

1960

PRECIPITATION DATA -- DIVISION NO. 1

Station	Av. Ann.	Oct. 59	Nov. 59	Dec. 59	Jan. 60	Feb. 60	Mar. 60	Apr. 60	May 60	June 60	July 60	Aug. 60	Sept. 60	Total Oct. 59-Sept. 60
Boulder	18.29	2.18	0.72	0.11	0.54	1.04	0.72	1.90	3.79	1.03	1.28	0.41	0.67	14.39
Denver	14.20	2.46	0.40	0.26	0.77	1.66	0.89	2.56	2.27	0.63	1.31	0.06	0.38	13.65
Ft. Collins	14.74	2.71	0.04	T	0.37	0.53	0.84	0.88	2.50	0.72	0.80	0.03	0.39	9.81
Ft. Lupton	12.51	2.21	0.03	0.06	0.82	1.10	0.55	1.42	3.20	0.68	0.63	0.15	0.36	11.21
Ft. Morgan	13.43	2.08	T	0.04	0.61	0.38	0.23	0.85	2.23	0.82	1.49	0.21	1.11	10.05
Greeley	12.30	2.41	T	0.01	0.30	0.38	0.37	1.60	1.64	0.65	1.35	0.16	0.92	9.79
Longmont	13.66	2.41	0.02	0.02	0.27	0.83	0.58	1.09	3.92	0.66	0.44	0.25	0.48	10.97
Julesburg	16.51	1.25	0.02	0	1.27	1.14	0.49	N.R.	3.85	2.49	1.22	1.21	0.43	13.37
Sterling	14.78	1.20	T	T	0.51	0.58	0.17	0.54	2.21	1.95	3.64	0.25	0.63	11.68

ACRE FEET IN STORAGE FIRST OF MONTH
DIVISION NO. 1 1960

Dist.	Use	June '60	July '60	Aug. '60	Sept. '60	Oct. '60	Nov. '60
1	Dist. Irrig.	137,272	120,651	71,660	35,001	12,102	34,015
2	Dist. Irrig.	74,495	63,757	46,930	13,880	9,368	16,133
3	Dist. Irrig.	142,692	147,213	111,854	62,220	53,627	58,149
	Big Thompson	140,805	138,819	120,171	74,435	59,380	64,923
	Municipal	6,765	6,660	6,554	5,403	4,075	4,132
	Total	290,262	292,692	238,579	142,058	117,082	127,204
4	Dist. Irrig.	95,098	91,540	71,379	58,515	59,310	60,424
	Big Thompson	80,170	75,087	60,293	33,930	20,370	29,911
	Total	175,268	166,627	131,672	92,445	79,680	90,335
5	Dist. Irrig.	35,911	32,131	27,847	14,916	15,201	16,031
6	Dist. Irrig.	31,163	32,644	26,700	18,585	14,130	14,670
	Big Thompson	6,829	9,744	8,580	4,028	9,230	9,812
	Municipal	41,318	49,088	48,817	46,265	42,357	35,696
	Total	79,310	91,476	84,097	68,878	65,717	60,178
7	Dist. Irrig.	19,479	17,406	12,220	4,303	1,609	1,484
	Municipal	10,554	11,795	9,544	6,465	6,128	9,057
	Total	30,033	29,201	21,764	10,768	7,737	10,541
8	Municipal	17,707	16,986	16,561	15,390	9,687	6,325
	Recreation	15,467	15,063	14,741	14,010	13,598	13,540
	Total	33,174	32,049	31,302	29,400	23,285	19,865
9	Dist. Irrig.	10,026	9,031	6,665	5,384	4,586	4,594
23	Dist. Irrig.	3,200(E.)	4,515	3,550	2,460	2,460(E.)	2,460(E.)
	Municipal	192,990	192,587	186,788	175,352	171,437	171,255
	Total	196,190	197,102	190,338	177,812	173,897	173,715
64	Dist. Irrig.	125,152	118,745	76,735	31,536	10,327	21,866

Totals:

