STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES

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EARL WARREN, Governor

FRANK B. DURKEE, Director of Public Works

A. D. EDMONSTON, State Engineer

REPORT ON WATERMASTER SERVICE IN BUTTE CREEK WATERMASTER SERVICE AREA

Butte County, California

1952 SEASON

Sacramento, California
April, 1953

SUBMISSION TO, AND ADOPTION BY
DEPARTMENT OF PUBLIC WORKS

I, L. C. Jopson, Supervising Hydraulic Engineer, Division of Water Resources, Department of Public Works of the State of California, submit this "Report on Watermaster Service in Butte Creek Watermaster Service Area, Butte County, California, 1952 Season".

/s/ L. C. JOPSON
Supervising Hydraulic Engineer

I, Harrison Smitherum, Supervising Hydraulic Engineer, Division of Water Resources, Department of Public Works of the State of California, approve this "Report on Watermaster Service in Butte Creek Watermaster Service Area, Butte County, California, 1952 Season.

/s/ HARRISON SMITHERUM
Supervising Hydraulic Engineer

I, A. D. Edmonston, State Engineer and Chief of the Division of Water Resources, Department of Public Works of the State of California, approve and adopt this "Report on Watermaster Service in Butte Creek Watermaster Service Area, Butte County, California, 1952 Season", as a report of the Department of Public Works.

WITNESS my hand and the seal of the Department of Public Works of the State of California, this day of , 1953.

DEPARTMENT OF PUBLIC WORKS
STATE OF CALIFORNIA

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

(SEAL)

ORGANIZATION

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INTRODUCTION

This report describes the tenth season of watermaster service in the Butte Creek Watermaster Service Area, and covers the period of water distribution beginning on June 1 and ending on September 30, 1952.

The service area was created by order of the Department of Public Works on January 7, 1943, to include the water rights defined in paragraphs 71 to 86, inclusive, and in Schedule 7 of the decree entered November 6, 1942 in the proceeding entitled "In the Matter of the Determination of the ~~Water~~ Rights of the Various Claimants to the Waters of that Portion of Butte Creek and its tributaries Situate above the Western Canal Dam Near Nelson, in Butte County, California," Superior Court, Butte County, No. 18917.

Watermaster service has been provided during each irrigation season since the service area was created.

The report is presented herein under five headings as follows: Introduction, Water Supply, Distribution of Water, Summary, and Changes in Ownership of Lands and Water Rights. Following the text are tables presenting records of precipitation and of stream and ditch discharges in the area and plates showing hydrographs of Butte Creek at U.S.G.S. station, Butte Creek below Parrott Dam and of the Parrott Ditch and the combined Colony Ditches at their intakes.

WATER SUPPLY

Precipitation

Monthly precipitation data at Chico, California as compiled from records of the U. S. Weather Bureau are presented in Table 1. The total precipitation for the 1951-52 season was 146.6 per cent of the 81-year mean.

Stream Flow

Water supply and diversion records were collected at ten stations equipped with water stage recorders in 1952. The location of the stations and their purposes are as follows:

Butte Creek Near Chico (U.S.G.S. Station below Covered Bridge)

This station, located below the confluence of Butte Creek and Little Butte Creek, is used to measure the combined foreign water and natural flow which is available at the Parrott Dam located two and one-half miles downstream.

The discharge at the station is comprised of natural flow of Butte Creek and foreign water brought into the stream system from the West Branch of Feather River. The foreign water is controlled by the Pacific Gas and Electric Company and is released into Butte Creek as needed to supply the power demands of that company. The daily mean discharge from May 1 through September 30 is set forth in Table 2.

Hendricks Canal

This station is located a short distance above the confluence of the Hendricks Canal with the Butte Creek Canal above De Sabla Reservoir. The discharge at the station consists of foreign water brought into the Butte Creek watershed. The daily mean discharge from June 9 through September 30 is set forth in Table 3.

Parrott Ditch

This station is located near the head of the Parrott Ditch above the Crouch and Hale takeouts. The record of discharge shows the amount of water diverted for the use of the Parrott, M. & T. Inc., Dayton Mutual Water Company and Miller (Hale) interests. The daily mean discharge from June 6 through September 30 is set forth in Table 4.

Butte Creek below Parrott Ditch

This station is located immediately below the Parrott Dam. The record of discharge shows the water supply available for filling the natural flow rights on Butte Creek below the Parrott Ditch. The daily mean discharge from June 10 through September 30 is set forth in Table 5.

Upper Colony Ditch

This station is located near the head of the Upper Colony Ditch. The record of discharge shows a portion of the water diverted by the Durham Mutual

Water Company. The daily mean discharge from June 6 through September 27, is set forth in Table 6.

Butte Creek above Lower Colony Dam

This station is located on Butte Creek between the Baxter Pump and the Lower Colony Dam. The record of discharge shows the water supply available for diversion by the Lower Colony, Brandt, Adams, Gorrill, and White diversions. The daily mean discharge from June 26 through September 27 is set forth in Table 7.

Lower Colony Ditch

The Lower Colony Ditch is used by the Durham Mutual Water Company to divert the portion of its water not taken through the Upper Colony Ditch. Diversion is by means of a submerged orifice with varying water levels both above and below this orifice. Two recorders were installed, one to measure the water level above the orifice and the other to measure the discharge water level. The daily mean discharge was computed as the flow through an orifice with a head equivalent to the difference in the two water levels. The orifice area is controlled by a screw gate which was locked. Current meter measurements taken during past years have established the coefficient of the orifice as 0.70.

The daily mean discharge from June 6 through September 26 is set forth in Table 8.

Butte Creek at Durham Bridge

This station is located on Butte Creek below the Oroville-Durham highway bridge. The record of discharge shows the water supply available for diversion at the Brandt pump, Roy White pump, Adams Ditch, Gorrill Ditch and E. E. White pumps. The daily mean discharge from June 26 through September 23 is set forth in Table 10.

