STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF WATER RESOURCES

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REPORT ON WATERMASTER SERVICE IN BUTTE CREEK WATERMASTER SERVICE AREA BUTTE COUNTY, CALIFORNIA 1955 SEASON

Sacramento, California
March 1956

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SUBMISSION TO, AND ADOPTION BY
DEPARTMENT OF PUBLIC WORKS

I, J. M. Page, Senior 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, 1955 Season".

/s/ J. M. Page
Senior Hydraulic Engineer

I, W. R. Gianelli, Supervising Hydraulic Engineer, Division of 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, 1955 Season".

/s/ W. R. Gianelli
Supervising Hydraulic Engineer

I, L. C. Jopson, Assistant State Engineer, 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, 1955 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 , 1956.

DEPARTMENT OF PUBLIC WORKS
STATE OF CALIFORNIA

By /s/ L. C. Jopson
Assistant State Engineer

(SEAL)

ORGANIZATION

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DIVISION OF WATER RESOURCES

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INTRODUCTION

This is the thirteenth annual report on watermaster service in Butte Creek Watermaster Service Area and covers the period of water distribution in 1955 beginning May 1 and terminating September 30.

The service area was created by order of the Department of Public Works January 7, 1943, to include the water rights defined in Paragraphs 71 through 85 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 to administer the decree provisions during each irrigation season since the service area was created and reports prepared to show the results accomplished.

The report is presented under four headings as follows: Introduction, Water Supply, Distribution of Water, and Changes in Ownership of Lands and Water Rights. Following the text are tables presenting records of precipitation and water supply in the area, and plates showing hydrographs of Butte Creek at United States Geological Survey station, Butte Creek above and below Parrott Ditch, Parrott Ditch at its intake, and the combined flows of the Colony ditches at their intakes.

WATER SUPPLY

Water supply on Butte Creek was below normal, however, the supply was adequate to fill most demands until the middle of June. Above normal precipitation during the month of April increased the runoff throughout the irrigation season to an amount somewhat greater than that which had been anticipated on April 1. However, the water right owners experienced the lowest water supply in several years during August and September.

Precipitation

Monthly precipitation data at Chico, California, as compiled from records of the United States Weather Bureau are presented in Table 1. The total precipitation for the 1954-1955 season was 81 per cent of the mean for this station.

Stream Flow

Water supply and diversion records were collected at eight stations equipped with water stage recorders in 1955. The location of the stations and their purposes are as follows:

Butte Creek (United States Geological Survey Station)

This station, located below the confluence of Butte Creek and Little Butte Creek, is used by the U.S.G.S. to measure the combined foreign water and natural flow of Butte Creek 2½ miles above Parrott Ditch. This station was not used for distribution purposes during the 1955 irrigation season as experience

has shown that the flow at this station differs somewhat from the measured flow above Parrott Ditch. It is believed that a more accurate measurement of the water available for distribution at this point is obtained by adding flows measured by a 10-foot Parshall Flume at the head of Parrott Ditch and the flow measured at an accurately rated station in Butte Creek below Parrott Ditch. This computed daily mean discharge is presented in Table 3.

The foreign water at this station is brought into the stream system from the West Branch of the Feather River by Hendricks Canal. The Hendricks Canal is designated as Toadtown Canal on records of the Pacific Gas and Electric Company and is released into Butte Creek as needed to supply power demands of the company.

The station is referred to as "Butte Creek near Chico" on records of the United States Geological Survey. Daily mean discharge at this station is presented in Table 2.

Hendricks Canal. This station is located on Hendricks Canal a short distance above its confluence with Butte Creek Canal above De Sabla Reservoir. Discharge at the station consists of foreign water brought into the Butte Creek watershed from West Branch Feather River and is measured by an 8-foot Parshall Flume equipped with an automatic water stage recorder. This recorder station and Parshall Flume, which is referred to as Gage No. BW12 on the records of the Pacific Gas and Electric Company is

maintained and operated by that company, and a copy of the recorded flow is forwarded to the Division of Water Resources each month. Daily mean discharge at this station is presented in Table 4.

Farrott Ditch. This station is located near the head of Farrott Ditch above the Crouch and Hale Ditches. The record of discharge as measured by a 10-foot Parshall Flume shows the amount of water diverted for use by the Farrott, M. & T. Inc., Dayton Mutual Water Company, and Taylor (Hale) interests. Daily mean discharge at this station is presented in Table 5.

Butte Creek Below Farrott Ditch. This station is located above the Chico-Paradise Highway, about 1½ miles below the Farrott Ditch. The record of discharge represents the water supply available for natural flow rights on Butte Creek below Farrett Ditch. Daily mean discharge at this station is presented in Table 6.

Upper Colony Ditch. This station is located near the head of Upper Colony Ditch. The record of discharge represents a portion of the water diverted by Durham Mutual Water Company. Daily mean discharge at this station is presented in Table 7.

Butte Creek Above Lower Colony Ditch. This station was installed on July 22 and was used to determine the flow to Lower Colony Ditch subsequent to that date. This was considered to be more convenient and accurate than the orifice method used prior to this date. (See Lower Colony Ditch). Daily mean discharge at this station is presented in Table 8.

Lower Colony Ditch. Lower Colony Ditch is used by the Durham Mutual Water Company to divert that part of its allotment not taken through the Upper Colony Ditch. Diversion is by means of a submerged gate orifice with varying water levels both above and below the orifice. Recorders were maintained on both sides of the orifice and a continuous record obtained of the two water levels. Daily mean discharge was computed as the flow through an orifice with a head equivalent to the difference in the two water levels. 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. This orifice method of determining the discharge into Lower Colony Ditch was used until July 22 when the Butte Creek above Lower Colony Ditch station was installed. From this date until September 15 the entire flow passing this station was diverted into the Lower Colony Ditch. Daily mean discharge at this station is presented in Table 9.

