/ 1950

Monte Vista, Colorado

December 28, 1950

Mr. M. C. Hinderlider,
State Engineer,
Capitol Building,
Denver, Colorado.

Dear Mr. Hinderlider: -

On November 30th, at our annual meeting with you, a resume of my years work was presented orally, following is my written report for the season of 1950, Water Division #3, District 20.

As it so frequently occurs, the month of April completely changed the water supply out-look. On April 1st the general snow survey at the various stations around the Valley indicated an average water content of 13.5 inches. The mean for the past record is 14.0 inches, thus on April 1st the water content was 96 percent of normal. However, on May 1st this year the water content, same stations, was 5.6 inches, the past mean being 10.4 inches or 54 percent of normal.

Along with the shortage of snow in the mountains the Valley experienced the worst drought last fall, winter and spring on record. At Monte Vista, from August to May, a nine month period, the percipitation indicated a total of 0.55 inches.

Reservoir carry over last fall was about 67,000 acre feet with additional storage during the winter of only about 9,000 acre feet, making the total reservoir supply some 76,000 acre feet. Storage was discontinued at the very early date of March 26th.

Taken from the Monthly Reports furnished by the Rio Grande Compact Commission, the Rio Grande River at the Del Norte station shows a total discharge September 30th, 1949 to October 1st, 1950 of 490,500 acre feet; which is about 60,000 acre feet below normal.

The rain-fall during the growing season, which is always a minor factor in the Valley, was slightly below normal.

In spite of the fact that delivery of water to the ditches was below normal, sub-water or ground water, remained un-expectedly high, resulting in a normal or above return flow to the river.

Diversion to all ditches in District 20, including reservoir and direct flow from the river and tributaries, was 563,857 acre feet, only slightly below normal.

Trans-Mountain Diversions, as would be expected, was some-what light with a total diversion for the season of 1,859.5 acre feet.

One of the most devastating hail storms on record in the Valley came on August 3rd striking the rich Sargent-Center area with almost complete distruction to all crops, covering a path about 2 miles wide and 8 miles long.

The one outstanding feature in connection with irrigation the past season, it seems to me, is the very extensive improvement program carried on by canal, ditch and reservoir companies including new structure and repairs.

This building program, as you know, demanded much of my time in many different ways and places.

Metroz Reservoir.

It is a pleasure to report that the, almost annual, tinkering at the Metroz Dam should be about over so far as the large or lower dam is concerned.

More than a year ago a 36" galvanized steel pipe 116 feet in length was placed at the extreme left end of the Metroz dam. The pipe extends through the dam and empties into a ditch some 200 feet in length which has been excavated through the original hillside of heavy rock formation.

The old wooden box used for many years for the discharge pipe was removed this last summer. The 36" tube now in use was placed two feet higher or two feet above the zero point as indicated on the capacity table.

The dam was raised with proper front and back slopes to a height of about 19 feet giving a free board of more than 5 feet and a top width of more than 10 feet. A spill-way some what removed from the right or south abutment of the dam with a bottom width of approximately 35 feet was excavated through heavy rock formation about 200 feet in length, which should provide ample protection.

Mr. Paul Davis registered engineer, was in charge of the engineering and inspection for the construction.

Rio Grande Reservoir New Trash-Racks

With the Rio Grande Reservoir empty early this summer and the river at a very low stage it seemed an opportune time to install the new trash racks to replace the old structure which, for many years, has been in very poor condition.

The design for the new trash-rack was prepared in 1947 by the Thompson Manufacturing Company of Denver, in co-operation with your office, is ~~was~~ of the sloping type 18 feet in width and 36 feet long, super-imposed upon a re-enforced concrete structure. The steel for the trash-rack was fabricated and delivered to the Reservoir Company in the fall of 1947 and had been stored at Center, Colorado since that time.

Upon the removal of the steel from the old trash-rack it was found that some of the main members were so badly dis-intergrated that they were only a light skeleton of the original structure; in many places completely eaten through by rust action.

The old concrete structure supporting the old steel rack, including both the head and side walls, were massive in dimension and found to be in excellent condition.

Excavation in front of the old structure indicated that the inlet channel had been filled to a depth of about 7 or 8 feet with rock and silt and was lodged against the vertical needles; thus the original draw down had been diminished to this amount; with the entire floor of the reservoir above, silted accordingly.

