREA

The Willow Creek service area is situated in Siskiyou County, about 10 miles northeast of Montague. A map showing the Willow Creek stream system, the diversions, and the principal roads in the area is presented in Figure 20, page 180. Willow Creek is the major source of water supply and rises on the west slope of the 2 377 metres (7,800 feet) Willow Creek Mountain east of the service area. It then flows in a northwesterly direction through about 18 kilometres (11 miles) of rolling hills to its confluence with the Klamath River. The service area is about 13 km (8 miles) long by 1.6 km (1 mile) wide and varies in elevation between about 792 and 1 219 m (2,600 and 4,000 feet).

Basis of Service

Willow Creek has had a long history of litigation. However, the present basis of service might be said to have been initiated in 1949 when a civil suit was referred to the Department of Public Works, Division of Water Resources, to act as referee. The matter was never finalized by a decree. The issues involved were reopened in 1971, and by Decree No. 24482, dated April 28, 1972, the Siskiyou County Superior Court appointed the Department of Water Resources to supervise distribution of water in accordance with an earlier agreement between the users defining their respective rights. Accordingly, the Willow Creek watermaster service area was created on June 22, 1972, and service began on July 1, 1972.

There are three water users in the service area. Distribution is on a fractional basis until the flow drops to a specified amount below the upper two users. At that time, the total flow is rotated between the upper two users.

Water Supply

The main source of water supply of the Willow Creek stream system is from the melting of snow which accumulates at high elevations on the drainage area during the winter months. The spring flow from the melting snow begins late in March or early April and is almost entirely gone prior to June 1. Thereafter the flow decreases rapidly until about July 1. From that date up to the time fall rains begin, the flow remains at a more or less sustained low-flow stage sufficient for domestic and stock watering purposes on the two upper ranches only.

Method of Distribution

Both sprinkler and flood irrigation are used in the Willow Creek service area. The upper water user has the option of using gravity diversions for either flood or sprinkler irrigation. The middle user relies entirely on runoff from the upper user's flood irrigation. Diversion is accomplished by diverting water into the ditches by temporary rock or gravel dams. The lower user in the area utilizes both flood and sprinkler irrigation during the early season when the supply is abundant. As the supply dwindles, the remaining water is pumped from a sump to the sprinkler system.

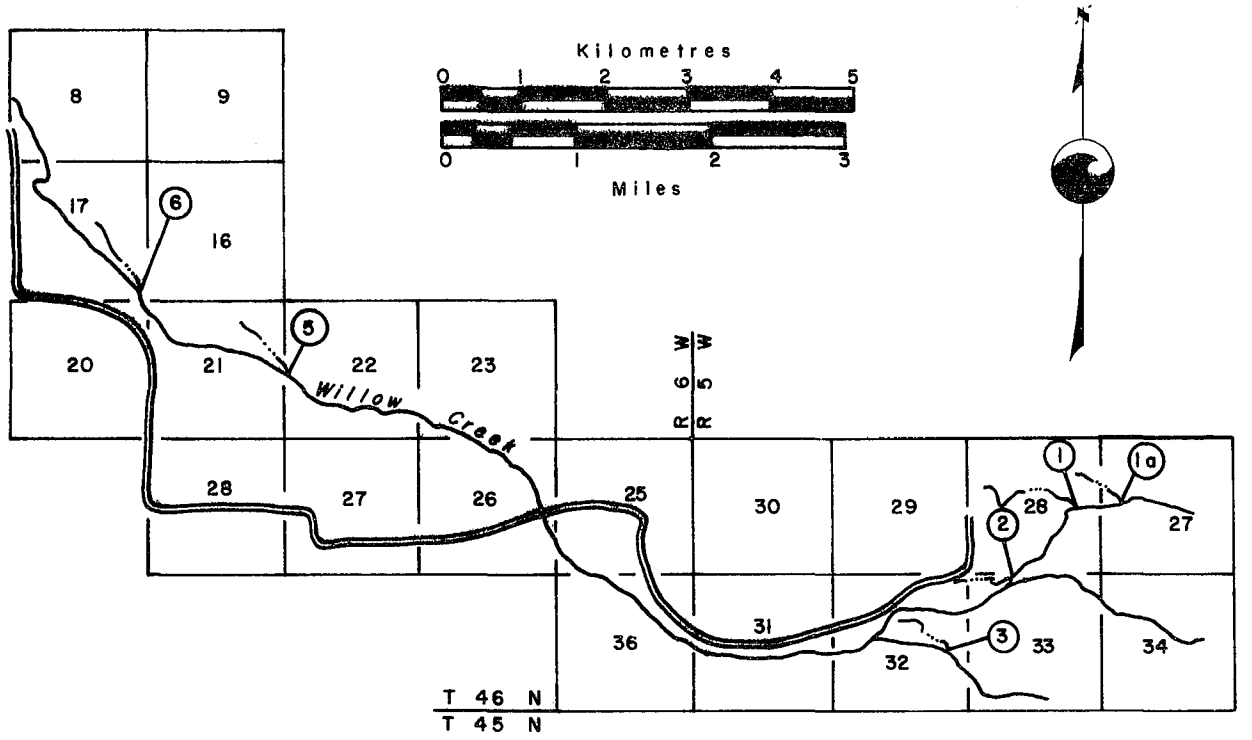
1977 Distribution

Watermaster service in the Willow Creek service area began on April 1 and continued until September 30. Lester L. Lighthall, Water Resources Technician II was watermaster during this period.

Since watermaster service began in 1972 on this creek, there is insufficient record for a basis of comparison of this year's water supply with an average. However, the water users indicated that the supply was far below average.

There was sufficient water to distribute to all three users according to their fractional allotments until the middle of June, when distribution was started on a 5-day rotation between the two upper users, since the lower user could no longer put his allotment to beneficial use. This rotation was continued for the rest of the season.

Figure 20



Diversion Number	
1	Underwood and Sylva
1a	Underwood and Pipeline
2,3	Sylva
5,6	Cook

Underwood, Sylva, and Cook may divert 1/6, 1/6, and 2/3 of the flow respectively, except when the flow below Sylva Ranch is less than ten (10) inches on the gage, between July 1 and October 15. During such times Underwood and Sylva each may divert the full flow for alternating five day periods.

Note: Other diversions exist outside the service area.

DIVERSIONS FROM WILLOW CREEK
WILLOW CREEK WATERMASTER SERVICE AREA