

ANNUAL REPORT  
DIVISION NO. 1  
1978 IRRIGATION YEAR  
NOV. 1, 1977 - OCT. 31, 1978

BY

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State Engineer

## DIVISION OF WATER RESOURCES

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January 10, 1979

Mr. C. J. Kuiper, State Engineer  
Division of Water Resources  
Room 818 - Centennial Building  
1313 Sherman Street  
Denver, Colorado 80203

Dear Mr. Kuiper:

Please find submitted herewith the annual report of Irrigation Division No. 1 for the 1978 water year. Due to the fact that some of the information presented is based upon preliminary tabulations and calculations, there may be some subsequent modification of such information upon finalizing the basic data. Such modifications are expected to be minor in nature.

The encouragement, guidance, and assistance that we have received from you and your staff as well as the outstanding efforts of my own staff have been greatly appreciated.

Very truly yours,

James R. Clark  
Division Engineer

JRC/slw

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## 1978 ANNUAL REPORT

### INTRODUCTORY STATEMENT

Division I covers an area of some 28,068 square miles or approximately the northeast one-fourth of the State of Colorado. Of this, approximately 19,500 square miles is in the South Platte River Basin, 8,165 square miles in the Republican River Basin, and 403 square miles in the Laramie River Basin.

### SOUTH PLATTE RIVER

The South Platte River starts at the Continental Divide, flows through South Park, down mountain canyons, out onto the plains in the Denver area, thence northeasterly and into Nebraska near the northeast corner of Colorado. The flow of the South Platte is augmented by a number of tributaries in the South Park area, the principal ones being the Middle and North Forks of the South Platte and Tarryall Creek. After leaving the mountains the South Platte is further augmented by several major tributaries arising at and east of the Continental Divide and flowing to the South Platte from the north and west. These major tributaries entering the South Platte in the Denver to Greeley area are Bear, Clear, Boulder and St. Vrain Creeks, and the Big Thompson and Cache la Poudre Rivers. Only normally minor and intermittent streams supplement the river flow from the south and east. However some of these, such as Plum, Cherry, Boxelder, Kiowa, Bijou, Badger, Beaver as well as Lone Tree, Coal, Wild Cat and Pawnee Creeks from the north and west are each capable of producing a major flood due to the extent and topography of their individual watersheds when subjected to intense precipitation.

In addition to the obvious tributary streams, the South Platte River is further supplemented very extensively, as are the tributaries themselves, by what is commonly referred to as return flow. This is water from springs, waste ditches, drains, seepage, etc., resulting generally from diversions for various uses, precipitation, and high water tables. Although the return flows resulting from the initial use of transmountain water have historically been considered a part of the natural stream subject to distribution under the priority system, the City of Denver continued the operation that they instituted in September of 1976 at which time they invoked the provisions of 37-82-106, CRS 1973, relating to the right of reuse of imported water. Through a detailed accounting system they are able to identify that portion of the effluent from Metro Sewer which is attributable to their current importation of Blue River water through the Roberts Tunnel. Denver then diverts by exchange at their intake as much of this calculated Blue River water return flow as the river flow at intake will support without injury to intervening water rights in that section of the stream between intake and sewer discharge. Denver also continues to study the treatment of wastewater for reuse as potable water through the operation of a pilot treatment plant. Denver has requested permission to initiate re-use of water through Moffat Tunnel beginning January 1, 1979.

The City of Aurora also claimed the reuse of their Homestake imported water to the extent that it could be identified and exchanged back up to their intake. This exchange was quite limited due to the lack of available stream flows to support the exchange in addition to supplying intervening water rights and the

Denver exchange previously discussed. During those periods when Aurora could not make its own exchange they did realize some monetary benefits from the sale of their transmountain effluent to the Central Colorado Water Conservancy District to be used as augmentation water in support of the Central member wells.

The elevations in the South Platte Basin vary from 14,000 feet at points along the Continental Divide to 3,400 feet at the Colorado-Nebraska line. The western one-third of the basin is mountainous in character and provides the principal source of water as the result of precipitation.

Of the 12,481,000 acres in the South Platte Basin, 9,469,470 acres are in farms and ranches. The balance of the area is owned by federal and state governments, public agencies, or included within municipalities. Within the farm areas are 1,137,000 irrigated acres and 7,557,000 acres of dry land according to the 1974 Agricultural Census.

The principal use of water in the mountain valleys is for meadow irrigation. Large volumes of water are released on meadows adjacent to the streams and, of this volume, a major proportion returns to the stream for reuse at lower elevations. The largest area of mountain valley irrigation is in South Park at elevations up to 11,000 feet. Other uses in the mountain areas include those of small municipalities, domestic, stock, power, mining, commercial and recreation needs.

The greatest use of water, by far, in the South Platte Basin is for agricultural purposes in the plains area at elevations between 3,500 and 5,000 feet. The water here supports a well developed, diversified agricultural economy that ranks high nationally in productivity. Much of the demand for water in areas downstream some 40-50 miles from the mountains is supplied from wells and by return flow from uses further upstream.

Some 5121 wells operating under augmentation plans and as alternate points of diversion for surface rights withdrew an estimated 521660 acre feet of water for irrigation from underground sources. Wells operating in approved augmentation did so either by replacing water to the stream to at least partially offset the stream depletion they were causing or by operating under decreed priorities which were legally entitled to be used in that manner. The two major augmentation plans for irrigation wells were G.A.S.P. with a membership of 2841 wells and Central Colorado Conservancy District with a membership of 864 wells. Combined membership in these two plans accounts for some 76 percent of the protected wells. Additionally, in the Cache la Poudre Drainage 9 percent of the protected wells operate as alternate points of diversion and 11 percent have been decreed as nontributary.

The amount of replacement water required from plans covering wells diverting out of priority was based upon the anticipated pumping of those wells. The pumping was first distributed on a monthly basis over the irrigation season and a 5 percent replacement of that pumping diversion occurring during periods of senior demand was made on a concurrent basis. A total replacement 26083 Ac.Ft. was made to the river. Maximum replacement was at the rate of 140 cfs on August 14th.

Wells operating as alternate points of diversion are not regulated as long as the decree to which they are attached is entitled to receive water.

Although several thousand proposed small capacity domestic and in-house use wells have been included in decreed augmentation plans, the actual construction and use of such wells is, as yet, comparatively minimal.

As a result of the inability in the summer of 1976 to move replacement surface water down the South Platte River in the reach between Harmony No. 1 and the South Reservation Ditches, G.A.S.P. constructed three wells upstream from the South Reservation headgate near Ovid with a combined capability to pump 16 cfs. In 1978 pump sizes on these three wells was increased to 40 horsepower from 25. This increased production to 22 cfs. G.A.S.P. reserved the first use of these wells to supply the replacement water for which they were responsible in that area. Any remaining capacity was then made available to those water users in that general area who could make use of the water either directly or by exchange. The right to use the additional capacity was on the basis of priority of ditch rights with the user paying the prorated operation and ownership costs.

A problem which has developed in recent years and which appears to be accelerating in magnitude is that of expanded use. The principal tool for expanding the use of water is the sprinkler system. Due to the greater efficiency of sprinkler application as compared to flood or row irrigation, only some 50 percent to 70 percent as much water per unit area is required by the sprinkler to satisfy crop requirements. Consequently with a given amount of water a farmer can increase his crop acreage 50 percent to 100 percent by converting to sprinklers. Although the individual farmer making this expanded use benefits from increased total yield, the whole river system supply is reduced by the amount of the consumption on the increased acreage. Crop water requirements remain substantially constant regardless of means of application so sprinkler irrigation over increased acreage reduces the net return flows to the stream system thereby depriving downstream users of water upon which they have historically depended for their needs.

The net effect of such expanded use is a reallocation of benefits without an appreciable overall increase in production but with increased production costs mainly due to the energy requirements for operating the sprinklers.

In the absence of formal complaints to the Water Court by water users who may have suffered material injury as a result of the expanded uses of old direct water rights, no administrative regulations have yet been made to control them. It appears that litigation by the affected parties will be necessary to determine the legal limitations of beneficial use which may be made of old water rights.

## REPUBLICAN RIVER

The Republican River Basin in Eastern Colorado covers 5,226,000 acres. Of this area 4,350,770 acres are in farm and ranch land with 226,109 acres under irrigation and 4,124,661 acres of dry land as reported in the 1969 Agricultural Census.

This area is relatively dry and the surface streams, many of which are intermittent, provide only enough water for some lands adjacent thereto. The normal precipitation in this area is about 17.1 inches of which 13.6 inches or 80 percent falls during the April through September period.

Supplies from surface streams continued to decline in spite of the increased rainfall. This decline is generally attributed to the operation of wells in the designated ground water basins where the regulatory guidelines provide for the 40 percent depletion of available supplies in the Ogallala formation within a 25-year period. Studies indicate that the Ogallala has historically provided a substantial portion of the surface flows and consequently as those aquifer levels drop the normal outflow from them is diminished.



## LARAMIE RIVER

The Laramie River Basin in North Central Colorado contains 258,000 acres of which 4,800 acres are irrigated and 15,000 acres are nonirrigated ranch land according to the 1964 Agricultural Census.

This basin is a mountain valley with the principal water use being for meadow irrigation and livestock purposes. There are no municipalities or villages in this basin so the domestic uses are minimal.

The Laramie River and its tributaries did not produce enough water during the 1977 irrigation season to satisfy the allotments in Colorado under the Laramie River Agreement and the 1957 Federal Court Order. The said court order provides that 19,875 acre feet of Laramie River water or its tributaries in Colorado may be annually diverted for use outside of the Laramie River Basin and that an additional 29,500 acre feet may be annually diverted for irrigation use within the Laramie River drainage with not more than 1,800 acre feet of such amount to be used after July 31 of each year. The Laramie River Agreement between the users of water in Colorado, being the meadowland users and the transmountain diverters, further provides for volumetric allotments to designated lands within the basin. This amounts to 6.0887 acre feet per acre for the season of which only 0.3715 acre feet may be diverted after July 31.

The 1978 meadowland diversions totaled 23,661 feet and transbasin diversions to Water District No. 3 totaled 20,890 acre feet from those sources subject to the Federal Court Order.