Butte Creek below Adams Dam

This station is located on Butte Creek immediately below the Adams Dam. The record of discharge shows the water supply available for diversion from Butte Creek by the Roy White, the Gorrill and the E. E. White ranches. The daily mean discharge from July 1 through September 27 is set forth in Table 11.

Hamlin Slough at Adams Ranch

This station installed for the first time this season, is located on Hamlin Slough at Adams Ranch. The record of discharge shows the water supply of Hamlin Slough available for diversion by the Gorrill Ranch. The flow consists of Gorrill's allotment when its diversion is made at Adams Dam plus natural flow of Hamlin Slough and return flow from the Durham Mutual Water Company and Adams Ranch. The daily mean discharge from June 30 to September 22 is set forth in Table 12.

DISTRIBUTION OF WATER

General

Distribution during the 1952 irrigation season was based upon the water supply available at the U.S.G.S. gaging station. The flow at this station comprises natural flow of Butte Creek and foreign water brought in from the West Branch of Feather River through the Hendricks Canal.

In utilizing the water for power generation above the gaging station it is the practice to pass Butte Creek water through at all times without fluctuation. The foreign water, however, is regulated through De Sabla Reservoir and the power plants to supply peak power demands resulting in wide variations in discharge during periods of low flow.

Prior to about June 20, the natural flow of Butte Creek water was large enough to provide near maximum capacity flow through the De Sabla and Centerville

power plants. Little fluctuation of flow occurred due to the foreign water during this period because very little foreign water was being diverted due to abundance of water in Butte Creek and cleaning of the Hendricks Canal.

After June 20, the power company regulated the foreign water by storage in De Sabla Reservoir during periods of low power demands and drew on this storage to supply the peak power demands. The result of this operation was an increasing fluctuation of flow in Butte Creek at the U.S.G.S. gaging station as the water supply decreased.

Since the amount of foreign water released from De Sabla Reservoir varied from day to day it was necessary to average the daily discharge at the U.S.G.S. station over a seven day period and deduct the like average discharge of the Hendricks Canal in order to determine the natural flow of Butte Creek. Table 13 has been prepared to show this computation. The seven day period used extended from Monday through Sunday as the reservoir was generally recharged over the week ends.

Foreign water delivered into the Butte Creek stream system from the West Branch of Feather River varied from a high of 56 cubic feet per second the forepart of July to 38 cubic feet per second during the first week in August. Beginning about August 5, the supply of foreign water was increased by the release of stored water from Philbrook and Round Valley Reservoirs into the system. Thereafter the flow of foreign water was maintained at about 45 cubic feet per second for the remainder of the season.

The natural flow of Butte Creek varied from a high of about 368 cubic feet per second during the first week in June to a low of 89 cubic feet per second during the last week of September. Prior to August 20, some water was available for "surplus class" rights but after that date the entire supply was

diverted for use by the rights set forth in Schedule 7 of the Butte Creek decree. Even during the lowest period of flow, water was available for 100 per cent of the first and second priority rights in the schedule.

Farrott Diversion

According to the "Memorandum and Order" entered May 10, 1949 by the Superior Court, Butte County, the full natural flow allotment of the users below Farrott Dam must be provided at all times without undue fluctuations caused by the intermittent presence of foreign water. In order to better accomplish this regulation a combination weir and orifice structure was placed in the head of the Farrott Ditch.

This structure was adjusted so that, during periods of daily low flow (i.e. when no foreign water was present) the natural flow allotment of the Farrott Ditch passed through the orifice into the ditch and the remainder of the flow passed through the Farrott Dam for downstream users. During periods of high flow (i.e. when foreign water was present) the water level above the Farrott Dam rose and allowed the major portion of the foreign water to flow freely over the weir into the ditch.

During the time that water was discharging over the weir, the increased water level above the Farrott Dam also forced more water through the openings in the Farrott Dam which had been adjusted for low flow conditions. A daily average flow of about 6 cubic feet per second of foreign water was lost to the Farrott Ditch in this manner.

U. S. Plant Garden Pump

The Plant Garden Pump, rated at 1,000 g.p.m., operated approximately six hours a day, five days a week throughout the 1952 season. This represents a use considerably less than their allotment (2.0 c.f.s 1st priority) and consequently no regulation of this diversion was required.

Compton-Entler-Marybill Ditch and the Upper Colony Ditch

These two diversions are located on opposite sides of Butte Creek immediately above the Upper Colony Dam.

The Compton-Entler-Marybill Ditch was regulated to divert its full first priority allotment of 10 cubic feet per second on June 15. A subsequent regulations maintained the flow at 10 cubic feet per second during the remainder of the season.

The Durham Mutual Water Company elected to divert approximately 80 per cent of the water to which it was entitled through the Upper Colony Ditch and regulation was made throughout the season on this basis. The remainder of its water and the allotments of the diverters below the Upper Colony Dam were passed over and through the Upper Colony Dam along with the foreign water which had passed Parrott Dam.

Van Nuys, Wakefield and Baxter Pumps

These pumps, located between the Upper and Lower Colony Dams, have an aggregate total first priority allotment of 4.61 cubic feet per second. The pumps operate largely during the daylight hours and divert an average amount somewhat less than their continuous flow allotment. No regulation was required in 1952.

Lower Colony Ditch

The Lower Colony Dam was maintained at a height of about three and one-half feet thus providing considerable storage in the rather flat channel behind the dam. The Lower Colony Ditch headgates were regulated to provide the Durham Mutual Water Company with the remainder of the water to which it was entitled until September 29 when the ditch was closed for the season.

At no time during the 1952 season was the flow reaching the pool above the Lower Colony Dam less than the amount required to fill allotments.

The foreign water passing Farrott Dam caused an average fluctuation of about three cubic feet per second between "high" and "low" flow in the Lower Colony Ditch.

A daily mean of approximately six cubic feet per second of the foreign water passed below the Lower Colony Dam and was picked up at the Adams' Dam for use on the lands of F. L. Adams.

The amount diverted by the Durham Mutual Water Company is set forth in Table 9. A comparison of the total allotments to the amount diverted is shown graphically on Plate III.

