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**OFFICE OF THE STATE ENGINEER**

232 STATE SERVICES BUILDING

1525 SHERMAN STREET

DENVER 3, COLORADO

Durango, Colorado

December 20-1960

Mr. J. E. Whitten  
State Engineer  
Denver, Colo.

Dear Sir:

Herewith is Tabulated Statement of Water Commissioners  
Annual Ditch and Reservoir Reports for 1960.

This is to complete the <sup>1960</sup> annual report for Irrigation  
Division 7.

Very truly yours,

*J. R. Williams*  
Division Engineer.



Preliminary Report For Irrigation Division No. 7  
1960

Nov. 22-1960

*77 1/2 inches by subm., etc*  
Water Supply.

After a long, cold winter and what seemed like an extra amount of snowfall, it was determined on April 1st, by water content of the accumulated snow on the water sheds that the water content was just slightly above average. The determinations on the Dolores River and Animas River were:

Dolores River - April 1st.

Snow Course	Water Content (Ins.)	Average	No. Yrs.	Percent of Average
Lizard Head	17.8	17.6	23	
Rico	9.2	7.7	"	
Trout Lake	17.0	13.5	9	
Average	13.7	12.9		111
<u>May 1st.</u>				
Lizard Head	14.3	12.9		
Rico	0.0	1.3		
Trout Lake	12.2	9.6		
Average	8.8	9.0		110

Animas River - April 1

Cascade	13.0	12.1	24	
Spud Mtn.	25.8	24.6	9	
Molas	14.3	13.9	9	
Howardsville	14.8	12.6	9	
Mineral Creek	18.1	17.5	9	
Red Mtn. Pass	36.3	33.3	9	
Average	20.4	19.0		107
<u>May 1st.</u>				
<u>Animas River - May 1</u>				
Cascade	3.0	2.9		
Spud Mtn.	20.8	25.8		
Molas Lake	5.0	10.5		
Howardsville	9.9	6.3		
Mineral Creek	12.1	11.7		
Red Mtn. Pass	33.5	29.7		
Average	14.0	15.0		93

Precipitation For Seasonal Year at Durango

Month

: Oct. : Nov. : Dec. : Jan. : Feb. : Mar. : Apr. : May : June : July : Aug. : Sept.

*Actual*  
In<sup>ches</sup>: 4.58 : 0.53 : 3.82 : 1.82 : 1.77 : 1.06 : 1.34 : 0.72 : 0.91 : 1.03 : 0.48 : 1.40 :

Dep.: 2.98 : -.39 : 2.19 : -.40 : .49 : -.45 : -.09 : -.46 : .00 : -.80 : -1.87 : -.48 :

Acc.  
Dep.: 2.98 2.59 4.78 4.38 4.87 4.42 4.33 3.87 3.87 3.07 1.20 0.72

Total for year was 19.46 ins. which <sup>was</sup> 0.72 ins. above average for the long record. This was about three percent above average.

The long period of snow measurements now makes it possible to make rather accurate stream flow forecasts. The forecasts and preliminary estimates of runoff follow.

*Units of 1,000 A.F.*

Stream	Forecast in Acre Feet (April-September)				Average Runoff	1960 % of Average
	April 1	May 1	Runoff	Percent		
Animas at Durango	475	475	455	96	484	94
Los Pinos (Bayfield)	220	220	203	92	223	91
Florida near Durango	62	62	59.6	96	65	92
La Plata-Hesperus	28	28	33.7	120	30.3	111
Dolores-Dolores	279	279	261	94	292	89

The forecasts are based on average precipitation during the spring and summer months. The lack of adequate or normal rainfall during July, August, and September probably caused the estimates to be higher than the actual runoff.

Stream Flow by Months in Acre Feet and Relation to Average.

Animas River at Durango.