The only deviation of any consequence from the plans as furnished, consisted of raising the entire structure 2.25 feet; you may recall that this matter was discussed both with you and Mr. Brown, engineer for the Thompson Mfg. Co., when the plans were being prepared.

It seemed feasible to raise the structure about this amount for it simplified the installation and did not decrease the available capacity due to the silted condition of the reservoir.

Upon completion of the excavation, which consisted mostly of the removal of deposited materials since original construction, bed-rock was encountered over the entire area on which the new structure was to rest, ~~stand~~.

In order to de-water the working area a temporary dam was placed at the upper end of the inlet channel and two large steel culvert pipe laid through the dam and to the portal of the discharge tunnel, thus carrying the entire flow of the river past the work.

It has been stated that the new trash-rack was raised so that the crest or top of the front wall support is 2.25 feet above the old zero point. This necessitated increasing the total height of the side walls and placing a concrete wall or curb across the channel to support the lower end of the steel trash rack or needles; this front wall was made 30" wide. For supports for the steel center posts two curbs were constructed parallel with the channel two feet wide and the 2.25 feet height extending from the mouth of the tunnel and tied into the front curb cross wall. The walls and floor were re-enforced and all rested on bed-rock.

My opinion is that the structure is well designed and constructed, my only cirticism being that the $\frac{1}{2}$" by 6" needles are spaced 8" centers instead of 6" centers as I had thought the design indicated. With a $7\frac{1}{2}$" clear opening some rather large logs may reach the gates and could cause trouble.

This fall a 6" stand pipe was placed in one of the gate towers in the Rio Grande Reservoir Dam extending from a point just above the top of the raised gates to about three feet above the top of the dam, a total

lenght of about 85 feet. The lower end of the 6" pipe is sealed with a steel plate, and tapped just above this plate for a 1" pipe. Some 435 feet of 1" pipe was laid on the floor of the inlet tunnel extending from the reservoir and connected to the tap at the lower end of the 6" stand pipe. The purpose of this pipe system is to establish in the 6" pipe the same water level as that in the reservoir under all conditions, that is, whether the gates are closed or discharging, in which case by use of a tape and float an accurate gage reading can be made at any time with in the gate house on the dam.

Beaver Park Dam:

The primary purpose of all the extensive work that has been under way at the Beaver Park Dam for the past four or five years has been to make the dam water tight.

1949 The earth blanket in front of the old dam was carried up last summer to slightly above elevation 60 feet. With storage to the top of the new fill this last spring, the results were so satisfactory that the owners, with your approval, decided to proceed with the enlargement of the dam, making possible full storage up to the original decreed capacity of 4434 acre feet, more or less.

This enlargement required an increase in the elevation of the high-water line from about 75 feet to 85 feet and an addition of about 12 feet in the total height of the dam.

In order to maintain the specified slope on the front face of the dam and secure the required top width it was necessary to place additional fill on the back slope of the dam. This was accomplished by placing approximately 14,000 cubic yards of stone which was blasted off of the rock cliff at the right end of the dam and bulldozzed into the canon below and against the back of the dam.

The old spill-way over the center of the dam was removed and provision has been made for a new concrete structure through the rock formation at the right abutment of the dam. The removal of the rock from the high cliff for the fill below, provided also for the new spillway and relocation of the roadway.

Work was discontinued late this fall, with practically all of the earth fill completed and excavation for the new spill-way nearly to ~~the~~ line and grade.

The principal work yet to be done is the concrete wall at the inlet end of the old spillway, all the concrete work for the new spillway, such concrete work that may be necessary in the base of the tower and tunnel lining repairs.

Some breaking up of the very large stone on the up-stream face of the dam would improve the appearance of the rip-rap.

Nothing has been done to date to improve the method of operating the outlet gates but it is my understanding the new plans call for the installation of hydraulic controlled gates.

The question of allowable storage for this winter and next spring has been discussed with the owners and the contractor, and the agreement is that storage should not exceed gage height 70 feet which is about 15 feet below the proposed new spillway crest. In case of an emergency, the excavation for the new spillway provides that spill would occur at ~~the~~ elevation approximately 79, allowing ample free-board under existing conditions, it seems.