Butte Creek at Durham Bridge. This station is located on Butte Creek below the Oroville-Durham highway bridge. The record of discharge represents the water supply available for diversion at the Brandt pump, Adams Ditch, Gorrill Ditch, and E. E. White pumps. Daily mean discharge at this station is presented in Table 11.

Hamlin Slough at Adams Ranch. This station 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

this is diverted at Adams Dam, plus natural flow of Hamlin Slough, plus some well water from the Adams Ranch and return flow from Durham Mutual Water Company lands and Adams Ranch. Daily mean discharge at this station is presented in Table 12.

DISTRIBUTION OF WATER

Distribution during the 1955 season was based upon the computed mean discharge of Butte Creek above Parrott Dam as presented in Table 3. The discharge at this station was computed by adding the discharge of Parrott Ditch as presented in Table 5 and the discharge of Butte Creek below Parrott Ditch as presented in Table 6. Flow at this station comprises natural flow of Butte Creek and foreign water diverted from West Branch of Feather River through Hendricks Canal.

Hydrographs of the flow of Butte Creek at United States Geological Survey Station, the computed flow of Butte Creek above Parrott Ditch, and the flow below Parrott Ditch are shown on Plate 1.

Distribution Procedure

In utilizing the water for power generation above Parrott Ditch, 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 when the natural flow of Butte Creek is low.

The natural weekly average flow of Butte Creek was determined by averaging the computed daily discharge at Butte Creek above Parrott Ditch over a seven day period and deducting the weekly average discharge of Hendricks Canal less 5 per cent. 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 weekends.

Inflow to Butte Creek from Hendricks Canal varied from a daily mean of 95 cubic feet per second on May 16 to 43 cubic feet per second on July 8. The weekly average natural flow of Butte Creek reached a low of 60 cubic feet per second during the second week of September. Water was available for 100 per cent of first priority rights until the middle of July. During the lowest period of flow, water was available for about 69 per cent of first priority rights.

According to the "Memorandum and Order" entered May 10, 1949, by the Superior Court, Butte County, full natural flow allotments of the users below Parrott Dam must be provided at all times without undue fluctuation caused by intermittent presence of foreign water. It is believed that regulation, as accomplished under conditions existing during the season, resulted in minimum measurable fluctuations.

A summary of the distribution of water and the regulation of diversions in order to insure compliance with the "Memorandum and Order" entered May 10, 1949, follows.

Parrott Ditch

This regulation was accomplished by a combination weir and orifice structure in the head of the Parrott Ditch, and a combination orifice and fish ladder in the north abutment of Parrott Dam. A removable and adjustable submerged gate was designed and installed in the fish ladder orifice this season for simpler and more accurate regulation of natural flow passing Parrott Ditch. These structures were adjusted so that during periods of daily high flow (i.e. when foreign water was present) the water level above Parrott 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 Parrott Dam also forced slightly more water through the orifice in Parrott Dam which had been adjusted for low flow conditions. However, during the 1955 season very little foreign water was lost by the Parrott Ditch in this manner.

Hydrographs on Plates 1 and 2 show daily mean flow of Butte Creek at the United States Geological Survey station, Butte Creek above Parrott Ditch, Butte Creek below Parrott Ditch and Parrott Ditch at its head.

U. S. Plant Garden Pump

Plant Garden pump, rated at 1,000 gallons per minute, operated approximately six hours a day, five days a week throughout the 1955 season. This represents a use considerably less

than their allotment (2.0 cubic feet per second, first priority) and consequently, no regulation of this diversion was required.

Compton-Entler Ditch, Marybill Ditch and the Upper Colony Ditch

These three diversions are located on Butte Creek immediately above Upper Colony Dam.

The Marybille Ditch diverted its full allotment throughout the season. The Compton-Entler Ditch did not receive its full allotment until the first week of August when an obstruction in the inlet was located and removed. The inlet works to the Compton-Entler Ditch and Marybill Ditch are in need of repair work.

Durham Mutual Water Company elected to divert approximately 70 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 the allotment together with allotments of users below Upper Colony Dam were passed over and through the dam.

Van Muys, Wakefield, and Baxter Pumps

These pumps, located between Upper and Lower Colony Ditches, have an aggregate total first priority allotment of 4.61 cubic feet per second. The pumps operated largely during daylight hours. The average amount diverted was about equal to their continuous flow allotment. No regulation was required in 1955.

Hansen Pump

This pump has only a surplus allotment with no first priority right. It was found to be in operation once during August without authority and the pump switch was then locked open by the watermaster.

Lower Colony Ditch

Lower Colony Dam was maintained at a height of about 3½ feet thus providing considerable storage in the rather flat channel behind the dam. The Lower Colony Ditch headgates were regulated to provide Durham Mutual Water Company with the remainder of the water to which it was entitled throughout the irrigation season.

Daily mean flow reaching the pool above Lower Colony Dam was never less than the amount required to fill the Durham Mutual Water Company's share of the available supply.

The amount diverted by Durham Mutual Water Company is presented in Table 10. A comparison of total allotments to amount diverted is shown graphically on Plate 3.

CHANGES IN OWNERSHIP OF LANDS AND WATER RIGHTS

No changes in ownership of lands and water rights as shown in "Statement for Butte Creek Watermaster Service Area, County of Butte, State of California, for 1955 have been reported up to and including September 30, 1955.