The continuing high cost of agricultural production and reduced income have forced the sale of some ranches in the Laramie River Valley.

At the present time there is consideration being given to the sale of Colorado water rights to interests in Wyoming. Such a sale would, no doubt, require consideration of the federal court decree involving the division of water between the states. Some Colorado users are also considering changes in use from irrigation to storage, recreational, and domestic uses. Such changes might also require some modification of the agreement between various meadowlands and transmountain water users within Colorado.

The following tabulation reveals the percentage of the stream flows for 1977 as compared with the previous 10 years, both for the entire water year and for the April through September irrigation season at several of the principal stream gaging stations. Stream flows for 1978 are from preliminary records:

COMPARATIVE STREAM FLOWS						
STATION	WATER YEAR			APRIL THRU SEPT.		
	1967 THRU '76 AVERAGE AC.FT.	1978 AC.FT.	1978 % AVG.	'67 THRU '76 AVG.AC.FT.	1978 AC.FT.	1978 % AVG.
SOUTH PLATTE @ DENVER	272,620	99,870	37	220,478	68,450	31
SOUTH FLATTE @ HENDERSON	388,350	193,800	50	284,090	128,900	45
SOUTH PLATTE @ FT. LUPTON	186,132	193,500	104	134,262	118,300	88
SOUTH PLATTE @ KERSEY	769,320	458,700	60	493,520	271,220	55
SOUTH PLATTE @ WELDONA	530,950	217,700	41	344,600	147,400	43
SOUTH PAATTE @ BALZAC	418,750	90,190	22	301,060	80,630	27
SOUTH PLATTE @ JULESBURG	454,740	71,230	16	274,180	24,690	9
CLEAR CREEK @ GOLDEN	155,480	134,600	87	133,000	120,500	91
CLEAR CREEK @ DERBY	73,080	39,130	54	59,520	35,900	60
BOULDER CREEK @ ORODELL	58,000			47,860		
ST.VRAIN CREEK @ LYONS	86,230	101,300	117	79,520	96,520	121
ST.VRAIN CREEK NR. PLATTEVILLE	176,840	147,200	83	121,100	111,500	92
BIG THOMPSON @ CANYON	59,820	78,270	131	48,880	74,470	152
BIG THOMPSON NR. LA SALLE	74,350	63,480	85	47,140	44,360	94
CACHE LA POUDRE @ CANYON	229,320	271,200	118	215,880	260,900	121
CACHE LA POUDRE NR. GREELEY	104,900	92,220	88	62,010	61,990	100

PERSONNEL

NAME	WATER DIST.	POSITION	CLASSIFICATION		DATE OF LAST STEP CHANGE	MONTHS WORKED	1977-1978 BUDGETED	MILEAGE PER. VEH.	STATE VEH.
			GRADE	OCT. 31, 1978 STEP					
Aab, Doug	Temporary	Eng. Aide A	34	1		3			
Allison, W.E.*		WRE-A	52	1	8-78	3	12		
Anderson, Dale	7	Wtr. Comm. C	48	3	8-78	12	12		15163
Applegren, P.S.	Temporary	Eng. Aide A	34	1		3	3		
Bentley, Morgan	6	Wtr. Comm. A	36	2	6-78	8	8		9534
Bell, Ted		WRE-B	57	6	7-75	12	12		
Blewitt, Lloyd	4	Sen. Wtr. Comm.	52	7	12-73	12	12		6202
Brazelton, Don		Wtr. Comm. C	48	6	9-77	12	12	234	7427
Burrows, Teal	23	Wtr. Comm. A	36	1		4	3		5113
Clark, Jim*		Sup. WRE	73	6	7-79	12	12		5487
Clayton, Joe	8-80	Sen. Wtr. Comm.	52	7	11-71	12	12		7426
Coffey, Harold*		Sen. WRE	67	6	7-78	12	12		
Cooper, Bob*		WRE-C	62	6	1-79	12	12		
Covelli, Terry*	1	Wtr. Comm. A	36	5	6-78	9	8		18433
Curry, Mark	23	Wtr. Comm. B	42	2	6-78	12	12		12030
David, C.G.		WRE-B	57	3	7-78	9	12		
Delventhal, Keith	2	Wtr. Comm. A	36	3	5-78	8	8		11890
Durand, Carolyn	48	Wtr. Comm. A	36	2	6-78	2	3		2448
Harman, Rachel		Typist B	26	6	11-76	12	12		
Hodgson, Mel	5	Wtr. Comm. A	36	4	4-78	7	8		6715
Jackson, John*	23	Wtr. Comm. A	36	1	6-79	4	4		4828
Johnson, Mark	Temporary	Wtr. Comm. A	36	1		1½	3		822
Klamann, R.M.	Temporary	Eng. Aide A	34	1		3	3		
Largent, G.E.		Eng. Tech. I	52	5	8-78	4	12		
Lee, Wayne	4	Wtr. Comm. A	36	6	10-77	8	8		5085
Liesman, Ray*		Sen. WRE	67	6	7-77	12	12		
Littler, Bob	64	Sen. Wtr. Comm.	52	7	7-70	12	12		18099
Liuzzi, M.J.*		WRE-A	52	3	5-78	12	12		
McCauley, Gary*		Wtr. Comm. B	41	1					
McDanold, J.C.		WRE-B	57	3	7-78	12	12		16303
Meehl, Paul	2	Sen. Wtr. Comm.	52	7	1-74	12	12		
Neutze, Dorothy*		Sec. IB	37	6	3-77	7	12		
Neutze, Jack	3	Prin. Wtr. Comm.	56	6	7-74	12	12	1673	7402
Palmer, Stix	5	Wtr. Comm. C	48	7	12-74	12	12		14179

PERSONNEL

NAME	WATER DIST.	POSITION	CLASSIFICATION		DATE OF LAST STEP CHANGE	MONTHS WORKED	1977-1978 BUDGETED	PER. VEH.	STATE VEH.	MILEAGE
			OCT. 31, 1978 GRADE	STEP						
Salser, Ken	8-80	Wtr. Comm. A	36	4	5-78	8			12328	
Samples, Bob	1	Sen. Wtr. Comm.	52	7	4-77	12	1332		22221	
Saunders, Ben*	65-79	Sen. Wtr. Comm.	52	1	8-78	3				
Sievers, George		Wtr. Comm. B	42	4	9-78	12				
Smith, Bruce*	3	Wtr. Comm. A	36	5	5-78	9			15226	
Swedlund, Kent	64	Wtr. Comm. A	36	2	6-78	3			3674	
VanGorden, Ralph	9	Wtr. Comm. B	42	7	7-70	12			11203	
Vannorsdel, Carolyn	48	Wtr. Comm. B	42	3	6-78	7			5264	
Ward, Ernie	6	Wtr. Comm. C	48	7	6-76	12			15261	
Wilkinson, Dugan*		Sup. WRE	73	7	7-73	9			11324	
Wyscaver, Sue*		Sec. IB	40	4	6-78	6				

- \*Allison-Started employment 8-3-78
- \*Clark-6-15-78 Acting Division Engineer, replaced Dugan Wilkinson
- \*Coffer-2-1-78 promoted from WRE-C to Senior WRE
- \*Cooper-8-15-78 promoted from WRE-B to WRE-C
- \*Covelli-6-15-78 changed from part-time to full-time
- \*Jackson-started employment 5-17-78
- \*Liesman-replaced assistant Div. Engineer 8-1-78, resigned 11-30-78
- \*Liuzzi-resigned 10-6-78
- \*McCauley-resigned 5-26-78
- \*Neutze-retired 5-31-78
- \*Saunders-started employment 8-14-78
- \*Smith-changed from part-time to full-time 6-15-78
- \*Wilkinson-retired 8-8-78
- \*Wyscaver-transferred 5-1-78

## WATER SUPPLY

### A. SNOW PACK

December and January brought good snow to the mountains along the Continental Divide. An excellent snow pack existed at the beginning of February and water supply outlook was generally rated as excellent in the upper South Platte Watershed and excellent to average in the Lower South Platte Watershed. Average to below average snowfall during February, March and April reduced the snowpack to just about average at the beginning of May. Well above average precipitation for May improved the overall outlook. Following are tabulations of water supply outlook and snow measurement summaries as of May 1, 1978:

#### WATER SUPPLY OUTLOOK\*

STREAM OR AREA	SPRING SEASON	LATE SEASON
Bear Creek	Average	Fair
Coal Creek	Average	Fair
N. Fork S. Platte	Average	Fair
N. Fork Cache la Poudre	Average	Fair
Ralston Creek	Average	Fair
Rock Creek	Average	Fair
South Platte - Greeley to Fort Morgan	Average	Fair
South Platte - Fort Morgan to Sterling	Fair	Fair
South Platte Below Sterling	Fair	Poor

\*Expressed as POOR, FAIR, AVERAGE, EXCELLENT, with respect to Usual Supply

#### SUMMARY OF SNOW MEASUREMENTS

RIVER BASIN AND /OR SUB-WATERSHED	NO. OF COURSES AVERAGED	THIS YEAR'S SNOW WATER AS PERCENT OF:	
		LAST YEAR	AVERAGE*
Big Thompson	5	308	95
Boulder	3	249	105
Cache la Poudre	7	229	99
Clear Creek	5	185	107
Saint Vrain	2	293	51
South Platte	3	202	99

\*1958 - 1972 Period

WATER SUPPLY

1978

B. PRECIPITATION

LOCATION	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER		6 MO. % OF NORMAL
	PRECIP.	% OF NORMAL	PRECIP.	% OF NORMAL	PRECIP.	% OF NORMAL	PRECIP.	% OF NORMAL	PRECIP.	% OF NORMAL	PRECIP.	% OF NORMAL	
BOULDER	3.77	163											
CHEESMAN	1.10	62	1.74	91	1.66	122	2.28	89	0.45	19	0.51	47	70
CHEYENNE WELLS	1.38	105	3.30	123	2.57	109	1.55	54	4.35	173	0.16	11	101
DENVER AP WSPD	1.82	94	3.46	131	1.17	61	0.54	30	0.26	20	0.07	6	68
ESTES PARK	0.91	53	4.62	214	0.96	47	1.05	46	0.36	19	0.27	22	72
FORT COLLINS	1.29	71	6.15	212	1.39	65	1.02	61	9.79	51	0.12	12	97
FORT MORGAN	0.79	62	5.49	212	2.23	105	0.98	53	2.63	181	0.02	2	117
GREELEY	1.83	124	5.22	217	1.37	76	0.70	52	0.53	50	0.01	1	107
KASSLER	2.46	104	4.22	143	0.98	51	0.46	28	0.21	14	0.38	32	75
LAKEWOOD	1.56	79	5.20	206	1.46	79	0.59	37	0.35	29	0.28	25	92
LONGMONT	1.35	88	6.86	271	1.21	64	0.52	43	1.35	131	0.11	11	124
PARKER RED	1.71	110	4.98	220	1.48	80	1.39	72	0.61	34	0.05	5	99
FEATHER LAKE	0.36												
STERLING	0.95	73	3.17	110	4.02	143	0.74	30	1.33	82	0.08	5	84
WRAY	0.88	47	4.01	127	2.13	68	1.91	66	1.08	44	0.09	6	67

## FLOODS

No severe flooding occurred in Division One during the 1978 Water Year.