Miscellaneous Reservoir Repairs:

New equipment has been installed for controlling the gates at the Santa Maria, Continental and Terrace reservoirs this past year.

At the Santa Maria reservoir, power operated hydraulic lift equipment was installed last fall.

At the Continental reservoir, hand-operated hydraulic lift equipment was installed also last fall.

Two, one and one half-horse power electric motors were installed at the Terrace reservoir to operate the discharge gates, and the gage staff was re-built.

Rio Grande Canal Improvements:

Most of the canals and ditches in the district have had improvement programs on this past season but the most extensive is now under way at the head-works of the Rio Grande Canal.

In my annual report to you last year, mention was made of the construction, during the winter, of a new concrete head-gate equipped with automatically controlled radial gates. This work was completed last March and the gates operate electrically by a float control at the measuring wier; set to act on 4/100th of a foot variation of the water level in the canal. The installation has proven most satisfactory. The cost of the entire head-gate structure was approximately $22,000.00.

In front of this new head-gate, now is being constructed a new concrete and steel trash-rack to eliminate some of the difficulty in handling the troublesome logs, trees and brush which is so abundent at that particular location when the river is at flood stage. It is estimated that the cost of this trash-rack will be approximately $30,000.00.

At their annual meeting this month, the stock-holders of the Rio Grande Canal Company voted assessments for the cost of a new diversion dam to replace the very old wooden structure. The plan is that the work is to be done next fall and winter at an estimated cost of $55,000.00

When the new diversion dam is completed the Canal Co. will have expended approximately $125,000.00 which includes the sand gates installed three or four years ago.

With no carry over of water in the reservoirs, the snow supply in the mountains below normal and the Valley very dry, prospects for the 1951 irrigation season at this date are not good.

Crop production for 1950 in District 20 was near normal but prices for potatoes and vegetables was and are now below cost of production; grain yields were low but the price good. Live stock production and marketing has been near normal with almost record prices paid for cattle and sheep.

No unusual administrative problems have arisen, other than the complaints so common on dry years.

Very truly yours,

D H Mathias

D. H. Mathias
Special Deputy
State Engineer

DHM:rc

1950

Corrected Sheet.

SUMMARY

WATER COMMISSIONERS' DITCH REPORTS

1950

Division No. 3

No. of Water District	Number of Ditches, Reporting	First Day Water was carried	Last Day Water was carried	No. Days Water carried	No. of Acre Feet carried by all
20	191	2-27	11-15	262	523250
21	68	3-21	10-31	225	77621
22	116	3-21	10-31	225	226524
24	54	4-1	10-31	214	33333
25	58	4-1	10-31	214	10743
26	58	4-1	10-31	214	15574
27	34	4-1	10-31	214	6160
35	77	4-1	10-31	214	30704
Totals for Division	656				923909

These figures include Reservoir water and Trans-Mountain Diversions.

Alamosa, Colorado,
December 4th., 1950

Mr. M. C. Hinderlider,
State Engineer,
State Capitol Building,
Denver, Colorado

Dear Mr. Hinderlider:

Herewith is submitted to you my annual report as Irrigation Division Engineer for Division No. 3 for the year 1950. This report consists of tabulated summarized statements of the Water Commissioners reports of diversions to various ditches, crop acreages and reservoir storage.

The 1950 irrigation season was one of the driest on record for the entire Division which is reflected in the tabulated statements showing the amounts of water diverted and the number of acres irrigated. In some districts; namely, Nos. 24, 25, 26, 27 and 35, which are in the north end and east side of the division; these amounts were considerably below normal. In districts Nos. 20, 21 and 22 these amounts were more nearly normal due to the fact that what run off there was came out slowly. In district No. 20 the carry-over reservoir storage from the 1949 season and the water supplied by irrigation pump wells aided very materially in supplying the water necessary to mature a fairly normal crop. There were practically no rains in the entire division that aided stream flow. There was no flood stage on any of the streams.

There was very little reservoir storage during the season and most of the reservoirs were empty before the end of the irrigating season. In some instances, it was the first time in many years that the trash racks were exposed, particularly so in regards to the Sanchez, Mountain Home and La Jara Reservoirs.