TABLE 1

PRECIPITATION AT CHICO, BUTTE COUNTY, CALIFORNIA
1954-1955

In Inches

Month	Mean precipitation	Precipitation 1954-1955
October	1.30	0.37
November	2.65	4.99
December	4.50	5.70
January	4.70	3.01
February	4.15	0.77
March	3.21	0.60
April	1.78	3.79
May	0.99	0.12
June	0.41	0.18
July	0.02	0.00
August	0.03	0.00
September	0.48	0.20
TOTALS	24.22	19.73

TABLE 2

DAILY MEAN DISCHARGE OF BUTTE CREEK NEAR CHICO

May 1 to September 30, 1955

In Cubic Feet per Second

Day	May	June	July	August	September
1	475	315	180	133	140
2	505	305	168	136	129
3	531	300	168	136	126
4	557	290	168	140	133
5	584	290	168	129	136
6	648	281	164	123	143
7	678	276	168	123	123
8	662	268	176	117	136
9	648	263	153	117	126
10	605	254	153	120	129
11	591	258	160	120	126
12	577	245	153	120	140
13	564	245	157	117	129
14	531	240	160	120	136
15	493	232	143	120	135
16	469	232	160	133	135
17	451	218	146	140	135
18	451	214	143	133	135
19	457	209	146	136	135
20	463	204	160	136	135
21	469	209	143	129	135
22	451	214	146	133	140
23	428	204	146	123	140
24	418	204	143	126	140
25	390	196	143	133	140
26	380	196	143	140	140
27	370	180	143	133	140
28	360	180	143	133	140
29	345	188	140	140	140
30	340	180	140	133	136
31	335	---	136	126	---
Mean	491	236	154	129	135
Runoff, in acre-feet	30,200	14,060	9,440	7,930	8,040

Total for period - 69,670 acre-feet

TABLE 3

COMPUTED DAILY MEAN DISCHARGE OF BUTTE CREEK ABOVE PARROTT DITCH

May 25 to September 26, 1955

In Cubic Feet per Second

Day	May	June	July	August	September
1		306	170	127	123
2		290	161	128	120
3		284	158	123	115
4		283	159	131	114
5		283	158	123	122
6	N	280	156	117	124
7	O	269	153	116	114
8		258	160	111	124
9	R	252	144	115	115
10	E	251	142	112	117
	C				
11	O	247	149	111	113
12	R	235	150	112	124
13	D	230	145	109	115
14		227	156	111	103
15		219	134	109	152
16		222	147	116	133
17		216	134	126	133
18		210	130	123	153
19		206	133	118	136
20		200	144	124	135
21		198	127	118	138
22		209	136	121	136
23		207	132	114	126
24		200	131	116	128
25	379	196	130	122	129
26	368	182	130	127	131
27	357	174	135	126	
28	342	174	133	119	
29	327	183	128	127	NO
30	322	172	132	125	RECORD
31	317	---	130	115	
Mean	345[a]	229	143	119	126[b]
Runoff, in acre-feet	4,780	13,600	8,780	7,320	6,470

[a] 7-day period

[b] 26-day period

Total for period - 41,000 acre-feet.

TABLE 4

DAILY MEAN DISCHARGE OF HENDRICKS CANAL

May 1 to September 30, 1955

In Cubic Feet per Second

Day	May	June	July	August	September
1	82.3	91.1	64.0	59.4	61.4
2	84.5	86.8	61.4	62.7	60.7
3	85.2	89.8	61.4	63.4	60.7
4	80.8	89.8	60.7	61.6	59.4
5	82.3	89.8	60.7	56.9	58.8
6	82.3	92.8	63.4	48.8	58.8
7	79.4	94.4	62.7	45.8	58.8
8	83.8	91.3	63.4	43.0	59.4
9	84.5	90.5	62.7	44.6	60.7
10	86.0	92.8	61.4	45.8	60.7
11	89.0	93.6	61.4	46.4	60.7
12	95.9	73.7	62.1	45.8	60.1
13	95.1	69.5	63.4	47.0	60.1
14	92.0	75.1	63.4	55.0	70.9
15	94.4	75.1	62.7	60.7	68.2
16	95.9	76.5	62.7	61.4	61.4
17	95.1	75.8	62.1	61.4	62.7
18	93.9	74.4	63.4	60.7	68.1
19	91.3	74.4	62.7	59.4	60.7
20	92.0	75.8	62.7	59.4	59.4
21	92.8	81.6	62.7	59.4	59.4
22	92.0	83.8	60.7	58.1	58.1
23	92.0	82.8	61.4	51.8	59.4
24	92.0	76.5	60.7	61.4	59.4
25	92.8	75.1	60.7	62.7	59.4
26	94.4	73.0	60.7	60.7	58.8
27	95.1	71.6	61.4	61.4	58.1
28	95.1	69.5	61.4	61.4	59.4
29	95.1	68.1	61.4	61.4	60.1
30	92.8	66.1	60.1	61.4	60.1
31	92.0	---	60.1	61.4	---
Mean	90.0	80.7	61.9	56.5	60.4
Runoff, in acre-feet	5,538	4,802	3,808	3,472	3,618

Total for period - 21,238 acre-feet

TABLE 5

DAILY MEAN DISCHARGE OF PARROTT DITCH

May 11 to September 26, 1955

In Cubic Feet per Second

Day	May	June	July	August	September
1		96	71	66	75
2	N	95	70	67	73
3	O	94	67	63	68
4		103	68	75	67
5	R	123	69	67	75
	E				
6	C	145	69	61	77
7	O	161	75	67	69
8	R	154	70	61	72
9	D	138	63	60	67
10		133	62	59	69
11	133	133	69	59	65
12	134	131	72	60	75
13	134	126	78	59	67
14	131	123	69	59	54
15	114	115	78	57	48
16	105	108	88	53	34
17	101	108	74	73	34
18	101	108	70	71	39
19	101	108	74	73	34
20	102	104	84	71	32
21	101	100	67	65	30
22	101	99	77	68	33
23	101	93	75	61	33
24	99	94	72	63	30
25	99	92	71	69	27
26	98	94	71	75	27
27	97	81	76	74	
28	97	81	73	67	N O
29	97	84	68	75	
30	97	75	71	73	R E C O R D
31	97	--	69	65	
Mean	107[a]	110	73	65	53[b]
Runoff, In acre-feet	4,440	6,540	4,480	4,060	2,730