SUMMARY

Regulation of the water was made to comply with "Memorandum and Order" entered by the Superior Court, Butte County on May 10, 1949 in which it was ordered that delivery of water to the Durham Mutual Water Company be made without fluctuation from foreign water flowing in the stream.

Due to the inability of the Farrott Ditch diversion works to skim off all the fluctuation due to foreign water, some excess water was diverted through the colony ditches throughout the season to prevent the minimum flows from dropping below the allotments. The excess water was passed through the colony lands onto the Adams ranch.

Regulation of the water diverted by the Farrott Ditch was by the same means as in 1950 and 1951 except that the temporary "weir-orifice" device in the intake of the conduit had been replaced by a permanent concrete structure with a weir crest of 32 feet. In this structure the natural flow allotments of the ditch pass through a submerged orifice and the foreign water spills over the weirs.

Use of the structure in 1952 reduced the fluctuation below the Parrott Dam and held the loss of foreign water through the dam to about 6 cubic feet per second.

The hydrographs on Plates 1, 2 and 3 show the daily mean flow of Butte Creek at the U.S.G.S. station, Butte Creek below the Parrott Ditch, Parrott Ditch and combined diversion by the Upper and Lower Colony Ditches together with minimum daily flows and allotments at all except the U.S.G.S. station.

CHANGES IN OWNERSHIP OF LANDS AND WATER RIGHTS

The changes in ownership of lands and water rights, which occurred subsequent to filing "Statement for Butte Creek Watermaster Service Area, County of Butte, State of California, for 1952", and which have been included in the statement for said service area for 1953 are listed in the following tabulation:

Tract No.	Name of Water Right Owner Appearing in 1952 Statement	Name and Address of Water Right Owner to Appear in 1953 Statement	Water c.f.s.
13-26	Ohlson, L. D. et ux., and Metzker, J. K., et ux.	Beach, O. S.	1.89
13-26	Harter, Earl L. and Harter, Margaret B.	Beach, O. S.	1.89
13-26	Klausen, M. J. and Klausen, Hazel	Beach, O. S.	1.22
13-29	Hook, L. C. and Hook, Helen M.	Smith, Kenneth and Smith, Violet	0.555
13-32	Miller, Robert S. and Miller Robert J.	Taylor, (Dr.) Pleasant G.	3.00

TABLE 1

PRECIPITATION FOR SEASONAL YEAR ~~1951-1952~~ 1953-1954

CHICO, BUTTE COUNTY, CALIFORNIA

Elevation 189 Feet

Month	Mean Precipitation ~~(Monthly Record)~~ Inches	Precipitation ~~1951-1952~~ 1953-1954 Inches	~~1951-1952~~ 1953-1954 Per Cent of Total Mean
October	~~1.27~~ 1.30	~~2.18~~ 1.62	11.4 %
November	2.69 2.65	4.27 3.03	17.5 %
December	4.53 4.50	7.29 0.73	29.8 %
January	4.86 4.70	10.28 4.58	42.0 %
February	4.25 4.15	3.18 3.94	13.0 %
March	3.15 3.21	4.65 4.77	19.0 %
April	1.76 1.78	1.83 4.29	7.5 %
May	.99 0.99	.41 0.06	1.7 %
June	.41 0.41	1.10 0.49	4.5 %
July	.02 0.02	.05 T	0.2 %
August	.02 0.03	.00 0.21	0.0 %
September	.50 0.48	T	0.0 %
TOTALS ~~Total~~	24.45 24.22	35.84	146.6 %

TABLE 2

Daily Discharge in Cubic Feet Per Second
BUTTE CREEK NEAR CHICO, CALIFORNIA
May 1 to September 30, 1952

Day	May	June	July	August	September
1	1,420	598	287	180	130
2	1,280	579	270	174	130
3	1,140	522	273	171	125
4	1,040	528	235	135	135
5	984	528	248	132	138
6	952	498	240	156	138
7	1,280	486	228	156	141
8	1,690	474	232	150	141
9	1,320	480	230	153	135
10	1,210	438	225	141	144
11	1,180	414	215	153	162
12	1,110	376	210	159	150
13	1,050	335	218	153	159
14	1,010	325	212	150	138
15	968	302	202	156	141
16	960	288	200	153	130
17	968	279	200	141	128
18	936	262	195	150	132
19	920	288	186	144	135
20	852	292	200	141	138
21	880	302	174	141	138
22	817	310	180	138	138
23	824	315	180	144	128
24	810	340	183	144	132
25	796	304	180	138	130
26	782	301	180	144	125
27	754	294	180	141	132
28	733	350	165	150	138
29	698	380	168	141	130
30	670	312	177	141	122
31	638		180	130	
Total Sec. Ft. Days	30,672	11,500	6,453	4,600	4,083
Mean Sec. Ft.	989	383	208	148	136
Total Ac. Ft.	60,840	22,810	12,800	9,120	8,100

Total for five month period - 113,670 acre-feet.

TABLE 3

Daily Discharge in Cubic Feet Per Second
HENDRICKS CANAL
June 9 to September 30, 1952

Day	May	June	July	August	September
1			55	42	42
2	NO	NO	56	40	45
3			56	38	46
4	RECORD	RECORD	56	38	47
5			56	45	48
6			56	46	48
7			56	46	47
8			56	46	47
9		15	55	47	47
10		14	55	46	47
11		14	53	46	47
12		13	53	46	47
13		13	53	46	47
14		13	52	46	47
15		13	52	46	46
16		13	52	46	46
17		13	52	46	46
18		20	52	46	46
19		36	52	45	46
20		40	52	45	46
21		46	52	43	46
22		50	51	46	46
23		51	51	47	46
24		52	50	47	46
25		53	50	48	46
26		54	50	48	45
27		55	49	49	45
28		55	49	48	45
29		55	49	47	45
30		55	46	45	45
31			46	43	
Total Sec. Ft. Days		743	1623	1403	1383
Mean Sec. Ft.		34	52	45	46
Total Ac. Ft.		1470	3220	2780	2740

Total for period - 10,210 acre-feet.