The following tabulation shows the annual flows in acre feet at the major control gaging stations in the Division and the highest instantaneous peak flow during the period.

Most figures are preliminary reports and subject to revision.

STATION	WATER YEAR (A.F.) Oct. 1, 1977 to Sept. 30, 1978	INSTANTANEOUS PEAK FLOWS	
		DATE	C.F.S
South Platte below Cheesman	43,510	July 2	558
North Fork at South Platte	188,200	June 30	806
South Platte at South Platte	244,500	July 3	1170
Bear Creek at Morrison	11,800	May 17	107
Bear Creek at Sheridan	9,700	May 17	267
South Platte at Denver	99,870	May 17	1730
Clear Creek Nr. Golden (Upper Station)	134,600	June 16	1370
Clear Creek at Derby	39,130	June 26	764
South Platte at Henderson	193,800	May 1	4170
Middle Boulder Creek at Orodell			
South Boulder Creek at Eldorado	45,310	June 27	366
Coal Creek at Plainview	1,160	May 10	46
St. Vrain Creek at Lyons	101,300	May 17	1560
St. Vrain at Platteville	147,200	May 18	2980
Big Thompson at Canyon (1)	78,270	May 17	1120
Big Thompson at LaSalle	63,480	May 18	1300
Cache la Poudre at Canyon	271,200	May 16	3760
Cache la Poudre at Greeley	92,220	June 12	2130
South Platte at Kersey	458,700	June 12	5080
South Platte at Balzac	90,190	June 14	1770
South Platte at Julesburg	71,230	June 19	581

(1) Does not include 73,100 A.F. which was diverted via Foothills Canal and Dille Tunnel and returned to the river below station.

WATER SUPPLY

UNDERGROUND WATER

The activity of the Groundwater Section of the State Engineer's Office continues to increase. The following tabulation is indicative of the magnitude of this activity:

	<u>APPLICATIONS RECEIVED</u>	<u>PERMITS ISSUED</u>	<u>EXTENSIONS DENIALS &amp; MISC.</u>	<u>TOTAL TRANSACTIONS</u>
EXEMPT	5023	4091		
NON-EXEMPT	396	295	235	10,040

These figures are for the period January 1, 1978 to November 30, 1978. Total transactions for 1978 were 112 percent of the 8977 for the comparable eleven month period in 1977.



HYDROGRAPHIC REPORT  
DIVISION ONE  
1978

GENERAL

The 1978 Water Year was more nearly a normal one than were the previous two years. Some residual repair activity carried over from the 1976 Big Thompson River Flood, but for the most part this was minor. We continue to have problems with inlets and with stability of gaging sections in the Big Thompson Canyon, because of movement of silt, sand and rock in the river channel. This problem, originally caused by the flood, is accentuated by continued construction activity.

As ever year a considerable amount of effort was devoted to routine maintenance and repair, as well as upgrading of stations and equipment. For example, digital recorders have been installed in several stations in the past two years, requiring station modifications such as moving flush tanks, and rebuilding shelves.

By far the major part of the hydrographic activity was devoted to the normal functions of discharge measurement and record processing. Administrative measurements and special studies are occupying an ever increasing share of the hydrographic work load. Gain-Loss study measurements were made on the Lower South Platte River twice during the irrigation water year. The same type measurements were made three times in the Boulder Creek-Coal Creek drainage basin as a cooperative effort with the Geological Survey. These efforts consumed twenty-four man-days of field time, as well as considerable office time for planning and preparation of results. The necessity of providing monthly stream flow figures for the Drought Committee Report also increased the work load.

HYDROGRAPHIC REPORT  
DIVISION ONE  
1978

HYDROGRAPHIC ACTIVITY

STREAM FLOW MEASUREMENTS  
1978 WATER YEAR

The following measurements were made by Division One Hydrographers:

<u>HYDROGRAPHER</u>	<u>NUMBER OF MONTHS</u>	<u>NUMBER OF MEASUREMENTS</u>
Aab, D.R.	3	
Allison, W.E.	3	75
Appelgren, P.S.	3	
Bell, T.S.	12	235
Coffer, H.R.	12	190
Cooper, R.E.	12	257
David, C.G.	8	162
Klamann, R.M.	3	
Largent, G.E.	8	173
Liuzzi, M.J.	11 1/2	270
McDanold, J.C.	12	326
	TOTAL	<u>1688</u>

Total hydrographic mileage was 100,366. Significant contribution to the total hydrographic effort was made by the three summer employees who made some of the above measurements. Measurements or mileage by Glen Brees or Bud Walcher in Division One are not included above.

SUPPLEMENTAL HYDROGRAPHIC REPORTS

ANNUAL REPORT  
COLORADO-BIG THOMPSON PROJECT  
1978

The Colorado-Big Thompson Project is a cooperative effort between the U.S. Bureau of Reclamation, the Northern Colorado Water Conservancy District and the Division of Water Resources. Water is diverted from the Western Slope through Alva B. Adams Tunnel. Power is generated in a series of five power plants by the Bureau, then the water is distributed to East slope users by the Conservancy District.

ACTIVE PROJECT STORAGE

<u>Western Slope</u>	<u>Nov 1, 1977</u>	<u>Nov. 1, 1978</u>	<u>Diff.</u>
Green Mountain	58,370	103,880	+ 45,510
Willow Creek	7,750	8,170	+ 420
Granby	138,500	199,920	+ 61,420
Shadow Mountain- Grand Lake	1,220	1,210	- 10
Total Acre Feet	<u>205,840</u>	<u>313,180</u>	+ <u>107,340</u>
 <u>Eastern Slope</u>			
Marys, Estes, Pinewood and Flatiron	4,950	4,570	- 380
Carter	13,190	49,330	+ 36,140
Horsetooth	20	51,720	+ 51,700
Boulder	2,280	2,160	- 120
Total Acre Feet	<u>20,440</u>	<u>107,780</u>	+ <u>87,340</u>

Total active storage (total reservoir storage less dead storage) was 420,960 acre feet on November 1, 1978. This compares with 226,280 acre feet on November 1, 1977 and with 623,350 acre feet total active project storage capacity.

DISTRIBUTION OF PROJECT WATER

<u>WATER DISTRICT</u>	<u>CARRIER</u>	<u>TOTAL ACRE FEET</u>
1	Hansen Feeder Canal via Big Thompson	3,250
3	Hansen Supply Canal via Cache la Poudre Direct Delivery	61,880 12,700
4	Hansen Feeder Canal via Big Thompson St. Vrain Supply via Little Thompson Direct Delivery	32,340 8,520 7,620
5	St. Vrain Supply Canal via St. Vrain Direct Delivery	8,520 14,060
6	Boulder Cr. Supply Canal via Boulder Cr. Direct Delivery	14,930 5,660
	Total to all districts, including replacement	169,480
	Quota water declared available - 60% or 185,660 ac.ft. Replacement water - 4860 ac.ft.	

MATERIAL BALANCE - PROJECT WATER DISTRIBUTION

ESTES PARK AREA

<u>INFLOW</u>	<u>NOV. 1, 1977 - NOV. 1, 1978</u>	<u>TOTAL ACRE FEET</u>
<u>WESTERN SLOPE WATER</u>		
Alva B. Adams Tunnel	268,210	
<u>EASTERN SLOPE WATER</u>		
Wind River	1,150	
Big Thompson River	112,590	
Fish Creek	790	
Storage November 1, 1977	3,170	385,910

<u>OUTFLOW</u>	<u>NOV. 1, 1977 - NOV. 1, 1978</u>	<u>TOTAL ACRE FEET</u>
Estes Park Water District	330	
Town of Estes Park	490	
Estes-Foothills Canal	345,630	
Big Thompson River	48,040	
Storage Nov. 1, 1978	<u>3,260</u>	397,750

Apparent Gain 11,840 acre feet

CARTER LAKE AREA

INFLOW

Estes-Foothills Canal	345,630	
Storage Pinewood, Flatiron Nov. 1, 1977	2,230	
Storage Carter Nov. 1, 1977	16,500	
Dille Tunnel	<u>5,150</u>	369,510

OUTFLOW

Hansen Feeder Canal	136,530	
Big Thompson River	99,920	
St. Vrain Supply Canal	60,070	
Direct Diversion	4,750	
Storage Carter Nov. 1, 1978	49,330	
Storage Pinewood, Flatiron Nov. 1, 1978	<u>2,300</u>	352,900

Apparent Loss 16,610 acre feet

HORSETOOTH AREA

INFLOW

Hansen Feeder Canal	134,350	
Storage Nov. 1, 1977	<u>8,290</u>	142,640

OUTFLOW

Hansen Supply Canal	62,490	
Direct Delivery	12,090	
Storage Nov. 1, 1978	<u>59,980</u>	134,560

Apparent Loss 8,080 acre feet

BOULDER AREA

<u>INFLOW</u>	<u>NOV. 1, 1977 - NOV. 1, 1978</u>	<u>TOTAL ACRE FEET</u>
Boulder Feeder Canal	21,470	
Storage Nov. 1, 1977	<u>2,280</u>	23,750

OUTFLOW

Boulder Creek Supply Canal	20,590	
Dry Creek Replacement	1,130	
Storage Nov. 1, 1978	<u>2,160</u>	23,880

Apparent Gain 130 acre feet

SUMMATIONS

Estes Park Area	+ 11,840	
Carter Lake Area	- 16,610	
Horsetooth Area	- 8,080	
Boulder Area	+ 130	- 12,720

Total Apparent Project Loss 12,720 Acre Feet

### OPERATION SKIM

In conjunction with the Colorado-Big Thompson Project, Operation Skim diverts Big Thompson River water for power generation purposes and returns it to the river. Upper Big Thompson River water is diverted through Estes Foothills Canal into Olympus Tunnel for power generation at Polehill and Flatiron Power Plants. Near the mouth of Big Thompson Canyon, river water is diverted through Dille Tunnel. River water from both diversions is then returned to the river through the Big Thompson Power Plant. Skim operations for the 1978 irrigation water year were as follows:

<u>MONTH</u>	<u>WATER DIVERTED ACRE-FEET</u>
November	1,440
December	840
January	760
February	590
March	830
April	70
May	11,960
June	29,850
July	21,310
August	3,230
September	490
October	0
	<u>71,370</u>

Harold R. Coffey  
Water Resources Engineer

III. WATER SUPPLY

F.