*Units of 1,000 A.F.*

Month and Season Totals									
1960	April	May	June	Total 3 Mos.	July	Aug.	Sept.	Total 6 Mos.	
1960	83.2	117.3	168.5	369.0	51.0	19.0	15.7	454.7	
Mean	1937-59	49.9	140.4	169.7	360.0	69.4	31.4	22.8	483.6
1960 % of Mean	167	84	99	102	73	60	69	94	

Los Pinos

*Units of 1,000 A.F.*

1960	36.2	61.7	73.9	171.8	18.8	6.7	5.4	202.7	
Mean	1937-59	21.6	69.0	74.6	165.2	32.0	14.6	11.4	223.2
1960 % of Mean	167	90	99	104	59	46	47	91	

Florida

*Units of 1,000 A.F.*

1960	13.4	20.2	21.6	55.2	3.3	0.7	0.4	59.6	
Mean	1928-59	7.4	21.1	22.6	51.1	6.5	3.9	3.5	65.0
1960 % of Mean	182	96	95	108	51	18	11	92	

Stream Flow by Months in Acre Feet and Relation to Average.

La Plata at Hesperus

*units of 1000 A.F.*

Month and Season Totals

	April	May	June	Total 3 Mos.	July	Aug.	Sept.	Total 6 Mos.
1960	10.1	11.1	10.0	31.2	11.7	0.6	0.3	33.7
Mean								
1928-59	5.1	11.0	8.9	25.0	2.6	1.6	1.1	30.3
1960 % of Mean	195	101	113	124	63	37	28	111

Dolores-Dolores

*units of 1000 A.F.*

1960	63.0	87.1	83.5	233.6	15.0	8.2	4.2	261
Mean								
1937-59	46.3	109.2	87.2	242.7	26.3	13.8	9.0	292
1960 % of Mean	136	80	95	96	57	59	46	89

Use of Water.

Tabulation of Use of Water From Major Reservoirs

Name of Reservoir	Capacity: Ac. Ft.	Max. Amt. Stored	Percent of Capacity Stored	Amount Used	Amount In Storage Nov. 1	No. Acres Irr'gtd
Vallecito	126,280	110,730	89	74,480	36,290	42,400
Jackson Gulch	10,000	9,980	100	6,020	3,150	5,910
Summit	4,800	4,940	100	7,020	170	5,000
Ground Hog	21,710	12,150	56	8,380	3,740	35,000
Narraguinepp	19,050	17,900	100	15,720	2,000	
Red Mesa Ward	1,200	1,200	100	1,000	50	580
Total	183,040	156,900	86	112,620	45,400	88,890
Amt's. in 1959	183,040	103,220	56	81,720	22,890	91,000
Inc. of 1960 vs. 1959		53,680		30,900	22,510	Min. 2,110

The Vallecito Reservoir could have been filled to capacity but operation program did not justify it. The change in acres irrigated is due to a correction of acreage under Spring Cr. and Pine River Canal. Total number of acres are those paying for water under the Pine River Project as furnished by the Bureau of Reclamation.

The Water Commissioners' records of ditch diversions are not all complete. Most are being copied and will be ready to tabulate early in December.

The water supply in streams was about 170 percent of average in April, which permitted storage in reservoirs. Flow was about average during May and June and was adequate for all irrigation requirements. Flow dropped rapidly during July, August, and September. This caused heavy use of reservoir water where the same was available. Minimum flow became about like it was in 1956. Areas without supplemental storage water suffered for lack of water in pastures which dried up. Wells remained productive because of the heavy charge of underground water from the heavy precipitation during the fall of 1959 and winter of 1960.

Crops. Some farmers claimed that crops were no better than in 1959 but that was due to too heavy use of water early and cold weather. Crops were definitely good in general. The late summer drought caused lack of pasture and late hay crops in the La Plata, Florida, and San Juan areas.

Dams. The Florida Project now has authorization for construction. Property owners are voting on this date in the Florida Conservancy District on whether or not to authorize the directors to accept the Bureau of Reclamation proposal for repayment of about sixteen percent of the cost. Estimated total cost is \$ 10,900,000 of which \$9,600,000 is for dam construction and \$ 1,323,000 for canal improvement. This is called the Lemon Dam and is located on the Florida River about twenty miles from Durango and above all irrigated areas on the stream. Capacity, to be 40,300 acre feet, of which 39,000 will be active or usable storage. Cost to farmers is \$ 1.25 per acre foot plus operation and maintenance cost which is estimated at fifty cents exclusive of canal operation costs. Anyway, the water will be cheap to the farmers. The non-repayable portion of the cost is to <sup>be</sup> subsidized by participation in the Colorado River Development and by sale of power from Glen Canon and other reservoirs.