Crops were below average on the whole. In districts Nos. 25 and 26 there was very little hay put up and in these two districts hay is the main crop. The season was bad for vegetables due to prices. There was some hail in the division and one particularly bad hail storm in district No. 20, in the territory between Center and Monte Vista. This storm totally destroyed crops over about 8 square miles and damaged crops in about that many more square miles. Perhaps the greatest loss in crops was in the loss of alfalfa and sweet clover, due to the very dry previous winter. This was reflected in the number of livestock raised, as many farmers and ranchers were forced to sell their livestock because they had no pasture.

The season in the mountain ranges was short and not too good. Livestock was held off the ranges several weeks longer than usual in the spring and were brought out several weeks earlier than usual in the fall.

Work is continuing on the Reclamation project at Platora on the upper Conejos River. It is hoped that work on the dam will be completed in 1951.

Work has continued in repairing the dam at the San Luis Valley Reservoir on Beaver Creek. The earth fill on the up-stream face of the dam has been raised. The work that has been done has proven satisfactory and plans are now underway to negotiate a loan from the R.F.C., which will permit the completion of the work.

The Water Conservancy District organized in Alamosa County in 1949 has been extended to include some 100,000 acres, a good part of which is in Rio Grande County. At this time the District is negotiating with the Reclamation Bureau for a contract to build a Reservoir on the Upper Rio Grande River.

An Electric Power line connection into the Valley has been made from the Big Thompson Project in the northern part of the State. This insures sufficient electric power so that the use of irrigation pumps need not again be curtailed. This is considered an important step in the advancement of the Valley.

There were a number of administrative problems during the season. Several parties were fined for molesting headgates and in one instance in District No. 22, it was necessary to go into District Court and secure an injunction in order to stop one party from diverting water into his ditch illegally.

Respectfully submitted,

Roy B. Heilman,
Irrigation Division Engineer,
Division No. 3.

SUMMARY

WATER COMMISSIONERS' DITCH REPORTS

1950

Division No. 3

No. of Water District	Number of Ditches Reporting	First Day Water was carried	Last Day Water was carried	No. Days Water carried	No. of Acre Feet carried by all
					523250 ~~451641~~ ~~563057~~
20	191	2-27	11-15	262	
21	168	3-21	10-31	225	77621
22	116	3-21	10-31	225	226524
24	54	4-1	10-31	214	33333
25	58	4-1	10-31	214	10743
26	58	4-1	10-31	214	15574
27	34	4-1	10-31	214	6160
35	77	4-1	10-31	214	30704
Totals for Division	656				~~904516~~ 923909

These figures include Reservoir water and Trans-Mountain Diversions.

SUMMARY

WATER COMMISSIONERS' DITCH REPORTS
1950.

Number of Acres

Water District	No. Acres That Can be Irrigated	Alfalfa	Natural Grass	Cereals	Pasture	Garden
20	517885	59120	48961	71162	98905	2847
21	74730	6912	10965	13119	7312	1766
22	194928	15382	27023	20833	22176	565
24	35798	3465	2080	8452	225	85
25	131665	276	6380	873	2680	110
26	57594	2137	10415	925	7749	
27	18500	608	1290		368	15
35	47998	1488	3488	3722	3257	70
Totals	1079098	89388	110602	119086	142672	5458

Number of Acres

Water District	Potatoes	Sugar Beets	Beans	Field Peas	Cabbage	Lettuce
20	26941	434	109	8225	664	2034
21	2063	41	249	3917	78	154
22	1336	150	270	3296	80	100
24	1560		946	2883	300	40
25	2					
26	2					
27	102		3	46		40
35	561	72	145	114	337	472
Totals	32567	697	1722	18481	1459	2840

Number of Acres

Water District	Cauliflower	Spinach	Sweet Clover	Summer Plow	Other Crops	CTotal Irrigated
20	632	11	27653	2743	2504	352945
21	115		1661	640	374	49366
22	60		5165	776	100	97312
24	1015		502		620	22173
25					1	10322
26						21228
27					20	2492
35	258	71	318		181	14554
Totals	2080	82	35299	4159	3800	570392