a 21-day period

b 26-day period

Total for period - 22,250 acre-feet

TABLE 6

DAILY MEAN DISCHARGE OF BUTTE CREEK BELOW PARROTT DITCH

May 1 to September 26, 1955

In Cubic Feet per Second

Day	May	June	July	August	September
1	330	210	99	61	48
2	350	195	91	61	47
3	360	190	91	60	47
4	390	180	91	56	47
5	390	160	89	56	47
6	400	135	87	56	47
7	420	108	79	49	45
8	420	104	81	50	49
9	420	114	81	55	48
10	400	118	80	53	48
11	380	114	80	52	48
12	380	104	78	52	49
13	370	104	67	50	48
14	340	104	63	52	49
15	330	104	56	52	104
16	325	114	59	53	99
17	310	108	60	53	99
18	310	102	60	52	114
19	315	98	59	53	102
20	315	96	60	53	93
21	320	98	60	53	108
22	330	110	59	53	103
23	325	114	57	53	93
24	295	106	59	53	98
25	280	104	59	53	102
26	270	98	59	52	104
27	260	93	59	52	
28	245	93	60	52	
29	230	99	60	52	N O
30	225	99	61	52	R E C O R D
31	220	--	61	50	
Mean	330	119	70	53	73*
Runoff, in acre-feet	20,300	7,090	4,290	3,280	3,740

*26-day period

Total for period - 38,700 acre-feet

TABLE 7

DAILY MEAN DISCHARGE OF UPPER COLONY DITCH

May 13 to September 26, 1955

In Cubic Feet per Second

Day	May	June	July	August	September
1		44	37	36	32
2	N	45	37	36	31
3	O	45	37	36	31
4		46	37	36	31
5	R	46	37	35	31
	E				
6	C	45	37	35	30
7	O	46	37	31	31
8	R	43	37	32	32
9	D	44	37	35	33
10		45	37	34	33
11		46	37	33	32
12		43	34	34	32
13	45	44	34	34	32
14	45	46	36	34	39
15	44	46	36	34	44
16	44	46	36	34	44
17	44	46	36	34	44
18	44	46	36	34	44
19	39	43	36	34	44
20	45	45	36	35	44
21	44	45	36	35	44
22	43	49	36	34	44
23	43	41	36	35	44
24	43	38	36	34	44
25	44	38	36	34	44
26	46	35	36	34	42
27	46	36	36	34	
28	46	36	36	34	
29	45	36	36	35	N O
30	45	37	36	35	R E C O R D
31	45	—	36	34	
Mean	44a	43	36	34	38b
Runoff in acre-feet	1,670	2,560	2,230	2,110	1,940

a 19-day period
b 26-day period

Total for period - 10,510 acre-feet

TABLE 8

DAILY MEAN DISCHARGE OF BUTTE CREEK ABOVE LOWER COLONY DITCH

July 22 to September 26, 1955

In Cubic Feet per Second

Day	July	August	September
1		18	9
2		17	8
3		16	8
4		13	8
5	N	13	7
6	O	10	7
7		9	7
8		11	10
9	R	10	9
10		10	10
	E		
11		9	10
12	C	9	10
13		9	9
14	O	10	19
15		9	43
	R		
16		8	38
17	D	11	38
18		9	45
19		10	38
20		10	38
21	18	10	38
22	18	10	35
23	17	9	34
24	16	9	38
25	15	9	38
26	17	8	38
27	16	9	
28	20	8	N O
29	18	8	R E C O R D
30	17	8	
31	18	8	
Mean	17.2a	10.2	22.8b
Runoff in, acre-feet	341	629	1,110

a 16-day period
b 26-day period

Total for period - 2,140 acre-feet

TABLE 9

DAILY MEAN DISCHARGE OF LOWER COLONY DITCH

May 13 to September 26, 1955

In Cubic Feet per Second

Day	May	June	July	August	September
1		16	20	16	8
2	N	17	20	16	7
3	O	17	20	14	7
4		17	20	12	7
5	R	16	18	11	6
	E				
6	C	16	18	8	6
7	O	15	18	7	6
8	R	15	18	10	9
9	D	24	18	9	8
10		27	18	9	7
11		26	18	8	9
12		25	18	8	9
13	20	25	15	8	8
14	20	25	16	9	13
15	20	21	16	7	13
16	19	22	16	7	18
17	20	22	14	9	18
18	23	22	18	8	18
19	23	22	18	8	18
20	23	22	17	9	18
21	23	22	16	8	25
22	23	22	18	8	23
23	22	22	15	7	20
24	22	22	14	7	21
25	23	23	14	8	20
26	20	9	16	7	20
27	20	20	15	8	
28	20	22	19	7	N O
29	20	23	16	7	R E C O R D
30	20	19	16	7	
31	20	—	16	7	
Mean	21[a]	21	17.1	8.8	13.2[b]
Runoff, in acre-feet	795	1,220	1,050	543	678

a 19-day period

b 26-day period

Total for period - 4,290 acre-feet

TABLE 10

COMBINED DAILY MEAN DISCHARGE OF UPPER AND LOWER COLONY DITCHES

May 13 to September 26, 1955

In Cubic Feet per Second

Day	May	June	July	August	September
1	NO	69	57	52	40
2		62	57	52	38
3		62	57	50	38
4	RE	63	57	48	38
5		62	55	46	37
6	CORD	61	55	43	36
7		61	55	38	37
8		58	55	42	41
9		68	55	44	41
10		72	55	43	40
11		72	55	41	41
12		68	52	42	41
13	65	69	49	42	40
14	65	71	52	43	52
15	64	67	52	41	57
16	63	68	52	41	62
17	64	68	50	43	62
18	67	68	54	42	62
19	62	65	54	42	62
20	68	67	53	44	62
21	67	67	52	43	69
22	66	71	52	42	67
23	65	63	51	42	64
24	65	60	50	41	65
25	67	61	50	42	64
26	66	44	52	41	62
27	66	56	51	42	
28	66	58	55	41	NO
29	65	59	52	42	RECORD
30	65	56	52	42	
31	65	--	52	41	
Mean	65[a]	64	53	43	51[b]
Runoff, in acre-feet	2,460	3,780	3,270	2,650	2,610