The Puett Dam under the Summit system was completed. This will give that area about two thousand acre feet additional storage which has been badly needed. The dam is completed with exception of placing the gage rods.

Inspection was made of all dams in the division early in the season and generally when the reservoirs were full. All are in apparent good condition with the possible exception of the Mullin Dam on Williams Fork of the Piedra River. There is a wet area on the downstream face of the dam which may need to be drained to dry it up. At least that is my opinion.

Project Operations.

Summation of Use Of Water under Pine River Project in Acre Feet.

<u>River Water</u>	<u>Amount Diverted</u>	<u>Number Acres Irrigated</u>	<u>Gross Duty</u>
Ute Indians :	35,441	9,503	3.73 :
Non-Indian :	78,940	32,884	2.40 :
Total :	114,381	42,387	2.70 :
<u>Reservoir Water</u>			
Utes :	1,082	9,503	0.11 :
Non-Indian :	73,402	32,884	2.23 :
Total Reservoir :	74,484	42,387	1.76 :
<u>Total Diversions.</u>			
Utes :	36,523	9,503	3.84 :
Non-Indian :	152,342	32,884	4.63 :
Total :	188,865	42,387	4.46 :

Note: This project shows 2,239 acres less irrigated in 1960 than was shown in 1959. This is due to correction of payable acreage under Spring Creek and Pine River Canal and some other adjustments. The the Utes carry water under contract for some white land. This amounts to several hundred acres and it is not known whether it is included in the number of acres as reported irrigated under Indian Ditches by the Indian Service.

Summation of Canal and Reservoir Operation in Acre Feet  
by Montezuma Valley Irr. Company. 1960

Name of Canal or Reservoir	: Total Am't. : Diverted : From River	: Amount : Diverted : To Storage	: Net Amount : Used From : River	: Number : Acres : Irrigated	: Gross : Duty :
Main No. 1 Canal	: 48,720	: 0	: 48,720	:	:
Main No. 2 "	: 62,070	: 12,790	: 49,280	:	:
Total			98,000	35,000	
Less Amount From Ground Hog Reservoir-----			<u>8,380</u>		
Net Amount From River-----			89,620		
Less Estimated Amount to Town of Cortez---- ( Priority Water)			<u>1,500</u>		
Net Company Use-----			88,120	35,000	2.52
<u>Use From Storage.</u>					
Ground Hog Reservoir-----			8,380		
Narraguinepp " -----			<u>15,720</u>		
Total Reservoir Water-----			24,100	35,000	0.69
Total Use-----			112,220	35,000	3.21
Used in 1959-----			84,190	35,000	2.40

Jackson Gulch Reservoir Operation -1960  
in Acre Feet.

Release From Storage.

Outlet to Crystal Creek Ditch -----	532
"    to Chicken Creek -----	1,860
"    to West Mancos River-----	3,892
Total -----	6,284

Delivery to Ditches

<u>Name of Ditch</u>	<u>Amount</u>	<u>Number Acres Irrigated.</u>
Root & Ratliff	748	800
Webber No. 1	1,656	1,615
Mancos Pipe Line	28	
Willis	216	150
Lee & Burke	16	20
No. 6	135	160
Beaver	290	500
Sheek	299	300
Henry Bolen	145	300
Lee	305	180
Franks	126	110
Boss & Velts	298	400
Carpenter & Mitchell	310	250
Exon	48	50
Frink & Glasgow	75	75
East Mancos Hiline	32	160
Smouse	28	40
Crystal Creek	751	600
Halls	218	200
Total	6,024	5,910



Summation of Summit Reservoir & Ditch Company  
Operation in Acre Feet for 1960.

Summit Reservoir Operation.