TABLE 4

Daily Discharge in Cubic Feet Per Second
PARROTT DITCH
June 6 to September 30, 1952

Day	May	June	July	August	September
1	NO	NO	127	73	54
2			124	70	53
3	RECORD	RECORD	119	67	49
4			112	48	54
5			85	48	59
6		138	94	56	61
7		135	101	59	62
8		132	101	55	61
9		134	101	56	60
10		129	97	56	63
11		125	94	56	73
12		123	91	59	66
13		125	91	59	63
14		125	91	56	62
15		119	85	56	57
16		119	82	55	57
17		128	79	54	57
18		125	79	58	56
19		131	78	55	56
20		134	90	55	51
21		132	76	55	46
22		132	73	54	45
23		128	75	57	45
24		132	73	56	40
25		128	74	54	31
26		128	74	54	26
27		128	73	54	21
28		128	64	61	17
29		126	64	62	17
30		128	70	62	17
31			73	59	
Total Sec. Ft. Days		3212	2710	1779	1479
Mean Sec. Ft.		128	87	57	49
Total Ac. Ft.		6370	5370	3530	2930

Total for period - 18,200 acre-feet.

TABLE 5

Daily Discharge in Cubic Feet Per Second
BUTTE CREEK BELOW PARROTT DAM
June 10 to September 30, 1952

Day	May	June	July	August	September
1			160	107	76
2	NO	NO	146	104	75
3			154	104	76
4	RECORD	RECORD	123	87	81
5			163	84	79
6			146	100	77
7			127	97	79
8			131	95	80
9			129	97	75
10		309	128	85	81
11		289	121	97	89
12		253	119	100	84
13		210	127	94	96
14		200	121	94	76
15		183	117	100	84
16		169	118	98	73
17		151	121	87	71
18		137	116	92	76
19		157	108	89	79
20		158	110	86	87
21		170	96	86	92
22		178	107	84	93
23		187	105	87	83
24		208	110	88	92
25		176	106	84	99
26		173	106	90	99
27		166	107	87	111
28		222	101	89	121
29		254	104	79	113
30		184	107	79	105
31			107	71	
Total Sec. Ft. Days		4134	3743	2821	2602
Mean Sec. Ft.		197	121	91	87
Total Ac. Ft.		8200	7420	5600	5160

Total for period - 26,380 acre-feet.

TABLE 6

Daily Discharge in Cubic Feet Per Second
UPPER COLONY DITCH
June 6 to September 27, 1952

Day	May	June	July	August	September
1			60	58	54
2	NO	NO	58	58	54
3			58	59	54
4	RECORD	RECORD	51	58	54
5			53	58	54
6		29	57	58	54
7		29	54	59	54
8		28	54	59	54
9		28	54	59	54
10		35	53	58	54
11		53	53	59	54
12		53	51	59	54
13		57	45	59	53
14		51	51	59	53
15		51	66	58	53
16		48	63	58	58
17		51	63	57	57
18		57	63	57	57
19		58	63	57	57
20		60	63	57	58
21		60	63	56	58
22		60	64	56	58
23		60	64	56	57
24		62	64	56	56
25		62	61	55	58
26		62	60	55	60
27		62	61	55	61
28		62	58	54	
29		64	58	54	
30		54	60	54	
31			60	54	
Total Sec. Ft. Days		1296	1806	1769	1502
Mean Sec. Ft.		52	58	57	56
Total Ac. Ft.		2570	3580	3510	2980

Total for period = 12,640 acre-feet.

TABLE 7

Daily Discharge in Cubic Feet Per Second
BUTTE CREEK ABOVE LOWER COLONY DAM
June 26 to September 27, 1952

Day	June	July	August	September
1		125	30	17
2		101	22	17
3		86	32	14
4		88	25	12
5		93	20	15
6		72	27	13
7		59	25	12
8		63	25	20
9		65	25	22
10		46	28	24
11		58	17	24
12		65	10	27
13		74	10	25
14		70	11	20
15		68	23	18
16		67	20	20
17		60	27	27
18		62	33	23
19		54	23	28
20		35	14	36
21		31	18	48
22		30	22	49
23		26	23	41
24		17	24	40
25		17	24	42
26	128	20	23	44
27	119	23	16	46
28	143	24	17	
29	217	23	11	
30	155	17	14	
31		17	20	
Total Sec. Ft. Days	762	1673	658	724
Mean Sec. Ft.	152	54	21	27
Total Ac. Ft.	1510	3320	1310	1440

Total for period - 7,580 acre-feet.

TABLE 8

Daily Discharge in Cubic Feet Per Second
LOWER COLONY DITCH
June 6 to September 26, 1952

Day	June	July	August	September
1		5	6	6
2		5	6	6
3		5	6	6
4		5	6	6
5		5	6	6
6	10	5	6	6
7	10	5	6	6
8	8	5	8	6
9	8	8	8	6
10	10	8	6	6
11	10	8	6	6
12	10	8	6	6
13	11	8	6	6
14	10	8	6	6
15	10	6	6	6
16	10	6	6	6
17	10	6	6	6
18	10	6	6	6
19	10	6	6	6
20	10	6	6	6
21	10	6	6	6
22	10	6	6	6
23	10	6	6	6
24	11	6	6	6
25	11	6	6	6
26	11	6	6	6
27	11	6	6	
28	10	6	6	
29	10	7	6	
30	10	6	6	
31		6	6	
Total Sec. Ft. Days	251	191	190	156
Mean Sec. Ft.	10	6	6	6
Total Ac. Feet	500	379	377	309

Total for period - 1,560 acre-feet.