Irrigation	674,488	637,633	455,540	246,800	182,720	229,826
Big Thompson	227,804	223,650	189,044	112,393	88,980	104,646
Municipal	269,334	277,116	268,264	248,875	233,684	226,465
Recreation	15,467	15,063	14,741	14,010	13,598	13,540
	1,187,093	1,153,462	927,589	622,078	518,982	574,477

page 59

ACRE FEET IN STORAGE FIRST OF MONTH
DIVISION NO. 1 1960

Dist.	Use	Dec. '59	Jan. '60	Feb. '60	Mar. '60	Apr. '60	May '60
1	Dist. Irrig.	75,710	102,182	107,808	119,085	128,931	132,327
2	Dist. Irrig.	44,538	56,419	63,474	63,474	69,267	71,757
3	Dist. Irrig.	114,095	120,604	123,320	126,929	135,212	141,613
	Big Thompson	67,486	78,767	93,237	106,408	118,024	127,412
	Municipal	6,474	6,510	6,517	6,517	6,475	6,628
	Total	188,055	205,881	223,074	239,854	259,711	275,653
4	Dist. Irrig.	80,641	80,024	80,400	82,037	85,074	86,566
	Big. Thompson	38,778	55,484	69,546	76,905	83,364	84,840
	Total	119,419	135,508	149,946	158,942	168,438	171,406
5	Dist. Irrig.	26,266	28,360	28,429	29,922	31,661	34,244
6	Dist. Irrig.	21,369	20,351	20,403	20,491	20,843	26,775
	Big Thompson	1,664	2,136	2,136	2,136	2,379	2,435
	Municipal	37,044	33,505	29,491	27,036	28,327	23,017
	Total	60,077	55,992	52,030	49,663	51,549	52,227
7	Dist. Irrig.	9,366	13,212	13,515	15,961	17,802	6,304
	Municipal	7,877	9,544	10,614	9,796	7,078	10,762
	Total	17,243	22,756	24,129	25,757	24,880	17,066
8	Municipal	17,089	26,124	16,487	16,269	16,585	16,902
	Recreation	9,009	9,082	9,129	9,283	11,549	16,082
	Total	26,098	35,206	25,616	25,552	28,134	32,984
9	Dist. Irrig.	6,096	6,901	7,521	7,766	8,027	10,026
23	Dist. Irrig.	2,000(Est.)	2,000(E.)	2,000(E.)	2,000(E.)	2,375(E.)	2,500
	Municipal	171,314	172,822	173,611	174,855	189,383	192,848
	Total	173,314	174,822	175,611	176,855	191,758	195,348
64	Dist. Irrig.	51,711	61,178	75,311	94,741	119,748	121,006

Totals:

Irrigation	431,792	491,231	522,181	562,406	618,940	633,118
Big Thompson	107,928	136,387	164,919	185,449	203,767	214,687
Municipal	239,798	248,505	236,720	234,473	247,848	250,157
Recreation	9,009	9,082	9,129	9,283	11,549	16,082
	788,527	885,205	932,949	991,611	1,082,104	1,114,044

page 58

TRANS-MOUNTAIN DIVERSIONS

Name of Diversion	From Dist.	To Dist.	Source of Supply	Ac. Ft. Diverted	First Day	Last Day
*Boreas Pass	36	8	Blue River	181	6-2	7-31 *
Hoosier Pass	36	10	Blue River	8,220	5-10	8-10
Berthoud Pass	51	7	Colorado River	973	6-1	8-14
Moffat Tunnel	51	6-7-8	Colorado River	56,290	10-1-1959	9-30-1960
Williams Fork T.	51	6-7-8	Colorado River	(Incl. in Moffat T.)		
Adams Tunnel	51	1-6	Colorado River	122,820	10-1-1959	9-30-1960
Eureka Ditch	51	4	Colorado River	68		
Grand River D.	51	3	Colorado River	23,010	5-16	9-3
Cameron Pass D.	47	3	Michigan River	156	6-16	7-1
Michigan Ditch	47	3	Michigan River	1,470	6-4	7-1
Wilson Supply D.	48	3	Sand Creek	3,190	4-25	7-15
Deadman Ditch	48	3	Laramie River	1,390	5-16	7-14
Laramie Poudre T.	48	3	Laramie River	15,980	4-27	7-15
Skyline Ditch	48	3	Laramie River	2,560	6-5	7-3
Columbine Ditch	48	3	Laramie River	0		
Bob Creek Ditch	48	3	Laramie River	0		
Lost Lake T.	48	3	Laramie River	0		

Total Diverted from Colorado River . . .	206,041
" " " Blue River	8,401
" " " Michigan River	1,626
" " " Sand Creek	3,190
" " " Laramie River	19,930
	<u>239,188</u>

* Diversions continued after this date - Too small to measure.