Date	: Gage	: Amount	: Gain	: Loss	Month	Inflow			Outflow	
						: Ht.	: in	: Res.	: Turkey	: Summit
Apr. 1	: 9.4	: 700	:	:	March	: 54	: 125	: 179	:	:
May 1	: 25.2	: 4,870	: 4,170	:	April	: 713	: 3661	: 4374	:	: 42
June 1	: 25.4	: 4,940	: 70	:	May	: 872	: 1684	: 2556	:	: 2031
July 1	: 21.5	: 3,580	:	: 1,360	June	: 475	: 587	: 1062	:	: 2025
Aug. 1	: 14.3	: 1,570	:	: 2,010	July	:	:	:	:	: 1827
Sept. 1	: 7.6	: 480	:	: 1,090	Aug.	:	:	:	:	: 928
Oct. 1	: 5.9	: 310	:	: 170	Sept.	:	:	:	:	: 171
Nov. 1	: Est.	: 170	:	:		:	:	:	:	: No : Record
Total		4,940	4,240	4,770		2,114	6,057	8,171		7,020

Estimated Total Use.

Release thru Summit Reservoir-----	7,020
Est. Share Use From Turkey Creek Ditch-----	570 ( 29.5 shares)
Est. Amount to Willis Smith -----	<u>140</u>
Total	7,730

About five thousand acres irrigated. Use per acre 1.55 acre feet.

In 1959 the total use was 0.4 ac. ft. per acre.

Irrigation Division 7

Tabulation of Water Commissioners Annual Ditch Reports -1960

Dist. No.	Number of Ditches Reported	Amount in S. F.	Total Capacity of Canals in S. F.	First Day Used	Last Day Used	No. Days	Average Daily Amt. Used	Number of Acres Irrigated	Number of Acres
29	:	589	639	:	:	:	:	45000	15000
30	175	587	1048	Apr. 6	Nov. 15	224	216	96551	21407
31	50	716	890	Apr. 18	Oct. 31	196	318	124746	44505
33	30	267	380	Apr. 10	Sept. 21	165	64	21229	14087
34	57	791	1235	Mar. 28	Oct. 31	202	301	122054	49100
69	14	108	74	Apr. 10	Aug. 31	144	13	3730	943
Totals	326	3058	4266	Mar. 28	Nov. 15	232	891	413310	145042

\* No Report by Water Commissioner of Dist. 29. Estimates by Division Engineer.

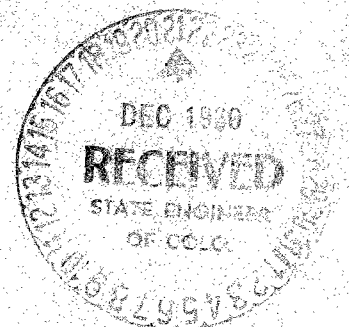
Tabulated Statement of Water Commissioners Annual Reservoir Reports

Dist. No.	Number of Reservoirs Reported	Area of High Water Line in Acres	Capacity in Acre Feet	Quantity in Storage on May 1st.	Quantity in Storage on Nov. 1st.	Y
29	5	670	* 1500	* 1500	:	
30	5	a 938	a 25310	a 6722	a 19380	
31	3	3093	128236	50832	36368	
33	1	50	1200	1200	50	
34	9	1338	36223	35798	5650	
69	3	700	22213	7692	3866	
Totals	26	6789	214682	103744	65314	

Continued next page

Note: \* No report for Dist. 29. Estimates by Division Engineer.

a - Includes Cascade Reservoir. Used for power only.



Tabulation of Water Commissioners Annual Reservoir Reports - 1960

Continued

Dist. No.	First Day Used From Y: Storage	Last Day Water Was Used From Storage	Number Days Used	Average Daily Amount Used in S.F.	Number of Acre Feet Used	Number of Acres Irrigated
29	:	:	:	:	* 1500	* 1500
30	July 15	Aug. 20	15	6.0	180	35
31	May 14	Oct. 16	126	227	74605	32954
33	May 27	Oct. 8	78	6.2	962	550
34	Apr. 28	Oct. 16	172	114	39053	48050
69	June 24	Aug. 15	53	1.7	181	49
Totals	Apr. 28	Oct. 16	172	340	116481	83138