TABLE 9

Combined Daily Discharge in Cubic Feet Per Second
UPPER AND LOWER COLONY DITCHES
June 6 to September 26, 1952

Day	June	July	August	September
1		65	64	60
2		63	64	60
3		63	65	60
4		56	64	60
5		58	64	60
6	39	62	64	60
7	39	59	65	60
8	36	59	67	60
9	36	62	67	60
10	45	61	64	60
11	63	61	65	60
12	63	59	65	59
13	68	53	65	59
14	61	59	65	59
15	61	72	64	59
16	58	69	64	64
17	61	69	63	63
18	67	69	63	63
19	68	69	63	63
20	70	69	63	64
21	70	69	62	64
22	70	70	62	64
23	70	70	62	63
24	73	70	62	62
25	73	67	61	64
26	73	66	61	66
27	73	67	61	
28	74	64	60	
29	74	65	60	
30	64	66	60	
31		66	60	
Total Sec. Ft. Days	1549	1997	1959	1596
Mean Sec. Ft.	62	64	65	61
Total Ac. Ft.	3070	3960	3890	3160

Total for period - 14,080 acre-feet.

TABLE 10

Daily Discharge in Cubic Feet Per Second
BUTTE CREEK AT DURHAM BRIDGE
June 26 to September 23, 1952

Day	June	July	August	September
1		120	14	11
2		96	16	11
3		81	26	8
4		83	19	6
5		88	14	9
6		94	21	7
7		54	19	6
8		58	17	14
9		57	27	16
10		38	22	18
11		50	11	15
12		57	4	21
13		66	4	19
14		62	5	14
15		54	17	12
16		61	14	14
17		54	21	21
18		56	27	17
19		48	17	22
20		29	8	30
21		25	12	42
22		24	16	43
23		20	17	35
24		11	18	
25		11	18	
26	117	14	17	
27	108	15	10	
28	133	18	10	
29	207	16	5	
30	145	11	8	
31		11	14	
Total Sec. Ft. Days	710	1482	468	414
Mean Sec. Ft.	142	48	15	18
Total Ac. Ft.	1410	2940	930	820

Total for period - 6,100 acre-feet.

TABLE 11

Daily Discharge in Cubic Feet Per Second
BUTTE CREEK BELOW ADAMS DAM
July 1 to September 27, 1952

Day	June	July	August	September
1		80	1.0	0.7
2	NO	70	1.2	0.7
3		29	1.4	0.7
4	RECORD	26	1.6	0.7
5		24	2.0	0.7
6		22	3.0	0.7
7		7.0	2.1	0.7
8		1.2	1.8	0.8
9		0.8	1.2	0.8
10		0.8	1.8	0.8
11		0.9	1.8	0.8
12		1.0	1.6	1.0
13		1.5	1.6	1.0
14		2.0	1.2	1.0
15		1.6	1.2	1.0
16		1.3	1.2	1.0
17		1.2	1.2	1.0
18		1.0	1.2	1.0
19		1.1	1.4	1.0
20		1.0	1.6	1.0
21		1.0	1.0	1.2
22		0.9	1.2	1.2
23		0.9	1.2	1.6
24		0.9	1.0	3.0
25		0.9	0.9	7.0
26		0.9	0.9	7.0
27		0.9	0.9	9.0
28		0.9	0.9	
29		0.9	0.8	NO
30		0.9	0.8	
31		0.9	0.8	RECORD
Total Sec. Ft. Days		283.	42.	47.
Mean Sec. Ft.		9.1	1.3	1.7
Total Ac. Ft.		561	83	93

Total for period - 737 acre-feet.

TABLE 12

Daily Discharge in Cubic Feet Per Second
HAMLIN SLOUGH AT ADAMS RANCH
June 30 to September 22, 1952

Day	June	July	August	September
1		15.2	7.2	9.8
2	NO	13.5	7.0	11.8
3		13.5	9.0	11.8
4	RECORD	20.0	8.2	11.5
5		20.0	8.0	11.0
6		15.5	9.2	10.4
7		14.0	10.4	6.5
8		12.0	8.0	7.0
9		13.5	6.2	5.0
10		12.0	6.5	8.0
11		12.0	7.4	8.0
12		12.0	6.5	10.4
13		12.0	6.5	11.0
14		12.0	11.5	15.5
15		17.0	8.9	12.8
16		13.5	9.8	12.2
17		17.0	10.4	15.5
18		15.5	8.2	12.8
19		16.2	12.1	15.5
20		21.8	11.0	15.0
21		15.5	9.3	5.9
22		12.0	8.0	12.2
23		13.5	9.3	
24		11.6	9.3	
25		6.2	7.4	
26		8.8	6.5	
27		18.0	7.0	
28		17.0	9.2	
29		15.2	8.0	
30	25	15.2	7.0	
31		9.3	9.2	
Total Sec. Ft. Days	25	440	262	240
Mean Sec. Ft.	25	14.2	8.7	10.9
Total Ac. Ft.	50	870	520	480

Total for period - 1,920 acre-feet.

TABLE 1

COMPARISON OF DELIVERIES OF WATER FROM BUTTE CREEK TO ALLOTMENTS
JUNE 1952

(All figures are in cubic feet per second)

Day	Flow at U.S.G.S. Station	Flow in Hendricks Canal	Hendricks Canal less 5%	Natural Flow of Butte Cr.	Butte Creek Below Parrott Dam: Nat. Flow Allotment	Butte Creek Below Parrott Dam: Flow Delivered	Parrott Ditch: Nat. Flow Allotment	Parrott Ditch: Total Allotment	Parrott Ditch: Flow Delivered	Durham Colony Ditches: Nat. Flow Allotment	Durham Colony Ditches: Flow Delivered
1	598										
2	579	NO RECORD	NO RECORD								
3	522										
4	528										
5	528									51.25	
6	498								138		39
7	486								135		39
8	474								132		36
9	480	15							134		36
10	438	14				309			129		45
11	414	14				289			125		63
12	376	13	12.6	368	150	253	169	182	123	51.25	63
13	335	13				210			125		68
14	325	13				200			125		61
15	302	13				183			119		61
16	288	13				169			119		58
17	279	13				151			128		61
18	262	20				137			125		67
19	288	36	29.4	260	130	157	130	160	131	51.25	68
20	292	40				158			134		70
21	302	46				170			132	51.25	70
22	310	50				178			132		70
23	315	51				187			128		70
24	340	52				208			132		73
25	304	53				176			128		73
26	301	54	50.9	275	130	173	145	196	128	51.25	73
27	294	55				166			128		73
28	350	55				222			128	51.25	74
29	380	55				254			126		74
30	312	55				184			128		64

(7 day mean) (7 day mean) (7 day mean) (7 day mean) (7 day mean)

TABLE 1 (Cont'd.)