P 104

WATER IN STORAGE SOUTH PLATTE RIVER SYSTEM

Irrigation Only -- Figures in Acre Feet

<u>Year</u>	<u>May 1</u>	<u>November 1</u>	<u>May 1 % of Normal</u>	<u>Nov. 1 % of Normal</u>
1938	314,019	345,829	64	176
1939	579,578	41,842	117	21
1940	242,892	45,075	49	22
1941	311,425	155,188	63	79
1942	533,002	350,255	108	179
1943	628,397	161,921	127	88
1944	563,588	132,258	114	68
1945	456,907	348,079	97	178
1946	509,884	162,197	103	88
1947	522,501	307,760	106	157
1948	598,680	151,688	121	78
1949	435,006	259,855	88	132
1950	507,847	117,058	103	60
1951	404,734	286,460	82	141
1952	674,975	244,932	136	125
1953	637,992	198,884	129	101
1954	541,842	90,554	110	49
1955	413,533	118,939	84	60
1956	295,334	44,039	60	22
1957	362,082	469,742	74	240
1958	659,070	312,026	136	151
1959	651,021	341,148	132	160
1960	633,118	229,826	128	108

1960 SNOW REPORT -- May 1st

	<u>Water Content</u>		<u>Per Cent of Average</u>	
	<u>1960</u>	<u>Avg.</u>	<u>Snow</u>	<u>Drainage</u>
			<u>Course</u>	<u>Basin</u>
<u>Upper South Platte</u>				
Hoosier Pass	11.4	11.9	96	68
Jefferson Creek	3.8	8.0	48	
Geneva Park	1.1	1.8	61	
<u>Clear Creek</u>				
Loveland Pass	12.6	14.7	86	95
Grizzly Peak	18.2	20.1	91	
Empire	5.9	5.6	105	
Berthoud Falls	8.8	12.8	69	
Clear Creek	22.0	18.0	122	
<u>Boulder Creek</u>				
University Camp	17.1	25.1	68	68
<u>Saint Vrain</u>				
Wild Basin	9.6	15.2	63	30
Copeland Lake	0.0	3.2	0	
Ward	1.7	6.3	27	
<u>Big Thompson</u>				
Lake Irene	23.0	24.3	95	73
Hidden Valley	10.8	13.4	81	
Deer Ridge	0.9	3.3	27	
Long's Peak	11.9	13.6	88	
<u>Poudre</u>				
Cameron Pass	26.0	25.6	102	46
Chambers Lake	0.0	4.9	0	
Big South	0.0	0.9	0	
Deadman Hill	15.5	17.7	88	
Lake Irene	23.0	24.3	95	
Hour Glass Lake	1.8	7.8	23	
Red Feather	0.0	5.3	0	
Lost Lake	5.5	9.6	57	
OVERALL AVERAGE SOUTH PLATTE DRAINAGE BASIN 63%				
<u>Laramie River</u>				
Chambers Lake	0.0	4.9	0	44
Deadman Hill	15.5	17.7	88	
McIntyre	3.3	9.9	33	
Roach	11.3	20.9	54	
<u>North Platte</u>				
Cameron Pass	26.0	25.6	102	66
Park View	2.1	6.5	32	
Columbine Lodge	13.7	21.3	64	
Willow Creek Pass	7.6	11.5	66	

Page 56

J. E. Whitten - Annual Report

CONCLUSION - Continued

Tabulations of the Water Commissioners' Annual Reports, Amounts of Water in Storage, Diversions by Trans-Mountain Projects, Amounts Diverted by Individual Users from the Laramie River, and other pertinent data, accompany and are a part of this report.

Respectfully submitted,



Division Engineer
Irrigation Division No. 1

MEASURING DEVICES

The established policy of the State Engineer to improve the facilities for measuring water diverted from the streams has continued. Additional measuring flumes have been installed in South Park this past season and will continue in the future. Some replacements have been made in ditches on the Laramie River. The need for headgate installations and measuring flumes on ditches of the South Fork of the Republican River was established and complied with by the water users as requested.

CHERRY CREEK RESERVOIR

An agreement was made with the Corps of Army Engineers to increase the capacity from 10,000 acre feet to 15,000 acre feet for recreational purposes, providing the need for this water for more beneficial purposes did not arise. On March 26th, ~~a release of approximately 3,000 acre feet, which was over the allowable 15,000 acre feet, was made.~~ From a local standpoint, this release would have been more beneficial at a later period, but this was not in agreement with the Corps of Engineers.