a 19-day period

b 26-day period

Total for period - 14,770 acre-feet

TABLE 11

DAILY MEAN DISCHARGE OF BUTTE CREEK AT DURHAM BRIDGE

May 17 to September 26, 1955

In Cubic Feet per Second

Day	May	June	July	August	September
1		148	28	5	0
2		118	24	5	0
3		133	28	5	0
4		105	24	5	0
5		80	24	5	0
6	NO	58	16	3	0
7		28	20	3	0
8	NEC	28	20	3	0
9		36	20	3	0
10		36	20	3	0
11	ORD	42	16	3	0
12		36	16	3	0
13		32	12	3	0
14		32	8	3	5
15		28	5	3	29
16		28	5	3	20
17	265	28	5	3	20
18	265	28	5	3	27
19	283	24	5	3	20
20	288	20	5	3	13
21	288	20	5	2	16
22	283	20	5	4	16
23	265	20	5	4	13
24	244	24	5	4	18
25	223	28	5	4	18
26	193	28	5	4	18
27	193	20	5	4	
28	184	20	6	2	
29	166	24	8	1	NO
30	166	28	5	0	RECORD
31	166	—	5	0	
Mean	231[a]	43	11.8	3.0	9.0[b]
Runoff, in acre-feet	6,880	2,580	726	185	462

a 15-day period
b 26-day period

Total for period - 10,830 acre-feet

TABLE 12

DAILY MEAN DISCHARGE OF HAMLIN SLOUGH AT ADAMS RANCH

May 17 to September 8, 1955

In Cubic Feet per Second

Day	May	June	July	August	September
1		13	23	5	2
2	N	13	16	4	4
3	O	13	6	4	4
4		13	7	3	5
5	R	13	6	3	5
	E				
6	C	13	6	3	4
7	O	12	5	3	2
8	R	11	7	3	2
9	D	9	7	4	
10		6	6	3	
11		7	5	4	N
12		23	5	4	O
13		18	4	4	
14		17	5	4	R
15		17	3	4	E
					C
16		25	4	4	O
17	20	25	4	4	R
18	17	19	4	4	D
19	15	25	4	5	
20	13	20	4	4	
21	11	18	4	4	
22	11	12	4	4	
23	17	9	4	4	
24	7	9	4	4	
25	11	7	4	4	
26	19	11	4	4	
27	17	11	4	3	
28	16	7	4	2	
29	16	11	4	2	
30	9	16	4	2	
31	13	--	4	2	
Mean	14.2[a]	14.1	5.6	3.6	3.9[b]
Runoff, in acre-feet	421	839	347	220	56

a 15-day period
b 8-day period

Total for period - 1,883 acre-feet

TABLE 13

COMPARISON OF DELIVERIES OF WATER FROM BUTTE CREEK TO ALLOTMENTS

MAY 1955

In Cubic Feet per Second

Day	Flow at U.S.G.S. station	Total flow above Parrott Ditch	Flow in Hendricks Canal	Hendricks Canal less 5% (mean)	Natural flow of Butte Creek (mean)	Butte Creek below Parrott Dam: Nat. flow allotment (mean)	Butte Creek below Parrott Dam: Flow delivered	Parrott Ditch: Nat. flow allotment (mean)	Parrott Ditch: Total allotment (mean)	Parrott Ditch: Flow delivered	Durham Colony Ditches: Nat. flow allotment (mean)	Durham Colony Ditches: Flow delivered
11	591		89				380			133		
12	577		96				380			134		
13	564	N	95				370			134		65
14	531	O	92	89	380	155	340	144	233	131	51.25	65
15	493		94				330			114		64
16	469	R	96				325			105		63
17	451	E	95				310			101		64
18	451	C	94				310			101		67
19	457	O	91				315			101		62
20	463	R	92				315			102		68
21	469	D	93	89	328	155	320	144	233	101	51.25	67
22	451		92				330			101		66
23	428		92				325			101		65
24	418		92				295			99		65
25	390	379	93				280			99		67
26	380	368	94				270			98		66
27	370	357	95				260			97		66
28	360	342	95	89	256	150	245	106	195	97	51.25	66
29	345	337	95				230			97		65
30	340	322	93				225			97		65
31	335	317	92				220			97		65

TABLE 13 (Continued)

COMPARISON OF DELIVERIES OF WATER FROM BUTTE CREEK TO ALLOTMENTS

JUNE 1955

In Cubic Feet per Second

Day	Flow at U.S.G.S. station	Total flow above Parrott Ditch	Flow in Hendricks Canal	Hendricks Canal less 5% (mean)	Natural flow of Butte Creek (mean)	Butte Creek below Parrott Dam: Nat. flow allotment (mean)	Butte Creek below Parrott Dam: Flow delivered	Parrott Ditch: Nat. flow allotment (mean)	Parrott Ditch: Total allotment (mean)	Parrott Ditch: Flow delivered	Durham Colony Ditches: Nat. flow allotment (mean)	Durham Colony Ditches: Flow delivered
1	315	306	91				210			96		60
2	305	290	87				195			95		62
3	300	294	90				190			94		62
4	290	283	90	86	199	150	180	49	135	103	51.25	63
5	290	283	90				160			123		62
6	281	280	93				135			145		61
7	276	269	94				108			161		61
8	268	258	91				104			154		58
9	263	252	90				114			138		58
10	254	251	93				118			133		68
11	258	247	94	80	163	144	114	19	99	133	51.25	72
12	245	235	74				104			131		72
13	245	230	69				104			126		68
14	240	227	75				104			123		69
15	232	219	75				104			115		71
16	232	222	75				114			108		67
17	218	216	76				108			108		68
18	214	210	74	72	138	119	102	19	91	108	51.25	68
19	209	206	74				98			108		68
20	204	200	76				96			104		65
21	209	198	82				98			100		67
22	214	209	84				110			99		71
23	204	207	83				114			93		63
24	204	200	76				106			94		60
25	196	196	75	72	119	100	104	19	91	92	51.25	61
26	196	182	73				98			94		44
27	180	174	72				93			81		56
28	180	174	69				93			81		58
29	188	183	68				99			84		59
30	180	172	66				99			75		56