SUMMARY

WATER COMMISSIONERS' RESERVOIR REPORTS

1950

Name of Reservoir	Water District No.	Capacity in Acre Feet	Amount Available in Acre Feet	Acre Feet in Storage May 1	Acre Feet in Storage Nov. 1	Total Acre Feet Delivered
Rio Grande	20	51113	30605		0	26724
Santa Maria	20	43565	22285		993	19387
Continental	20	26716	19004		1074	15957
San Luis (Beaver Cr.)	20	3283	1635			1472
Metroz	20	297	221		27	138
Wee Ruby	20	186	66		0	60
Hunters	20	48	48		0	40
Spruce No. 1	20	111.2	111.2		0	48
Spruce No. 2	20	105.2	105.2		0	76
Fuchs	20	237.3	237.3		0	213
Lost Lakes	20	966	771.		0	698
Squaw	20	140	140		0	144
Poage	20	261	261		0	196
Shaw	20	491	491		0	334
Bristol Head No. 1	20	151	151		0	)
Bristol Head No. 3	20	804	804		0	) 873)
Regan	20	667	483		0	446
SUDude	20	120	120		20	88
Goose Lake	20	232	232		0	210
Trout Lake	20	312	312		0	282
Road Canon	20	395	not used.			
Sowards No.1	20	121.5	" "		0	)
Sowards No. 2,	20	22.3	" "		0	) 84
Sowards No. 3,	20	18.2	18.2		0	)
Meadow Lake	20	199.4	199.4		---	48
Streams Lake	20	40	----		---	58
Terrace	21	17700	4440	4440	1071	3414
La Jara	21	14052	3331	3110	0	1535
Cove Lake	22	7910	3090	2420	0	3090
Sanchez	24	103155	13824	12890	500	13824
Eastdale No.1	24	3468	640	531	0	537
Salazar No.24	24	142	168	20	10	168
Mountain Home	35	19150	4805	4805	0	4232
Smith	35	5336	5336	4360	1051	4092
Totals for Division		301515.1	113934.5		4746	98468.

1950 RESERVOIR STORAGE REPORT - DIVISION NO. 3.

AMOUNTS IN STORAGE IN ACRE FEET.

	Rio Grande	Santa Maria	Continental	Sanchez	Terrace
12-1-49	26978	22916	17287	11541	3338
1-1-50	27745	22906	17287	11979	3518
2-1-50	29100	22901	17287	12353	3738
3-1-50	29769	22901	18692	12853	4147
4-1-50	30605	22496	19004	13041	4356
5-1-50	19685	22116	19004	12890	4440
6-1-50	7935	18288	19004	9625	3805
7-1-50	0	15457	13024	6800	3940
8-1-50	0	8767	1744	3688	3184
9-1-50	0	1157	1076	0	1458
10-1-50	0	942	1074	100	1233
11-1-50	0	942	1074	500	1071

	Mt. Home	Smith	Cove Lake	La Jara
12-1-49	3230	3362	0	2781
1-1-50	3606	4191	0	2781
2-1-50	4014	4575	0	2781
3-1-50	4341	5336	0	2781
4-1-50	4734	5336	0	3331
5-1-50	4805	4360	2420	3111
6-1-50	3867	3514	1834	3001
7-1-50	2880	2805	354	2482
8-1-50	1898	1591	0	1586
9-1-50	357	1231	0	1046
10-1-50	0	1366	0	857
11-1-50	0	1051	0	0

VEGETABLE SHIPMENTS

To date in 1950 Season

Lettuce	258 Car loads
Mixed Vegetable	617 Car Loads
Spinach	7 Car loads
Garden Peas	268 Car loads
Cabbage	99 Car loads
Carrots	45 Car loads
Cauliflower	630 Car loads
Potatoes	1682 Car loads
	3606

These figures do not include shipments by trucks.

1949 TRANS-MOUNTAIN DIVERSIONS

Dist. No. 20.	Weminucke Pass	1331.6 Acre Feet
Dist. No. 20.	Spring Creek Pass	253.2 " "
Dist. No. 20.	Squaw Creek Pass	206.0 " "
Dist. No. 20.	Treasure Pass	68.7 " "
	Total Diverted	1859.5 Acre Feet

COMPARISON FOR 10 YEAR PERIOD

	No. of Acres Irrigated.	Acre Feet of Water Delivered to Ditches
1941	717654	1635840
1942	733996	1398212
1943	769680	1123219
1944	749625	1557569
1945	746751	1318180
1946	698431	912394
1947	742289	1351229
1948	757041	1320484
1949	789722	1444440
1950	570392	964516

D. H. MATHIAS
ENGINEER

PHONES
OFFICE 263
RES. 331

STATE OF COLORADO
Department of Water Resources
OFFICE OF
Special Deputy State Engineer
147 WASHINGTON
MONTE VISTA, COLO. Jan, 27, 1950.