COMPARISON OF DELIVERIES OF WATER FROM BUTTE CREEK TO ALLOTMENTS
JULY 1952

(All figures are in cubic feet per second)

Day	Flow at U.S.G.S. Station	Flow in Hendricks Canal	Hendricks Canal less 5%	Natural Flow of Butte Cr.	Butte Creek Below Parrott Dam: Nat. Flow Allotment	Butte Creek Below Parrott Dam: Flow Delivered	Parrott Ditch: Nat. Flow Allotment	Parrott Ditch: Total Allotment	Parrott Ditch: Flow Delivered	Durham Colony Ditches: Nat. Flow Allotment	Durham Colony Ditches: Flow Delivered
1	287	55				160			127		65
2	270	56				146			124		63
3	273	56	53.2	213	135	154	78	131	119	51.25	63
4	235	56				123			112		56
5	248	56				163			85		58
6	240	56				146			94		62
7	228	56				127			101		59
8	232	56				131			101		59
9	230	55				129			101		62
10	225	55	52.3	170	135	128	35	87	97	51.25	61
11	215	53				121			94		61
12	210	53				119			91		59
13	218	52				127			91		53
14	212	52				121			91		59
15	202	52				117			85		72
16	200	52				118			82		69
17	200	52	49.4	150	131	121	19	69	79	51.25	69
18	195	52				116			79		69
19	186	52				108			78		69
20	200	52				110			90		69
21	174	52				98			76		69
22	180	51				107			73		70
23	180	51				105			75		70
24	183	50	47.9	131	112	110	19	67	73	51.25	70
25	180	50				106			74		67
26	180	50				106			74		66
27	180	49				107			73		67
28	165	49				101			64		64
29	168	49				104			64		65
30	177	46				107			70		66
31	180	46	42.1	131	112	107	19	61	73	51.25	66

TABLE ___ (Cont'd.)

COMPARISON OF DELIVERIES OF WATER FROM BUTTE CREEK TO ALLOTMENTS
AUGUST 1952

(All figures are in cubic feet per second)

Day	Flow at U.S.G.S. Station	Flow in Hendricks Canal	Hendricks Canal less 5%	Natural Flow of Butte Cr.	Butte Creek Below Parrott Dam: Nat. Flow Allotment	Butte Creek Below Parrott Dam: Flow Delivered	Parrott Ditch: Nat. Flow Allotment	Parrott Ditch: Total Allotment	Parrott Ditch: Flow Delivered	Durham Colony Ditches: Nat. Flow Allotment	Durham Colony Ditches: Flow Delivered
1	180	42				107			73		64
2	174	40				104			70		64
3	171	38				104			67		65
4	135	38				87			48		64
5	132	45				84			48		64
6	156	46				100			56		64
7	156	46	42.6	103	84	97	19	62	59	51.25	65
8	150	46				95			55		67
9	153	47				97			56		67
10	141	46				85			56		64
11	153	46				97			56		65
12	159	46				100			59		65
13	153	46				94			59		65
14	150	46	43.7	108	89	94	19	63	56	51.25	65
15	156	46				100			56		64
16	153	46				98			55		64
17	141	46				87			54		63
18	150	46				92			58		63
19	144	45				89			55		63
20	141	45				86			55		63
21	141	43	43.3	100	81	86	19	62	55	51.25	62
22	138	46				84			54		62
23	144	47				87			57		62
24	144	47				88			56		62
25	138	48				84			54		61
26	144	48				90			54		61
27	141	49				87			54		61
28	150	48	44.6	96	77	89	19	64	61	51.25	60
29	141	47				79			62		60
30	141	45				79			62		60
31	130	43				71			59		60

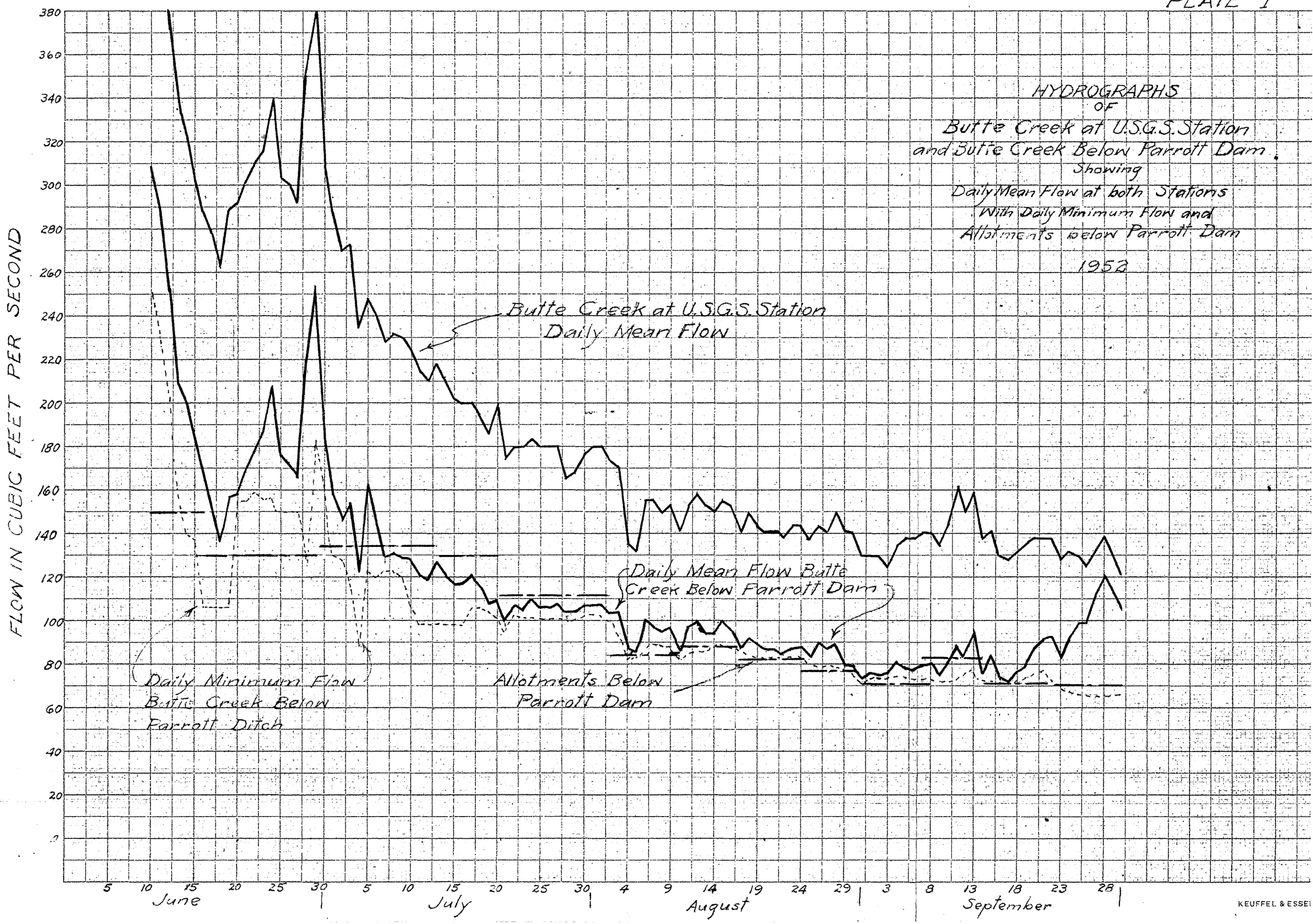
TABLE [illegible] (Cont'd.)