TABLE 13 (Continued)

COMPARISON OF DELIVERIES OF WATER FROM BUTTE CREEK TO ALLOTMENTS

JULY 1955

In Cubic Feet per Second

Day	Flow at U.S.G.S. station	Total flow above Parrott Ditch	Flow in Hendricks Canal	Hendricks Canal less 5% (mean)	Natural flow of Butte Creek (mean)	Butte Creek below Parrott Dam: Nat. flow allotment (mean)	Butte Creek below Parrott Dam: Flow delivered	Parrott Ditch: Nat. flow allotment (mean)	Parrott Ditch: Total allotment (mean)	Parrott Ditch: Flow delivered	Durham Colony Ditches: Nat. flow allotment (mean)	Durham Colony Ditches: Flow delivered
1	180	170	64				99			71		57
2	168	161	61	60	106	87	91	19	79	70	51.25	57
3	168	158	61				91			67		57
4	168	159	61				91			68		57
5	168	158	61				89			69		55
6	164	156	63				87			69		55
7	168	153	63				78			75		55
8	176	160	63				81			79		55
9	153	144	63	59	91	72	81	19	78	63	51.25	55
10	153	142	61				80			62		55
11	160	149	61				80			69		55
12	153	150	62				78			72		52
13	157	145	63				67			78		49
14	160	156	63				63			88		52
15	143	134	63				56			78		52
16	160	147	63	60	79	62	59	17	77	88	46	52
17	146	134	62				60			74		50
18	143	130	63				60			70		54
19	146	133	63				59			74		54
20	160	144	63				60			84		53
21	143	127	63				60			67		52
22	146	136	61				59			77		52
23	146	132	61	58	74	58	57	16	74	75	43	51
24	143	131	61				59			72		50
25	143	130	61				59			71		50
26	143	130	61				59			71		52
27	143	135	61				59			76		51
28	143	133	61				60			73		55
29	140	128	61				60			68		52
30	140	132	60	58	73	57	61	16	74	71	43	52
31	136	130	60				61			69		52

TABLE 13 (Continued)

COMPARISON OF DELIVERIES OF WATER FROM BUTTE CREEK TO ALLOTMENTS

AUGUST 1955

In Cubic Feet per Second

Day	Flow at U.S.G.S. station	Total flow above Parrott Ditch	Flow in Hendricks Canal	Hendricks Canal less 5% (mean)	Natural flow of Butte Creek (mean)	Butte Creek below Parrott Dam: Nat. flow allotment (mean)	Butte Creek below Parrott Dam: Flow delivered	Parrott Ditch: Nat. flow allotment (mean)	Parrott Ditch: Total allotment (mean)	Parrott Ditch: Flow delivered	Durham Colony Ditches: Nat. flow allotment (mean)	Durham Colony Ditches: Flow delivered
1	133	127	59				61			66		52
2	136	128	63				61			67		52
3	136	123	63				60			63		50
4	140	131	62				56			75		48
5	129	123	57				56			67		46
6	123	117	49	49	70	55	56	15	64	61	41	43
7	123	116	46				49			67		38
8	117	111	43				50			61		42
9	117	115	45				55			60		44
10	120	112	46				53			59		43
11	120	111	46				52			59		41
12	120	112	46				52			60		42
13	117	109	47	49	62	49	50	13	62	59	36	42
14	120	111	55				52			59		43
15	120	109	61				52			57		41
16	133	116	61				53			63		41
17	146	126	61				53			73		43
18	133	123	61				52			71		42
19	136	116	59				53			73		42
20	136	124	59	56	65	51	53	14	70	71	38	44
21	129	118	59				53			65		43
22	133	121	58				53			68		42
23	123	114	52				53			61		42
24	126	116	61				53			63		41
25	133	122	63				53			69		42
26	140	127	61				52			75	[illegible]	41
27	133	126	61	58	65	51	52	14	72	74	38	42
28	133	119	61				52			67		41
29	140	127	61				52			75		42
30	133	125	61				52			73		42
31	129	115	61				50			65		41

TABLE 13 (Continued)