TRANSMOUNTAIN DIVERSIONS

OCTOBER 1, 1977 - SEPTEMBER 30, 1978

DIVERTING STRUCTURE	SOURCE	SOURCE DISTRICT	RECEIVING DISTRICT	CONTROLLING OR
Wilson Supply Ditch	Sand & Deadman Creek	48	3	Divide Canal &
*Deadman Ditch	Deadman Creek	48	3	Divide Canal &
(Incl. in Wilson supply)				
Bob Creek Ditch	Nunn Creek	48	3	City of Greele
Columbine Ditch	Deadman Creek	48	3	City of Greele
Laramie Poudre Tunnel	Laramie River	48	3	Water Supply &
Skyline Ditch	West Fork Laramie River	48	3	Water Supply &
Cameron Pass Ditch	Michigan River	47	3	Water Supply &
Michigan Ditch	Michigan River	47	3	North Poudre I
Grand River Ditch	Colorado River	51	3	City of Ft. C
Eureka	Colorado River	51	4	City of Lovel
Alva B. Adams Tunnel	Colorado River	51	4	U.S.B.R. - N.
Moffat Tunnel	Fraser River	51	6	City of Denve
Jones Pass Tunnel	Williams Fork	51	6	City of Denve
AKA August P. Gumllich or Williams Fork Tunnel	(INC in Moffat: Tunnel)			
Berthoud Pass Ditch	Fraser River	51	7	Farmers Res. &
Vidler Tunnel	Montezuma Creek	36	7	Herbert Young
Roberts Tunnel	Blue River	36	23-8	City of Denve
Boreas Pass Ditch	Indiana Creek	36	23	City of Aurora
Hoosier Pass Tunnel	Blue River	36	23	City of Colo.
Aurora Homestake	Homestake Creek	37	23	City of Aurora

\* INCLUDED IN WILSON SUPPLY DITCH



RESERVOIR STORAGE DISTRICT NO. 1

NAME	SOURCE	AMOUNT - A.F.		
		10-31-77	4-30-78	10-31-78
Empire	South Platte	6155	34126	5043
Riverside	South Platte	8817	60110	12692
Jackson	South Platte	9460	32940	11343
Bijou No.2	South Platte	0	4780	0
North Sterling	South Platte	11930	72015	17360
Prewitt	South Platte	6610	27250	7460
Klug	Boxelder Creek	0	0	0
Bootleg	Boxelder Creek	0	0	0
Heart	Little Crow Creek	316	21	0
Giffin No. 1	Lone Tree Creek	23	15	0
Giffin No. 2	Lone Tree Creek	0	14	0
Adams & Bunker No.1	Little Crow Creek	78	207	25
Adams & Bunker No.2	Little Crow Creek	0	84	0
	TOTAL	43389	231562	53923

RESERVOIR STORAGE DISTRICT NO. 2

NAME	SOURCE	AMOUNT - A.F.		
		10-31-77	4-30-78	10-31-78
Barr	South Platte	1396	21927	2664
Horsecreek	South Platte	880	8570	280
Prospect	South Platte	1310	1125	626
Lord	South Platte	0	0	0
Milton	South Platte	978	13221	2314
Lower Latham	South Platte	3155	5853	4325
Standley	Clear Creek	16167	23068	24570
Behrns	South Platte	12	7	37
Beulah	South Platte	7	25	25
Bowles No. 1	South Platte	30	0	15
Bowles No. 2	South Platte	40	25	45
Brantner No. 2	Brantner Gulch	11	11	11
Carlin	South Platte	0	0	0
Church Lower Lake	Dry Creek	33	34	68
Coal Ridge	Little Dry Creek	453	331	369
Fulton Waste	South Platte	420	400	315
German No. 2	Big Dry Creek	28	80	80
German No. 3	Big Dry Creek	2	2	3
German No. 4	Big Dry Creek	32	30	30
German No. 6	Big Dry Creek	14	4	16
German No. 8	Big Dry Creek	27	15	27
German No. 9	Big Dry Creek	9	4	9
German No. 12	Big Dry Creek	83	70	70
H.A. Smith	South Platte	30	40	40
Great Western	Clear Creek	1230	544	1745
Henry	South Platte	0	0	0
J.B. Smith	Todd Creek	75	120	120
Ireland No. 1	South Platte	5	35	3
Ireland No. 5	South Platte	0	0	0
La Dore	Seepage	360	367	367
Loloff	South Platte	109	145	72
Marshall	Brantner Gulch	30	30	30
Maul	First Creek	33	33	20
Meek No. 1	South Platte	20	10	35
Meek No. 2	South Platte	6	1	8
Mose Davis No. 2	South Platte	92	120	72
North Star	Big Dry Creek	0	116	116
Olds	South Platte	0	0	0
Parson-Holms	Second Creek	0	0	0
Thompson	Big Dry Creek	203	200	200

RESERVOIR STORAGE DISTRICT NO. 2 (CONTINUED)

NAME	SOURCE	AMOUNT - A.F.		
		10-31-77	4-30-78	10-31-78
Matson	Big Dry Creek	9	1	8
Karsh	Big Dry Creek	2	2	2
Hamilton	Seepage	0	1	1
Francis	Gulch	0	2	1
Brunner	Seepage	0	53	1
Burnett-Deisher	Seepage	<u>17</u>	<u>11</u>	<u>17</u>
	TOTAL	27308	76633	38757

RESERVOIR STORAGE DISTRICT NO. 3

NAME	SOURCE	AMOUNT - A.F.		
		10-31-77	4-30-78	10-31-78
Fossil Creek	Cache La Poudre	4776	6012	1322
Halligan	N FK Cache La Poudre	571	1103	465
Clarks Lake	N FK Cache La Poudre	465	642	568
Indian Creek	N FK Cache La Poudre	1339	1239	1399
N. Poudre No. 2	N FK Cache La Poudre	1776	2563	1898
N. Poudre No. 3	N FK Cache La Poudre	881	71	0
N. Poudre No. 4	N FK Cache La Poudre	364	915	573
N. Poudre No. 5	Cache La Poudre	0	0	2828
N. Poudre No. 6	Cache La Poudre	1703	2279	0
N. Poudre No. 15	N FK Cache La Poudre	2104	2465	1284
Park Creek	N FK Cache La Poudre	4241	5298	2051
N. Poudre Minor	N FK Cache La Poudre	819		
Cobb	Cache La Poudre	0	0	3535
Douglas	Cache La Poudre	3382	3584	5337
Res. No. 8	Cache La Poudre	4752	4410	5597
Res. No. 8 Annex	Cache La Poudre	1499	1368	1837
Windsor Res.	Cache La Poudre	3121	8307	5516
Chambers	Wright, Trap & Fall	3919	3864	4579
Long Draw	Long Draw	6765	6320	7224
Black Hollow	Cache La Poudre	3197	3517	3409
Curtis	Cache La Poudre	585	464	629
Kluyer	Cache La Poudre	793	640	751
Lindenmeier	Cache La Poudre	0	0	330
Long Pond	Cache La Poudre	1948	2575	2795
Richards	Cache La Poudre	495	531	219
Rocky Ridge	Cache La Poudre	3203	3403	2973
W S & S No. 3	Cache La Poudre	0	110	2256
W S & S No. 4	Cache La Poudre	497	456	739
Terry Lake	Cache La Poudre	3477	5367	4639
Worster Res.	Sheep Creek	0	519	93
Timnath Res.	Cache La Poudre	3302	7438	4482
Windsor Lake	Cache La Poudre	866	636	969
Barnes Meadow	Barnes Meadow	1682	1360	2084
Big Beaver	Big Beaver Creek	0	0	0
Comanche	Big Beaver Creek	0	0	0
Peterson	Unnamed Creek	0	0	0
Seaman	N FK Cache La Poudre	1163	2709	1046
Twin Lake	Trib. of Pennock	0	0	0
Claymore	Cache La Poudre	0	436	529
Dowdy	Pine Creek	34	12	595
Joe Wright	Joe Wright Creek		0	0
Eaton Law Res.	Cache La Poudre	0	0	

RESERVOIR STORAGE DISTRICT NO. 3 (CONTINUED)

NAME	SOURCE	<u>AMOUNT - A.F.</u>		
		10-31-77	4-30-78	10-31-78
Gray Lakes	Boxelder Creek	509	1021	
Panhandle Creek	Panhandle Creek	841	841	841
Portner	Fossil Creek	69	192	284
Seeley	Cache La Poudre	865	986	740
Warren Lake	Cache La Poudre	1269	978	277
Woods Lake	Cache La Poudre	210	661	1474
Horsetooth	Colo. Big Thompson	<u>8266</u>	<u>67856</u>	<u>        </u>
	TOTAL	75748	153148	78167