CONCLUSION

The administration of the Colorado-Big Thompson Project waters, and the quantities delivered to the several systems and the problems encountered, are contained in the report of Special Deputy State Engineer, C. E. Schnurr.

COMPACTS AND U. S. SUPREME COURT RULINGS

The administration of the waters of the Laramie River was carried on in compliance with the ruling of the U. S. Supreme Court. No complaints were received from the water officials of Wyoming on this, or on the Sand Creek Agreement. The provisions of the South Platte River Compact were carried on without difficulty.

STOCK WATER DAMS

Stock Water Dams are still being built at a rapid rate. Although they are built on normally dry water courses, they undoubtedly affect the flow of the various streams; however, no specific complaints were received this season.

PUMPING FROM UNDERGROUND SUPPLIES

Development of sub#surface water for irrigation and domestic uses continues at a fair rate. It is recommended that a log or record of the time and rate of flow of pumping facilities would be very useful in the study of return flow and recharge of water tables.

URBAN DEVELOPMENT

The development of urban areas continues at a remarkable rate and appears it will do so in the future. Some areas are faced with a water shortage at times, but this is usually due to the lack of storage facilities.

Considerable concern arises as to the quality of water in the stream due to the detergents and other undesirable elements. A proposal for a Master sewage plant has been made in the past. If this were to develop, it would undoubtedly alleviate the problem in a large area.

J. E. Whitten - Annual Report

Continued - Water Supply

Supplemental water was not needed until mid-July and this was possible through the availability of the reservoirs and the trans-^{mountain} diversions. This proves the definite need for this type of facility for the agricultural development and economy of farming areas.

CROPS

Crops were probably above average. This was especially true of sugar beets where the yield and sugar content were good and the price was stable. Meadow hay appeared to be good as were dry land crops. Considerable hail damage was done to crops around Brush, Colorado, and also some areas between Wray and Idalia in eastern Colorado.

TRANS-MOUNTAIN DIVERSIONS

The Colorado-Big Thompson Project is a year around operation, and the Moffat Tunnel is also being operated the year around, but on a small scale.

RESERVOIR OUTLOOK

There appears to be definite need for additional storage facilities, especially in the higher elevations where early run-off could be held and released at more beneficial periods.

INSPECTION OF RESERVOIR DAMS

Reservoir dams were inspected at every opportunity, and since July 1st, this policy has been increased by the capabilities of Mr. L. Reese Brooks as Construction Engineer.

RESERVOIR STORAGE

Reservoir storage reached its maximum June 1st and the minimum occurred October 1st. The following is a tabulation of the respective months:

	<u>June 1st</u>	<u>October 1st</u>
Irrigation	674,488	182,720
Big Thompson	227,804	88,980
Municipal	269,334	233,684
Recreation	15,467	13,598
Total	1,187,093	518,982

The maximum was 18,472 acre feet higher than a year ago, while the minimum was 2,653 acre feet less than a year ago. The first decree of Barr Lake was supplied somewhat ahead of the usual time in 1960.

PRECIPITATION

Precipitation at Denver was slightly below normal, as was other areas in the Valley below Denver where deficiencies of three to four inches were recorded. Precipitation during the summer months was short and, when occurring, was generally local.

WATER SUPPLY

The water call was approximately two weeks later than usual after the irrigation season started. A call was made July 20th to supply 1871 water in District No. 2, which was later than normal. However, on August 22nd, a call was made to supply 1865 water in District No. 2 and on September 2nd, a call for 1864 water was made in this same district. This call was on for four days. The most senior call to supply 1881 water was made August 2nd in District No. 1. There was extreme difficulty to supply 1862 and 1863 water in District No. 8 around the latter part of August and the first part of September.

1960
ANNUAL REPORT
Irrigation Division No. 1
M. W. Mattern, Division Engineer

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Mr. J. E. Whitten
State Engineer
State of Colorado
232 State Services Building
Denver, Colorado

Dear Mr. Whitten:

I hereby submit the Annual Report of the Office of Division Engineer, Irrigation Division No. 1, for the year ending October 31, 1960.