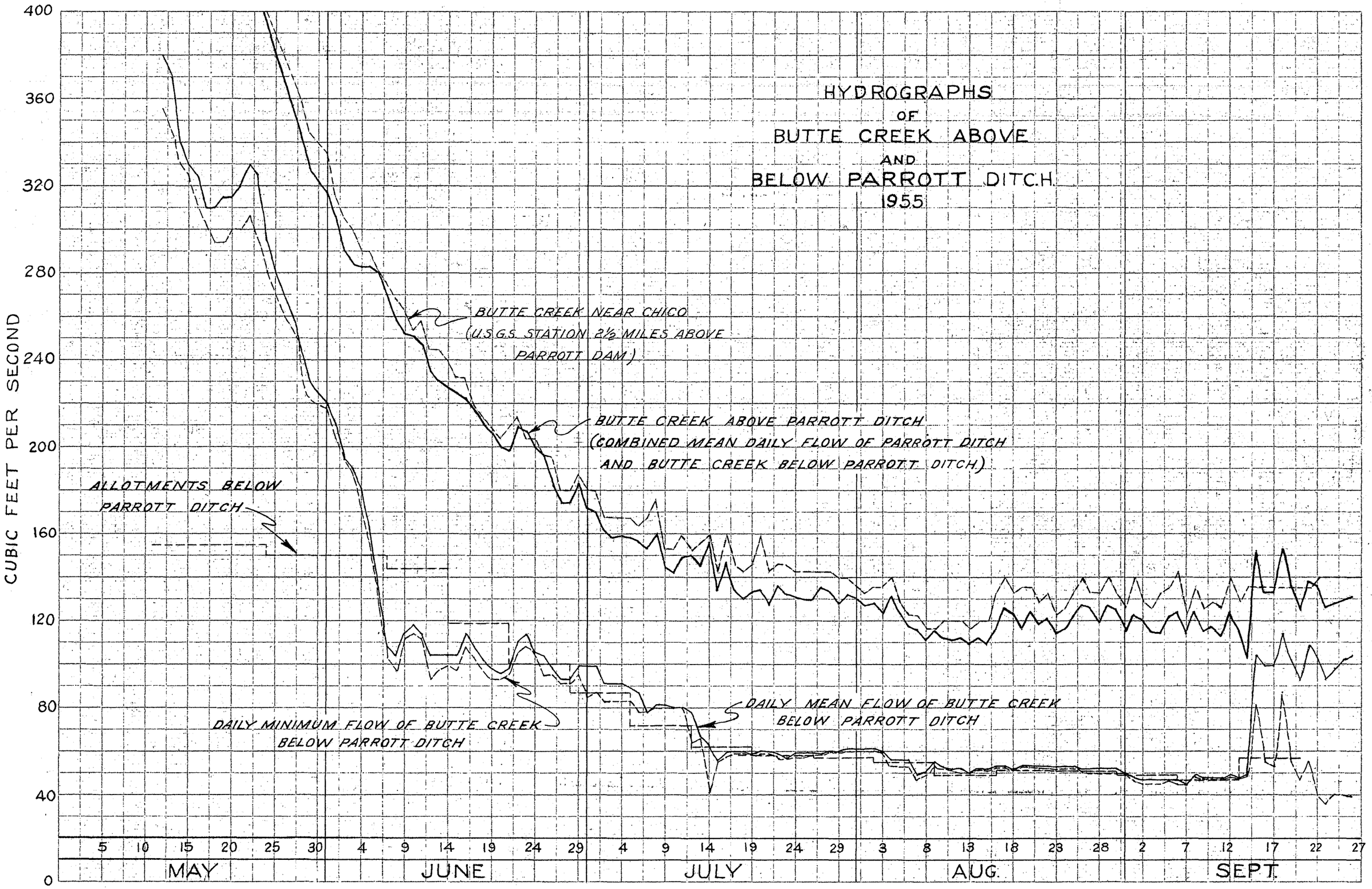
COMPARISON OF DELIVERIES OF WATER FROM BUTTE CREEK TO ALLOTMENTS

SEPTEMBER 1955

In Cubic Feet per Second

Day	Flow at U.S.G.S. station	Total flow above Parrott Ditch	Flow in Hendricks Canal	Hendricks Canal less 5% (mean)	Natural flow of Butte Creek (mean)	Butte Creek below Parrott Dam: Nat. flow allotment (mean)	Butte Creek below Parrott Dam: Flow delivered	Parrott Ditch: Nat. flow allotment (mean)	Parrott Ditch: Total allotment (mean)	Parrott Ditch: Flow delivered	Durham Colony Ditches: Nat. flow allotment (mean)	Durham Colony Ditches: Flow delivered
1	140	123	61				48			75		40
2	129	120	61				47			73		38
3	126	115	61	57	62	49	47	13	70	68	36	38
4	133	114	59				47			67		38
5	136	122	59				47			75		37
6	143	129	59				47			77		36
7	123	114	59				45			69		37
8	136	124	59				49			75		41
9	126	115	61				48			67		41
10	129	117	61	57	60	47	48	13	70	69	35	40
11	126	113	61				48			65		41
12	140	124	60				49			75		41
13	129	115	60				48			67		40
14	136	103	71				49			54		52
15	135	152	68				104			48		57
16	135	133	61				99			34		62
17	135	133	63	61	73	57	99	16	77	34	43	62
18	135	153	68				114			39		62
19	135	136	61				102			34		62
20	135	125	59				93			32		62
21	135	138	59				108			30		69
22	140	138	58				103			33		67
23	140	126	59				93			33		64
24	140	128	59	56	75	58	98	17	73	30	44	65
25	140	129	59				102			27	[illegible]	64
26	140	131	59				104			27		62
27			58									