RESERVOIR STORAGE DISTRICT NO. 4

NAME	SOURCE	AMOUNT - A.F.		
		10-31-77	4-30-78	10-31-78
Boulder & Larimer	Little Thompson	2098	1953	1586
Boyd Lake	Big Thompson	16126	15801	33498
Carter	Colo. Big Thompson	16505	98908	52509
Cemetery Lake	Big Thompson	336	303	359
Donath	Big Thompson	601	512	373
Fairport	Big Thompson	52	18	185
Geo. Rist (Buckingham)	Big Thompson	0	0	269
Hertha Res.	Dry Creek	577	1456	454
Horseshoe Res.	Big Thompson	5275	6510	4008
Lake Loveland	Big Thompson	11772	9307	3214
Lawn Lake	Roaring Fork	0	0	817
Lon Hagler	Big Thompson	5108	4912	2448
Lone Tree Res.	Big Thompson	5063	7575	1844
Loveland Lake	Big Thompson	369	872	648
Mariano	Big Thompson	1977	4657	1088
Oklahoma	Big Thompson	224	210	274
Rist Benson Res.	Big Thompson	0	0	341
Ryan Gulch Res.	Ryan Gulch	300	504	543
South Side Res.	Big Thompson	271	206	294
Welch	Big Thompson	<u>4446</u>	<u>4002</u>	<u>3514</u>
	TOTAL	71100	157706	108266

RESERVOIR STORAGE DISTRICT NO. 5

NAME	SOURCE	AMOUNT - A.F.		
		10-31-77	4-30-78	10-31-78
Beaver Lake	Beaver Creek	857	1026	679
Foothills	St.Vrain	1163	2077	960
Highland No. 1	St.Vrain	741	745	497
Highland No. 2	St.Vrain	2270	2245	2377
Highland No. 3	St.Vrain	637	637	503
McIntosh	St.Vrain	257	314	482
Pleasant Valley	St.Vrain	2002	2309	2079
Oligarchy No. 1	St.Vrain	1621	1669	1358
Union	St.Vrain	8864	10188	10645
Left Hand Park	Left Hand	1499	1499	685
Left Hand Valley	Left Hand	225	1275	2422
Button Rock	N.St.Vrain	<u>10680</u>	<u>10373</u>	<u>12319</u>
	TOTAL	30816	34357	35006

RESERVOIR STORAGE DISTRICT NO. 6

NAME	SOURCE	AMOUNT - A.F.		
		10-31-77	4-30-78	10-31-78
Marshall	South Boulder Creek	60	3306	2636
Great Western	Clear & Coal Creeks	1232	530	1746
Baseline	S. & M. Boulder Creek	2144	2206	2839
McKay	South Boulder Creek	125	72	211
Albion	Albion Creek	1003	1111	554
Barker	M. Boulder Creek	4998	2991	8762
Boulder	Big Thompson Project	3584	4984	3461
Goose Lake	North Boulder Creek	1036	1036	1036
Gross	S. & M. Boulder Creek	19219	13684	23109
Hillcrest	S. & M. Boulder Creek	1793	1591	1701
Leggett	S. & M. Boulder Creek	1292	1145	1225
Valmont	S. & M. Boulder Creek	6471	5989	6253
Six Mile	Middle Boulder Creek	0	1077	794
Silver	North Boulder Creek	3781	365	3086
Panama No.1	Middle Boulder Creek	<u>1827</u>	<u>3267</u>	<u>3765</u>
	TOTAL	48565	43354	61178



RESERVOIR STORAGE DISTRICT NO. 7

NAME	SOURCE	<u>AMOUNT - A.F.</u>		
		10-31-77	4-30-78	10-31-78
Maple Grove	South Clear Creek	530	375	489
Ralston	Moffat via Gross	10016	6617	7018
Tucker	Ralston	161	376	293
Long Lake	Ralston Creek	1008	638	688
Standley	Clear Creek	<u>15953</u>	<u>22855</u>	<u>24309</u>
	TOTAL	27668	30861	32797

RESERVOIR STORAGE DISTRICT NO. 8

NAME	SOURCE	AMOUNT - A.F.		
		10-31-77	4-30-78	10-31-78
Aurora Rampart	South Platte	766	384	114
Chatfield	South Platte	8635	9303	8803
Cherry Creek	Cherry Creek	13236	13252	11900
Marston	South Platte	16377	15413	13368
McLellen	South Platte	3506	3276	3058
Platte Canyon	South Platte	<u>920</u>	<u>913</u>	<u>917</u>
	TOTAL	43440	42541	38160

RESERVOIR STORAGE DISTRICT NO. 9

NAME	SOURCE	AMOUNT - A.F.		
		10-31-77	4-30-78	10-31-78
Soda No.1 (West)	Bear Creek	0	0	0
Soda No.2 (East)	Bear Creek	308	194	40
Kendrick	Bear Creek	50	190	50
Patrick	Bear Creek	495	520	495
Deane	Turkey Creek	225	225	107
Bergen No.1 (East)	Turkey Creek	328	277	240
Bergen No.2 (West)	Turkey Creek	423	490	490
Ward	Bear Creek	480	550	455
Henry Lake	Bear Creek	100	109	87
Harriman	Bear Creek	305	575	245
Bowles	Bear Creek	1194	1738	750
Johnston	Bear Creek	120	160	222
Tule No.1 (Upper)	South Platte	63	63	84
Tule No.2 (Lower)	South Platte	74	74	90
Grant A (West)	Bear Creek	30	58	0
Grant B (South)	Bear Creek	105	105	105
Grant C (East)	Bear Creek	35	35	34
Kingfisher Lake	Turkey Creek	0	30	5
Willow Sp.No.1	Turkey Creek	<u>35</u>	<u>20</u>	<u>10</u>
	TOTAL	4370	5413	3509

RESERVOIR STORAGE DISTRICT NO. 23

NAME	SOURCE	AMOUNT - A.F.		
		10-31-77	4-30-78	10-31-78
Antero	So.Fk.South Platte	13815	14960	13365
Eleven Mile	So.Fk.South Platte	82300	82328	89961
Jefferson	Jefferson Lake	165	0	0
Montgomery	Md.Fk.South Platte and Hoosier Tunnel	<u>4066</u>	<u>725</u>	<u>3948</u>
	TOTAL	100346	98013	107274

RESERVOIR STORAGE DISTRICT NO. 64

NAME	SOURCE	AMOUNT - A.F.		
		10-31-77	4-30-78	10-31-78
Julesburg Res.	South Platte	9186	22814	5198
North Sterling	South Platte	11930	72015	17360
Prewitt	South Platte	<u>6610</u>	<u>27250</u>	<u>7460</u>
	TOTAL	27726	122079	30018

SPRING WHEAT

1976 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION I PERCENT	IRRIGATED				NON IRRIGATED			
		ACRES	YIELD BU/ACRE	PRODUCTION BUSHELS X 1000	ACRES	YIELD BU/ACRE	PRODUCTION BUSHELS X 1000		
ADAMS		300	46	13.8	100	14	1.4		
ARAPAHOE					600	13	7.8		
BOULDER		200	43	8.6	200	20	4		
CHEYENNE	39								
CLEAR CREEK									
DENVER									
DOUGLAS									
ELBERT	69								
GILPIN									
JEFFERSON									
KIT CARSON									
LARIMER		800	41	32.8	500	20.6	10.3		
LINCOLN	26.5								
LOGAN		200	44	8.8	200	19	3.8		
MORGAN		100	49	4.9	400	20	8		
PARK	87.4								
PHILLIPS									
SEDGWICK					1000	19	19		
TELLER	47.5								
WASHINGTON									
WELD		700	47	32.9	700	17	11.9		
YUMA		200	31	6.2	100	13	1.3		
<b>TOTALS</b>		2500	43.2	108	3800	17.8	67.5		

SPRING WHEAT

1976 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION I PERCENT	IRRIGATED			NON IRRIGATED		
		ACRES	YIELD BU/ACRE	PRODUCTION BUSHEL X 1000	ACRES	YIELD BU/ACRE	PRODUCTION BUSHEL X 1000
ADAMS		300	46	13.8	100	14	1.4
ARAPAHOE					600	13	7.8
BOULDER		200	43	8.6	200	20	4
CHEYENNE	39						
CLEAR CREEK							
DENVER							
DOUGLAS							
ELBERT	69						
GILPIN							
JEFFERSON							
KIT CARSON							
LARIMER		800	41	32.8	500	20.6	10.3
LINCOLN	26.5						
LOGAN		200	44	8.8	200	19	3.8
MORGAN		100	49	4.9	400	20	8
PARK	87.4						
PHILLIPS							
SEDGWICK					1000	19	19
TELLER	47.5						
WASHINGTON							
WELD		700	47	32.9	700	17	11.9
YUMA		200	31	6.2	100	13	1.3
TOTALS		2500	43.2	108	3800	17.8	67.5

1976 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION 1 PERCENT	POTATOES			CORN FOR SILAGE			HAY		
		ACRES	YIELD cwt/acres	PRODUCTION CWT X 1000	ACRES	YIELD TONS/ACRE	PRODUCTION TONS X 1000	ACRES	YIELD TONS/ACRE	PRODUCTION TONS X 1000
ADAMS					3200	18	57.6	17000	2.69	45.8
ARAPAHOE					400	19.5	7.8	7000	2.24	15.7
BOULDER					4900	18	88.2	15200	2.57	39
CHEYENNE	39				600	15	9	3400	1.14	3.9
CLEAR CREEK										
DENVER										
DOUGLAS								9100	1.68	15.3
ELBERT	69				800	11	8.8	13400	1.45	19.4
GILPIN										
JEFFERSON					600	20	12.	7600	1.13	8.6
KIT CARSON								21200	1.83	38.7
LARIMER					23800	21	499.8	32000	2.58	82.4
LINCOLN	26.5				200	14	2.8	4900	1.48	7.3
LOGAN					13400	19	254.6	47000	2.68	125.8
MORGAN				882	7800	18	140.4	22600	3.83	86.6
PARK	87.4	3150	280					17000	.60	10.2
PHILLIPS					1400	18	25.2	12900	2.32	29.9
SEDGWICK					4500	22	99	8600	2.66	22.9
TELLER	47.5							2000	.86	1.7
WASHINGTON					2600	17	44.2	36500	1.25	45.7
WELD		3500	265	928.5	85000	21	1785	113000	3.04	343.7
YUMA					13500	20	270	36000	2.99	107.7
TOTALS		6650	272.3	1810.5	162700	20.3	3304.4	426400	2.46	1050.3