Mr.M.C.Hinderlider,
State Engineer,
Capitol Bldg.,
Denver, Colorado.

Dear Mr.Hinderlider.-

Replying to your letter of January 25th requesting the amount of water stored in the three reservoirs, Rio Grande, Santa Maria and the Continental as of January 1-st,1950.

Rio Grande	27,745	Acre feet.
Santa Maria	22,906	" "
Continental (Estimated)	17,500	" " no reading made.

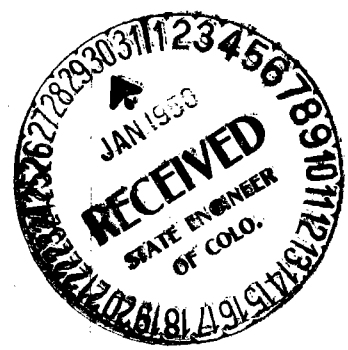
Note - Last reading taken at the Continental Reservoir was on November 25th 1949 which was 17,287 Acre feet.

You might be interested to know that the snow cover on the west range is above normal for this date but some-what under last year's supply.

Very truly yours,

D H Mathias

Special Deputy State Engineer.



M. C. HINDERLIDER
STATE ENGINEER
C. C. HEZMALHALCH
DEPUTY

L. T. BURGESS
CHIEF HYDROGRAPHER
W. T. BLIGHT
OFFICE ENGINEER

STATE OF COLORADO
OFFICE OF STATE ENGINEER
DIVISION OF WATER RESOURCES
Alamosa, ~~DENVER 2~~ Colorado,
January 28th., 1950.

SUBJECT:

Mr. M. C. Hinderlider,
State Engineer,
State Capitol Building,
Denver, Colorado.

Dear Mr. Hinderlider:

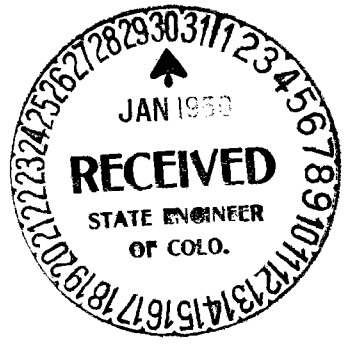
The following is a statement of the amount of water in the Terrace and Mountain Home reservoirs, as requested in your letter of January 25th., to Dave Mathias.

	Dec. 1, 1949	Jan. 1, 1950
Terrace Reservoir	3338 acre ft.	3518 acre ft.
Mountain Home Reservoir	3230 " "	3606 " "

Yours very truly,

Roy B. Heilman

Roy B. Heilman.



February 14, 1950

Mr. Roy B. Heilman
Division Engineer, Div. #3
Alamosa, Colorado

Dear Sir:

I am unable to find in any of your reports, the amount of water in storage as of December 1, 1949 in the following reservoirs:

Rio Grande
Santa Maria
Continental

Please send this information by return mail.

Very truly yours,

MCH/a

State Engineer

M. C. HINDERLIDER
STATE ENGINEER
C. C. HEZMALHALCH
DEPUTY

L. T. BURGESS
CHIEF HYDROGRAPHER
W. T. BLIGHT
OFFICE ENGINEER

STATE OF COLORADO
OFFICE OF STATE ENGINEER
DIVISION OF WATER RESOURCES
~~DENVER 2~~

Alamosa, Colorado.
February 15th., 1950.

SUBJECT:

Mr. M. C. Hinderlider,
State Engineer,
State Capitol Bldg.,
Denver, Colorado.

Dear Mr. Hinderlider:

The following is a statement of the amount of water in reservoirs as requested in your letter of February 14th.

	Acre Ft. in Storage Dec. 1, 1949.
Rio Grande	26978
Santa Maria	22916
Continental	17287

The reason you do not have this information in your office is because my annual report is completed before December 1st., and I have had no occasion to send this information in prior to this time.

Yours very truly,

Roy B. Heilman.

Roy B. Heilman.

RBH:ot