SNOW PACK

Snow reports May 1st indicated normal to less than normal run-off, water content ranging from 122% in the Clear Creek area to "0" in portions of the St. Vrain and Cache la Poudre drainages. The over-all average for the South Platte and tributaries was only 63%. Cool weather did restrain any sudden run-off, which was undoubtedly beneficial even though considerable water was lost through evaporation. It is believed that more snow courses are needed whereby our knowledge of run-off could be somewhat more accurate and beneficial to the many interests who are desirous of this information. Also photos, either aerial or ground, of the general area at regular intervals over a period of years would be highly beneficial in the future.

DIVERSIONS FROM LARAMIE RIVER AND TRIBUTARIES

Recapitulation - Totals for Season 1960

Name of Ditch	Amount Diverted Day Second Feet Before July 31st	Amount Diverted Day Second Feet After July 31st
Bliler - Boswell Stuck Warren	821.87	0
Mansfield & Enlg. Mansfield No. 2	1,286.06	74.78
Forrester No. 1 Grace Cr. & Enlg.	1,021.47	0
Detro No. 1 Detro No. 2 Lower La Garde	419.54	0
Jimmy Cr. (Net) La Garde minus Lower L. G. La Garde No. 1 Schnitger	1,058.38	16.35
Yelton	397.66	0
Homestead No. 1 (Big Jenkins) Homestead No. 2 (Little Jenkins) Pache Nellie	811.48	23.60
Martin No. 1 Martin No. 2 & Enlg. Wright	2,486.35	157.16
Brown - Nunn Cr. Cabin Davy Forrester - Brown Cr. Stubb	888.55	4.89
Link No. 1 Link No. 2 Smith - Brown Cr. Upper Hills	1,097.06	34.44
Brown - Porter Cr.	50.60	12.05
Lamb	744.50	102.37

LARAMIE RIVER DIVERSIONS - Continued

Name of Ditch	Amount Diverted Day Second Feet Before July 31st	Amount Diverted Day Second Feet After July 31st
British Cr.		
Comet		
Homestead - McIntyre Cr.		
Lower Grant		
Upper Grant		
Stuart No. 1		
Stuart No. 2	643.35	16.38
Brinker		
McIntyre		
Pine Creek & Enlg.	469.95	17.81
Glendevey		
Talmadge	85.79	46.49
Lower Jim		
Trollope		
Ward No. 1		
Ward No. 2	139.26	0
Jim minus Lower Jim		
Jim No. 2		
Lone Tree		
Ollie		
Timothy	926.71	108.93
TOTAL MEADOW LAND DIVERSION	13,348.58	615.25

Summary through July 31 - Allotment 27,700 A.F.
 Total Diverted 13,348.58 D.S.F. - 26,477 A.F.
 Total Unused Balance 1,223 A.F.

Summary after July 31 - Allotment
 Total Diverted 615.25 D.S.F. - 1,221 A.F.
 Total Unused Balance 579 A.F.

SUMMARY OF WATER COMMISSIONERS ANNUAL REPORTS

1960

Acre Feet Water Used

Dist. No.	No. Ditches & Reservoirs	Direct Flow	Reservoir	Big Thompson Project	Other	Total	Acres Irrigated	First Day Used	Last Day Used
1	39	193,691	90,507	2,154		286,352	137,026	4-17	10-31
2	71	302,338	81,912	9,342	4,804	398,496	130,840	4-16	10-29
3	70	277,584	46,854	98,167	32,902	455,507	266,080	11-1-59	10-31-60
4	64	119,495	72,221	66,317		322,923	149,625	4-1	10-31
5	101	81,534	30,617	25,908		138,059	111,960	5-16	10-30
6	87	117,428	29,425	16,351		163,204	167,391	11-1-59	10-31
7	141	120,614	21,609			142,223	99,095	3-19	11-5
8	71	124,311	20,420		3,265	147,996	21,743	11-1-59	10-31
9	40	18,935	5,424			24,359	15,471	4-10	10-31
23	128	86,179	1,810			87,989	40,906	4-4	8-15
64	20	149,720	120,574			270,294	117,708	11-1-59	10-31
65	23	21,666				21,666	8,030	4-10	10-27
47	Est.	350,000				350,000	128,000		
48	57	27,698				27,698	4,845	5-1	10-30
49 (Div. 2)	9 921	4,994 1,996,187	521,373	218,239	40,971	4,994 2,841,760	2,196 1,400,916	5-26	10-31

npw page 63