1976 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION 1 PERCENT	POTATOES				CORN FOR SILAGE				HAY		
		ACRES	YIELD cwt/aces	PRODUCTION CWT X 1000	ACRES	YIELD TONS/ACRE	PRODUCTION TONS X 1000	ACRES	YIELD TONS/ACRE	PRODUCTION TONS X 1000		
ADAMS					3200	18	57.6	17000	2.69	45.8		
ARAPAHOE					400	19.5	7.8	7000	2.24	15.7		
BOULDER					4900	18	88.2	15200	2.57	39		
CHEYENNE	39				600	15	9	3400	1.14	3.9		
CLEAR CREEK												
DENVER												
DOUGLAS												
ELBERT	69				800	11	8.8	9100	1.68	15.3		
GILPIN								13400	1.45	19.4		
JEFFERSON					600	20	12.	7600	1.13	8.6		
KIT CARSON								21200	1.83	38.7		
LARIMER					23800	21	499.8	32000	2.58	82.4		
LINCOLN	26.5				200	14	2.8	4900	1.48	7.3		
LOGAN					13400	19	254.6	47000	2.68	125.8		
MORGAN					3150	280	882	22600	3.83	86.6		
PARK	87.4							17000	.60	10.2		
PHILLIPS					1400	18	25.2	12900	2.32	29.9		
SEDGWICK					4500	22	99	8600	2.66	22.9		
TELLER	47.5							2000	.86	1.7		
WASHINGTON					2600	17	44.2	36500	1.25	45.7		
WELD					3500	265	928.5	113000	3.04	343.7		
YUMA					13500	20	270	36000	2.99	107.7		
TOTALS					6650	272.3	1810.5	426400	2.46	1050.3		

OATS

1976 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION I PERCENT	IRRIGATED				NON IRRIGATED			
		ACRES	YIELD BU/ACRE	PRODUCTION BUSHELS X 1000	ACRES	YIELD BU/ACRE	PRODUCTION BUSHELS X 1000		
ADAMS		1000	75	75	700	30	21		
ARAPAHOE					600	15	9		
BOULDER		400	55	22	200	15	3		
CHEYENNE	39								
CLEAR CREEK									
DENVER									
DOUGLAS		100	64	6.4	600	20	12		
ELBERT	69	70	72	3	1300	30	39		
GILPIN									
JEFFERSON									
KIT CARSON		600	60	36	200	22	4.4		
LARIMER		300	68	20.4	300	29	8.7		
LINCOLN	26.5				130	16	2.1		
LOGAN		800	64	51.2	700	25	17.5		
MORGAN		600	72	43.2	200	18	3.6		
PARK	87.4								
PHILLIPS		700	70	49	1000	20	20		
SEDGWICK		200	68	13.6	800	17.5	14		
TELLER	47.5								
WASHINGTON					1300	26	33.8		
WELD		2700	70.2	189.6	1800	14	25.2		
YUMA		200	80	16.	500	20	10.		
TOTALS		7670	68.8	527.4	10330	21.6	223.3		

OATS

1976 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION I PERCENT	IRRIGATED				NON IRRIGATED			
		ACRES	YIELD BU/ACRE	PRODUCTION BUSHEL X 1000	ACRES	YIELD BU/ACRE	PRODUCTION BUSHEL X 1000		
ADAMS		1000	75	75	700	30	21		
ARAPAHOE					600	15	9		
BOULDER		400	55	22	200	15	3		
CHEYENNE	39								
CLEAR CREEK									
DENVER									
DOUGLAS		100	64	6.4	600	20	12		
ELBERT	69	70	72	3	1300	30	39		
GILPIN									
JEFFERSON									
KIT CARSON		600	60	36	200	22	4.4		
LARIMER		300	68	20.4	300	29	8.7		
LINCOLN	26.5				130	16	2.1		
LOGAN		800	64	51.2	700	25	17.5		
MORGAN		600	72	43.2	200	18	3.6		
PARK	87.4								
PHILLIPS		700	70	49	1000	20	20		
SEDGWICK		200	68	13.6	800	17.5	14		
TELLER	47.5								
WASHINGTON					1300	26	33.8		
WELD		2700	70.2	189.6	1800	14	25.2		
YUMA		200	80	16.	500	20	10.		
TOTALS		7670	68.8	527.4	10330	21.6	223.3		

SUGAR BEETS1976 FINAL1977 PRELIMINARY

COUNTY	PORTION OF COUNTY IN DIVISION I PERCENT	ACRES	YIELD TONS/ACRE	PRODUCTION X 1000	ACRES	YIELD TONS/ACRE	PRODUCTION X 1000
ADAMS		1650	16.8	27.8	970	19.8	19.2
ARAPAHOE							
BOULDER		1350	20.1	27.1	940	19.1	18
CHEYENNE	39	500	16.3	8.2	175	11.8	2.1
CLEAR CREEK							
DENVER							
DOUGLAS							
ELBERT	69						
GILPIN							
JEFFERSON							
KIT CARSON		11500	18.6	213.4	6780	17.6	119
LARIMER		6350	20.7	131.5	4970	20.4	101.5
LINCOLN	26.5						
LOGAN		9600	16.5	158.7	5090	16.9	86
MORGAN		11700	17.6	206.1	7710	20.2	155.5
PARK	87.4						
PHILLIPS		6700	19	127.1	3680	19.5	71.8
SEDGWICK		3000	18.1	54.2	2020	17.8	36
TELLER	47.5						
WASHINGTON		2600	18.4	47.9	2520	20.4	31.4
WELD		39400	19.8	780.4	28570	21.1	603
YUMA		9400	18.6	175.3	5100	18.3	93.3
TOTALS		103750	18.9	1957.7	68525	19.8	1356.8

SUGAR BEETS

1976 FINAL

1977 PRELIMINARY

COUNTY	PORTION OF COUNTY IN DIVISION I PERCENT	ACRES	YIELD TONS/ACRE	PRODUCTION X 1000	ACRES	YIELD TONS/ACRE	PRODUCTION X 1000
ADAMS		1650	16.8	27.8	970	19.8	19.2
ARAPAHOE							
BOULDER		1350	20.1	27.1	940	19.1	18
CHEYENNE	39	500	16.3	8.2	175	11.8	2.1
CLEAR CREEK							
DENVER							
DOUGLAS							
ELBERT	69						
GILPIN							
JEFFERSON							
KIT CARSON		11500	18.6	213.4	6780	17.6	119
LARIMER		6350	20.7	131.5	4970	20.4	101.5
LINCOLN	26.5						
LOGAN		9600	16.5	158.7	5090	16.9	86
MORGAN		11700	17.6	206.1	7710	20.2	155.5
PARK	87.4						
PHILLIPS		6700	19	127.1	3680	19.5	71.8
SEDGWICK		3000	18.1	54.2	2020	17.8	36
TELLER	47.5						
WASHINGTON		2600	18.4	47.9	2520	20.4	31.4
WELD		39400	19.8	780.4	28570	21.1	603
YUMA		9400	18.6	175.3	5100	18.3	93.3
TOTALS		103750	18.9	1957.7	68525	19.8	1356.8

CORN FOR GRAIN

1976 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION I PERCENT	ACRES PLANTED	IRRIGATED				NON IRRIGATED				1977 PRELIMINARY			
			ACRES HARVESTED	YIELD bu/acre	PRODUCTION BUSHELS X 1000	ACRES HARVESTED	YIELD bu/acre	PRODUCTION BUSHELS X 1000	ACRES	YIELD bu/acre	PRODUCTION BUSHELS X 1000	ACRES	YIELD bu/acre	PRODUCTION BUSHELS X 1000
ADAMS		6800	3300	105	346.5							2800	100	280
ARAPAHOE		700	200	102	20.4		100	19	1.9			300	76.7	23
BOULDER		11000	6100	95.4	582							7000	98	686
CHEYENNE	39	2300	1600	100	160		50	19	.9			1800	100	180
CLEAR CREEK														
DENVER														
DOUGLAS												500	96	48
ELBERT	69						70	16	1.1			100	20	2
GILPIN														
JEFFERSON		1000	400	95	38							500	96	48
KIT CARSON		89500	70000	100	7000		500	19	9.5			75000	113.4	8503
LARIMER		42000	14000	102	1428		1500	21	31.5			11500	106	1219
LINCOLN	26.5	500	150	90	13.5							150	80	12
LOGAN		58500	39500	96	3792		3500	18	63			52000	122	6344
MORGAN		76000	65000	107	6955							65000	119	7735
PARK	87.4													
PHILLIPS		62500	52500	106	5565		7500	19	142.5			71500	124.2	8882.5
SEDGWICK		29500	22500	106	2385		2500	19	47.5			31000	126.6	3925.5
TELLER	47.5													
WASHINGTON		25500	20000	106	2120		1000	18	18			23000	110	2531
WEID		189000	93500	106	9911		3500	18	63			99000	113.6	11246.5
YUMA		150000	132000	111.6	14733		1000	24.5	24.5			153000	127.3	19483.5
TOTALS		744800	520750	105.7	55049.4		21220	19	403.4			594150	119.7	71149

CORN FOR GRAIN

1976 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION I PERCENT	IRRIGATED				NON IRRIGATED				1977 PRELIMINARY			
		ACRES PLANTED	ACRES HARVESTED	YIELD bu/acre	PRODUCTION BUSHELS X 1000	ACRES HARVESTED	YIELD bu/acre	PRODUCTION BUSHELS X 1000	ACRES	YIELD bu/acre	PRODUCTION BUSHELS X 1000		
ADAMS		6800	3300	105	346.5				2800	100	280		
ARAPAHOE		700	200	102	20.4	100	19	1.9	300	76.7	23		
BOULDER		11000	6100	95.4	582				7000	98	686		
CHEYENNE	39	2300	1600	100	160	50	19	.9	1800	100	180		
CLEAR CREEK													
DENVER													
DOUGLAS									500	96	48		
ELBERT	69					70	16	1.1	100	20	2		
GILPIN													
JEFFERSON		1000	400	95	38				500	96	48		
KIT CARSON		89500	70000	100	7000	500	19	9.5	75000	113.4	8503		
LARIMER		42000	14000	102	1428	1500	21	31.5	11500	106	1219		
LINCOLN	26.5	500	150	90	13.5				150	80	12		
LOGAN		58500	39500	96	3792	3500	18	63	52000	122	6344		
MORGAN		76000	65000	107	6955				65000	119	7735		
PARK	87.4												
PHILLIPS		62500	52500	106	5565	7500	19	142.5	71500	124.2	8882.5		
SEDGWICK		29500	22500	106	2385	2500	19	47.5	31000	126.6	3925.5		
TELLER	47.5												
WASHINGTON		25500	20000	106	2120	1000	18	18	23000	110	2531		
WELD		189000	93500	106	9911	3500	18	63	99000	113.6	11246.5		
YUMA		150000	132000	111.6	14733	1000	24.5	24.5	153000	127.3	19483.5		
TOTALS		744800	520750	105.7	55049.4	21220	19	403.4	594150	119.7	71149		