COMPARISON OF DELIVERIES OF WATER FROM BUTTE CREEK TO ALLOTMENTS
SEPTEMBER 1952

(All figures are in cubic feet per second)

Day	Flow at U.S.G.S. Station	Flow in Hendricks Canal	Hendricks Canal less 5%	Natural Flow of Butte Cr.	Butte Creek Below Parrott Dam: Nat. Flow Allotment	Butte Creek Below Parrott Dam: Flow Delivered	Parrott Ditch: Nat. Flow Allotment	Parrott Ditch: Total Allotment	Parrott Ditch: Flow Delivered	Durham Colony Ditches: Nat. Flow Allotment	Durham Colony Ditches: Flow Delivered
1	130	42				76			54		60
2	130	45				75			53		60
3	125	46				76			49		60
4	135	47	43.7	90	71	81	19	63	54	51.25	60
5	138	48				79			59		60
6	138	48				77			61		60
7	141	47				79			62		60
8	141	47				80			61		60
9	135	47				75			60		60
10	144	47				81			63		60
11	162	47				89			73		60
12	150	47	44.6	102	83	84	19	64	66	51.25	59
13	159	47				96			63		59
14	138	47				76			62		59
15	141	46				84			57		59
16	130	46				73			57		64
17	128	46				71			57		63
18	132	46	43.7	90	71	76	19	63	56	51.25	63
19	135	46				79			56		63
20	138	46				87			51		64
21	138	46				92			46		64
22	138	46				93			45		64
23	128	46				83			45		63
24	132	46				92			40		62
25	130	46	43.3	89	70	99	19	61	31	51.25	64
26	125	45				99			26		66
27	132	45				111			21		
28	138	45				121			17		
29	138	45				113			17		
30	122	45				105			17		

PLATE I



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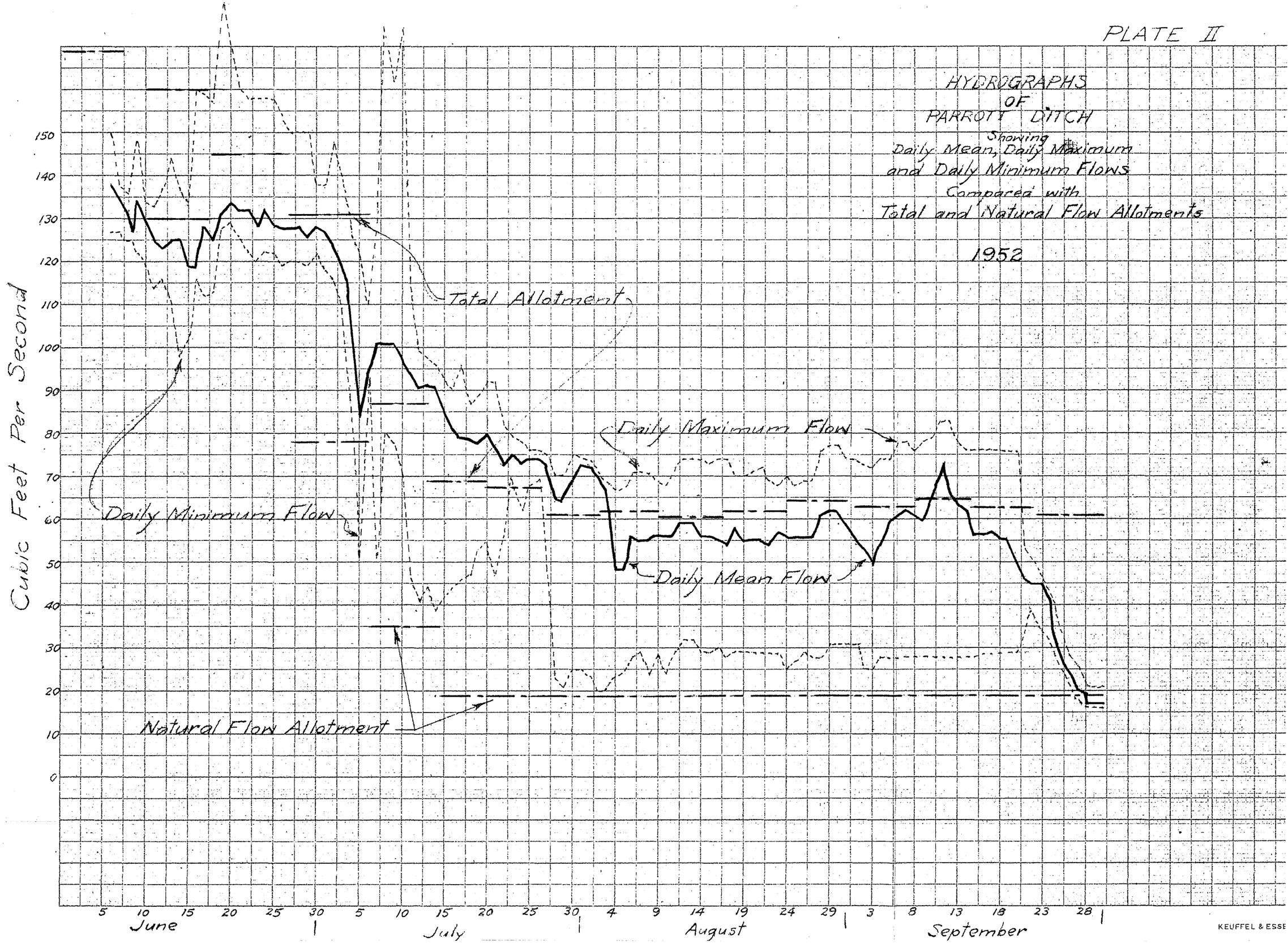