PLATE I



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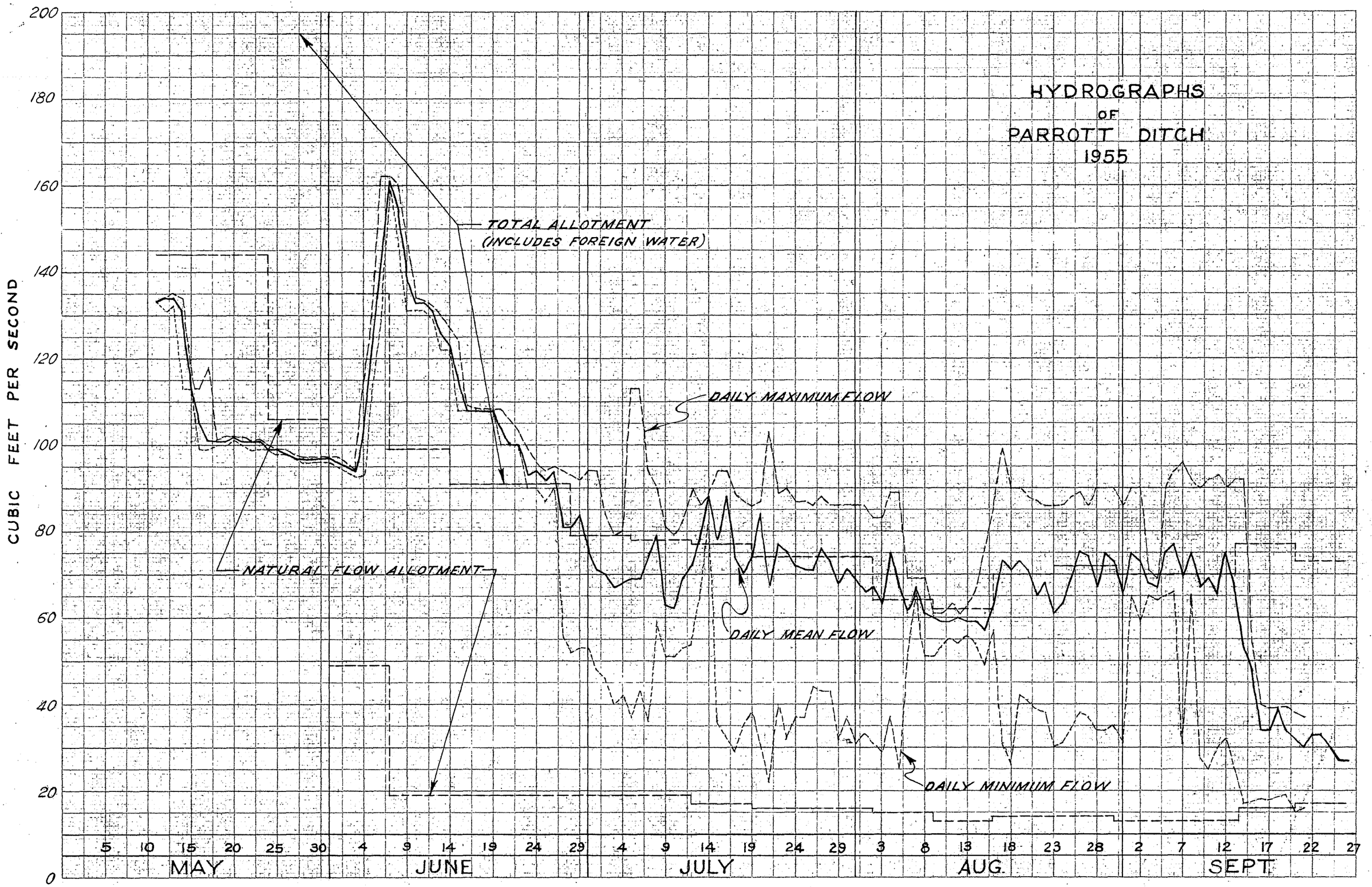

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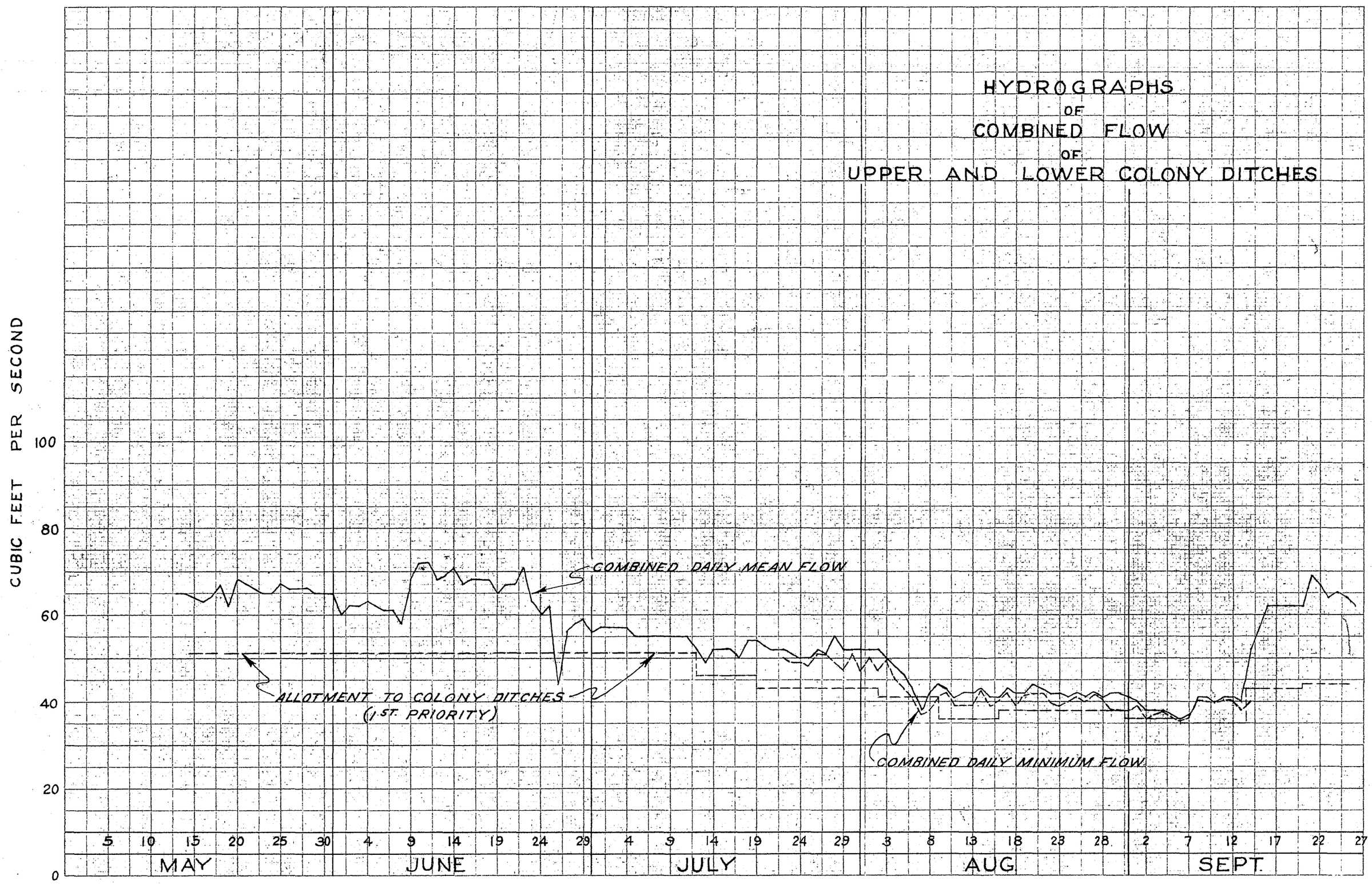

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