WINTER WHEAT

1976 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION I PERCENT	IRRIGATED				NON IRRIGATED				1977 PRELIMINARY				
		ACRES PLANTED	ACRES HARVESTED	YIELD bu/acre	PRODUCTION BUSHELS X 1000	ACRES HARVESTED	YIELD bu/acre	PRODUCTION BUSHELS X 1000	ACRES	YIELD bu/acre	PRODUCTION BUSHELS X 1000	ACRES	YIELD bu/acre	PRODUCTION BUSHELS X 1000
ADAMS		234000	5000	44	220	217000	22	4774	220000	21.6	4746			
ARAPAHOE		71500	1000	36	36	54500	20.5	1115	57000	15.4	875			
BOULDER		10500	600	44.2	26.5	8400	29	243.6	7500	20.4	153.2			
CHEYENNE	39	48000	1600	35	56	22600	11	248.6	31200	22.2	692.6			
CLEAR CREEK														
DENVER														
DOUGLAS		9500				6500	14	91	7000	15	105			
ELBERT	69	48600	350	44	15.4	38300	14	536.2	41400	16.5	683.1			
GILPIN														
JEFFERSON		4000	200	44	8.8	3800	19	72.2	4500	17	76.5			
KIT CARSON		261000	17000	34.1	579	188000	19	3572	243000	24.2	5888.5			
LARIMER		16500	200	47	9.4	15800	29	458.2	14000	15.1	212			
LINCOLN	26.5	37600	500	26	13	31500	18	567	30700	21.2	650.8			
LOGAN		185000	1500	44	66	158500	21	3328	146000	21.1	3080			
MORGAN		72500	4500	54	243	65500	24	1572	74000	21.2	1569			
PARK	87.4													
PHILLIPS		139000	2500	40	100	134500	25	3362	137000	35.1	4809			
SEDGWICK		76500	3000	43.8	131.3	73000	31	2263	68500	29.1	1994.7			
TELLER	47.5													
WASHINGTON		323000	4500	48	216	281500	24	6756	290000	23.3	6766.5			
WELD		195000	3000	42	126	172000	23.2	3991	147500	15.4	2274.6			
YUMA		148000	5000	38	190	140000	23	3220	160000	26.3	4207			
TOTALS		1880200	50450	40.4	2036.4	1611400	22.4	36169.8	1679300	23.1	38783.5			



WINTER WHEAT

1976 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION I PERCENT	IRRIGATED				NON IRRIGATED				1977 PRELIMINARY				
		ACRES PLANTED	ACRES HARVESTED	YIELD bu/acre	PRODUCTION BUSHELS X 1000	ACRES HARVESTED	YIELD bu/acre	PRODUCTION BUSHELS X 1000	ACRES	YIELD bu/acre	PRODUCTION BUSHELS X 1000	ACRES	YIELD bu/acre	PRODUCTION BUSHELS X 1000
ADAMS		234000	5000	44	220	217000	22	4774	220000	21.6	4746			
ARAPAHOE		71500	1000	36	36	54500	20.5	1115	57000	15.4	875			
BOULDER		10500	600	44.2	26.5	8400	29	243.6	7500	20.4	153.2			
CHEYENNE	39	48000	1600	35	56	22600	11	248.6	31200	22.2	692.6			
CLEAR CREEK														
DENVER														
DOUGLAS		9500				6500	14	91	7000	15	105			
ELBERT	69	48600	350	44	15.4	38300	14	536.2	41400	16.5	683.1			
GILPIN														
JEFFERSON		4000	200	44	8.8	3800	19	72.2	4500	17	76.5			
KIT CARSON		261000	17000	34.1	579	188000	19	3572	243000	24.2	5888.5			
LARIMER		16500	200	47	9.4	15800	29	458.2	14000	15.1	212			
LINCOLN	26.5	37600	500	26	13	31500	18	567	30700	21.2	650.8			
LOGAN		185000	1500	44	66	158500	21	3328	146000	21.1	3080			
MORGAN		72500	4500	54	243	65500	24	1572	74000	21.2	1569			
PARK	87.4													
PHILLIPS		139000	2500	40	100	134500	25	3362	137000	35.1	4809			
SEDGWICK		76500	3000	43.8	131.3	73000	31	2263	68500	29.1	1994.7			
TELLER	47.5													
WASHINGTON		323000	4500	48	216	281500	24	6756	290000	23.3	6766.5			
WELD		195000	3000	42	126	172000	23.2	3991	147500	15.4	2274.6			
YUMA		148000	5000	38	190	140000	23	3220	160000	26.3	4207			
TOTALS		1880200	50450	40.4	2036.4	1611400	22.4	36169.8	1679300	23.1	38783.5			

SORGHAM FOR GRAIN

1976 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION I PERCENT	ACRES PLANTED	IRRIGATED			NON IRRIGATED			1977 PRELIMINARY		
			ACRES HARVESTED	YIELD bu/acre	PRODUCTION BUSHELS X 1000	ACRES HARVESTED	YIELD bu/acre	PRODUCTION BUSHELS X 1000	ACRES	YIELD bu/acre	PRODUCTION BUSHELS X 1000
ADAMS									700	38.9	27.2
ARAPAHOE											
BOULDER											
CHEYENNE	39	11300	350	53	18.6	2800	16	44.8	3900	31.9	124.4
CLEAR CREEK											
DENVER											
DOUGLAS											
ELBERT	69	4100				400	14	5.6	400	20	8
GILPIN											
JEFFERSON											
KIT CARSON		29500	2200	48.5	106.7	3300	16	52.8	8000	43.6	348.4
LARIMER											
LINCOLN	26.5	6400	200	50	10	1100	13	14.3	1700	19.4	33
LOGAN											
MORGAN		3200	800	65	52	400	25.5	10.2	1400	67.7	94.8
PARK	87.4										
PHILLIPS		5500	300	60	18	2500	24.7	61.7	3400	37.9	128.8
SEDGWICK									500	74.4	37.2
TELLER	47.5										
WASHINGTON		13000	200	56	11.2	1800	17	30.6	3500	28.2	98.8
WELD											
YUMA		23500	2000	58	116	10500	18	189	15000	31.7	476
TOTALS		96500	6050	55	332.5	22800	17.9	409	38500	35.8	1376.6

SORGHAM FOR GRAIN

1976 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION I PERCENT	ACRES PLANTED	IRRIGATED				NON IRRIGATED				1977 PRELIMINARY						
			ACRES HARVESTED	YIELD bu/acre	PRODUCTION BUSHEL X 1000	ACRES HARVESTED	YIELD bu/acre	PRODUCTION BUSHEL X 1000	ACRES	YIELD bu/acre	PRODUCTION BUSHEL X 1000	ACRES	YIELD bu/acre	PRODUCTION BUSHEL X 1000			
ADAMS												700	38.9				27.2
ARAPAHOE																	
BOULDER																	
CHEYENNE	39	11300	350	53	18.6	2800	16			44.8		3900	31.9			124.4	
CLEAR CREEK																	
DENVER																	
DOUGLAS																	
ELBERT	69	4100	400	14						5.6		400	20			8	
GILPIN																	
JEFFERSON																	
KIT CARSON		29500	2200	48.5	106.7	3300	16			52.8		8000	43.6			348.4	
LARIMER																	
LINCOLN	26.5	6400	200	50	10	1100	13			14.3		1700	19.4			33	
LOGAN																	
MORGAN		3200	800	65	52	400	25.5			10.2		1400	67.7			94.8	
PARK	87.4																
PHILLIPS		5500	300	60	18	2500	24.7			61.7		3400	37.9			128.8	
SEDGWICK												500	74.4			37.2	
TELLER	47.5																
WASHINGTON		13000	200	56	11.2	1800	17			30.6		3500	28.2			98.8	
WELD																	
YUMA		23500	2000	58	116	10500	18			189		15000	31.7			476	
TOTALS		96500	6050	55	332.5	22800	17.9			409		38500	35.8			1376.6	

DRY BEANS

1976 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION I PERCENT	ACRES PLANTED	IRRIGATED				NON IRRIGATED				197 PRELIMINARY			
			ACRES HARVESTED	YIELD LBS/ACRE	PRODUCTION CWT	ACRES HARVESTED	YIELD LBS/ACRE	PRODUCTION CWT	ACRES	YIELD LBS/ACRE	PRODUCTION CWT	ACRES	YIELD LBS/ACRE	PRODUCTION CWT
ADAMS		500	500	1500	7.5							900	1300	11.7
ARAPAHOE														
BOULDER		700	700	1900	13.3							800	1900	15.2
CHEYENNE	39													
CLEAR CREEK														
DENVER														
DOUGLAS		100	100	1000	1									
ELBERT	69	300				300		500	1.5			200	200	.4
GILPIN														
JEFFERSON														
KIT CARSON														
LARIMER		4900	4600	1700	78.2							8300	1200	99.6
LINCOLN	26.5	100	100	1100	1.1	25		500	.1			3900	1800	70.2
LOGAN		4300	4000	1500	60	200		500	1			4000	1533	61.3
MORGAN		9500	9500	1700	161.5							8500	1659	141.
PARK	87.4													
PHILLIPS		11000	10500	1300	136.5	500		520	2.6			7700	1362	104.9
SEDGWICK		8600	8200	1500	123	300		600	1.8			4800	1542	74
TELLER	47.5													
WASHINGTON		5200	5200	1331	69.2							2900	1300	37.7
WELD		19000	18000	1628	293.	500		440	2.2			17000	1661	282.3
YUMA		5000	4800	1300	62.4	200		500	1			4000	1200	48
TOTALS		69200	66200	1528	1011.7	2025		504	10.2			63100	1501	947.4