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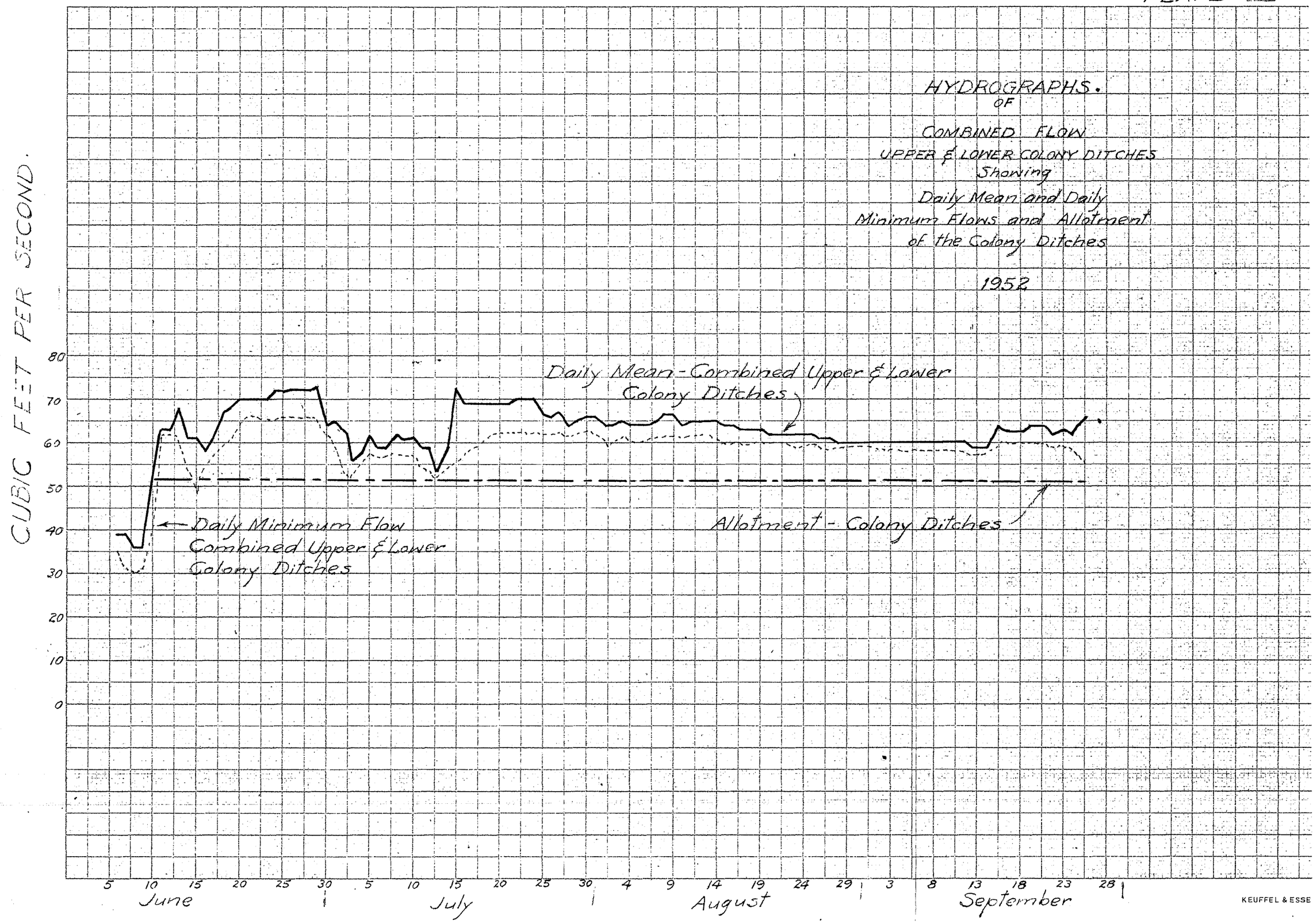
HYDROGRAPHS.
OF
COMBINED FLOW
UPPER & LOWER COLONY DITCHES
Showing
Daily Mean and Daily
Minimum Flows and Allotment
of the Colony Ditches
1952
CUBIC FEET PER SECOND.
80
70
60
50
40
30
20
10
0
Daily Mean - Combined Upper & Lower Colony Ditches
Daily Minimum Flow Combined Upper & Lower Colony Ditches
Allotment - Colony Ditches
5 10 15 20 25 30
June
5 10 15 20 25 30
July
4 9 14 19 24 29
August
3 8 13 18 23 28
September
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