DRY BEANS

1976 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION I PERCENT	IRRIGATED					NON IRRIGATED					197 PRELIMINARY		
		ACRES PLANTED	ACRES HARVESTED	YIELD LBS/ACRE	PRODUCTION CWT	ACRES HARVESTED	YIELD LBS/ACRE	PRODUCTION CWT	ACRES	YIELD LBS/ACRE	PRODUCTION CWT	ACRES	YIELD LBS/ACRE	PRODUCTION CWT
ADAMS		500	500	1500	7.5						900	1300	11.7	
ARAPAHOE														
BOULDER		700	700	1900	13.3						800	1900	15.2	
CHEYENNE	39													
CLEAR CREEK														
DENVER														
DOUGLAS		100	100	1000	1									
ELBERT	69	300				300	500	1.5			200	200	.4	
GILPIN														
JEFFERSON														
KIT CARSON														
LARIMER		4900	4600	1700	78.2						8300	1200	99.6	
LINCOLN	26.5	100	100	1100	1.1	25	500	.1			3900	1800	70.2	
LOGAN		4300	4000	1500	60	200	500	1			100	1100	1.1	
MORGAN		9500	9500	1700	161.5						4000	1533	61.3	
PARK	87.4										8500	1659	141.	
PHILLIPS		11000	10500	1300	136.5	500	520	2.6			7700	1362	104.9	
SEDGWICK		8600	8200	1500	123	300	600	1.8			4800	1542	74	
TELLER	47.5													
WASHINGTON		5200	5200	1331	69.2						2900	1300	37.7	
WELD		19000	18000	1628	293.	500	440	2.2			17000	1661	282.3	
YUMA		5000	4800	1300	62.4	200	500	1			4000	1200	48	
TOTALS		69200	66200	1528	1011.7	2025	504	10.2			63100	1501	947.4	

BARLEY  
1976 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION I PERCENT	IRRIGATED					NON IRRIGATED					1977 PRELIMINARY				
		ACRES PLANTED	ACRES HARVESTED	YIELD bu/acre	PRODUCTION BUSHELS X 1000	ACRES HARVESTED	YIELD bu/acre	ACRES HARVESTED	YIELD bu/acre	PRODUCTION BUSHELS X 1000	ACRES	YIELD bu/acre	PRODUCTION BUSHELS X 1000	ACRES	YIELD bu/acre	PRODUCTION BUSHELS X 1000
ADAMS		8800	900	60	54	7400	27	199.8	5300	41	217.4					
ARAPAHOE		5000	800	60	48	3600	25	90	4500	18.6	83.6					
BOULDER		8700	6900	57	393.3	1500	28	42	6000	56.6	339.6					
CHEYENNE	39	300	250	59	14.8	100	19	1.9	300	53.5	16					
CLEAR CREEK		0	0	-	-	-	-	-	-	-	-					
DENVER		0	0	-	-	-	-	-	-	-	-					
DOUGLAS		2200	100	50	5	2000	16	32	2000	37	74					
ELBERT	69	0	0	-	-	2300	17	39.1	1900	17	32.3					
GILPIN		0	0	-	-	-	-	-	-	-	-					
JEFFERSON		800	200	60	12	500	26	13	700	20	14					
KIT CARSON		3700	1400	62.6	87.6	2200	20	44	5000	61	304.9					
LARIMER		10500	9000	64	576	1000	30	30	7000	52.8	369.7					
LINCOLN	26.5	500	0	-	-	500	18	9	400	19.5	7.8					
LOGAN		3500	400	60	24	3100	24	74.4	1800	28.9	52					
MORGAN		7100	3300	62	204.7	3700	25.2	93.3	3500	50	175					
PARK	87.4	0	0	0	-	-	-	-	-	-	-					
PHILLIPS		600	100	60	6	500	28	14	600	45	27					
SEDGWICK		1400	700	60	42	700	29	20.3	1000	26.5	26.5					
TELLER	47.5	0	0	-	-	-	-	-	-	-	-					
WASHINGTON		4500	500	65	32.5	3900	24.5	95.5	6000	23.4	140.6					
WELD		39000	23500	64.7	1520	13500	26	3.51	33000	53.6	1767.2					
YUMA		1400	500	64	32	500	25	12.5	1100	61.4	67.5					
TOTALS		98000	48550	62.9	3051.9	47000	24.7	1161.8	80100	46.4	3715.1					

BARLEY

1976 FINAL

COUNTY	PORTION OF COUNTY IN DIVISION I PERCENT	ACRES PLANTED	IRRIGATED				NON IRRIGATED				1977 PRELIMINARY			
			ACRES HARVESTED	YIELD bu/acre	PRODUCTION BUSHELS X 1000	ACRES HARVESTED	YIELD bu/acre	PRODUCTION BUSHELS X 1000	ACRES	YIELD bu/acre	PRODUCTION BUSHELS X 1000	ACRES	YIELD bu/acre	PRODUCTION BUSHELS X 1000
ADAMS		8800	900	60	54	7400	27	199.8	5300	41	217.4			
ARAPAHOE		5000	800	60	48	3600	25	90	4500	18.6	83.6			
BOULDER		8700	6900	57	393.3	1500	28	42	6000	56.6	339.6			
CHEYENNE	39	300	250	59	14.8	100	19	1.9	300	53.5	16			
CLEAR CREEK		0	0	-	-	-	-	-	-	-	-			
DENVER		0	0	-	-	-	-	-	-	-	-			
DOUGLAS		2200	100	50	5	2000	16	32	2000	37	74			
ELBERT	69	0	0	-	-	2300	17	39.1	1900	17	32.3			
GILPIN		0	0	-	-	-	-	-	-	-	-			
JEFFERSON		800	200	60	12	500	26	13	700	20	14			
KIT CARSON		3700	1400	62.6	87.6	2200	20	44	5000	61	304.9			
LARIMER		10500	9000	64	576	1000	30	30	7000	52.8	369.7			
LINCOLN	26.5	500	0	-	-	500	18	9	400	19.5	7.8			
LOGAN		3500	400	60	24	3100	24	74.4	1800	28.9	52			
MORGAN		7100	3300	62	204.7	3700	25.2	93.3	3500	50	175			
PARK	87.4	0	0	0	-	-	-	-	-	-	-			
PHILLIPS		600	100	60	6	500	28	14	600	45	27			
SEDGWICK		1400	700	60	42	700	29	20.3	1000	26.5	26.5			
TELLER	47.5	0	0	-	-	-	-	-	-	-	-			
WASHINGTON		4500	500	65	32.5	3900	24.5	95.5	6000	23.4	140.6			
WELD		39000	23500	64.7	1520	13500	26	3.51	33000	53.6	1767.2			
YUMA		1400	500	64	32	500	25	12.5	1100	61.4	67.5			
TOTALS		98000	48550	62.9	3051.9	47000	24.7	1161.8	80100	46.4	3715.1			

COMPACTS

SOUTH PLATTE RIVER COMPACT

The Colorado-Nebraska Compact on the South Platte River provides that Colorado shall have the full use of the river water between the fifteenth of October of any year and the first day of April of the succeeding year but that, between the first day of April and the fifteenth of October of each year, Colorado shall not permit diversions from the river below the Washington-Morgan County line to supply water rights having priority dates junior to June 14, 1897 to the extent that they would diminish the flow of the river at the Julesburg gaging station below a daily mean flow of 120 cfs.

Normally it is not necessary to curtail any surface diversions in Colorado to honor the compact because stream flows are inadequate to satisfy all the water rights senior to the compact date.

During the 1978 irrigation season, as in most other years, the flow of the river at Julesburg did drop below the 120 cfs level, however; during those periods of low flow many of those water rights with priority dates senior to the June 14, 1897 cut off date were curtailed due to insufficient water in the river.

Preliminary flow data for the Julesburg station indicates that during the 197 day period from April 1 to October 15, 1977 the mean daily flow dropped below 120 cfs on 160 days. The daily flow for the 197 days averaged 65.9 cfs.

The following tabulation summarized the monthly South Platte River flows at the Julesburg Gage:

PERIOD	TOTAL FLOW FOR PERIOD AC. FT.	DAILY MAX. FLOW CFS	DAILY MIN. FLOW CFS	AVERAGE DAILY FLOW CFS	DAYS LESS THAN 120 CFS
(1)	(2)	(3)	(4)	(5)	(6)
April	4410	129	30	74	26
May	3610	160	26	59	27
June	13170	568	32	221	9
July	1670	43	18	27	31
August	1020	25	9	17	31
September	811	22	11	14	31
October 1-14 incl.	1050	117	20	38	14



REPUBLICAN RIVER COMPACT

The Republican River Compact allocates water to the signatory states, Colorado, Kansas and Nebraska, on the basis of beneficial consumptive use. Colorado's total allocation of 54,100 acre-feet is broken down as follows:

North Fork of the Republican River Drainage Basin	10,000 ac.ft.
Arikaree River Drainage Basin	15,400 ac.ft.
South Fork of the Republican River Drainage Basin	25,400 ac.ft.
Beaver Creek Drainage Basin	3,300 ac.ft.

and in addition, for beneficial consumptive use in Colorado annually, the entire water supply of the Frenchman Creek (River) Drainage Basin in Colorado and the Red Willow Creek Drainage Basin in Colorado.

The computed annual consumptive use in Colorado in the Republican River Basin for the 1977 water year, the last year for which official figures are available, was as follows:

<u>STREAM</u>	<u>CONSUMPTION</u>	<u>% OF ALLOCATION</u>
North Fork of Republican River	5390 Ac.Ft.	53.9%
South Fork of Republican River	8550	33.7
Arikaree River	3930	25.5
Beaver Creek	0	0
	<u>17870 Ac.Ft.</u>	<u>33.0%</u>

LARAMIE RIVER COMPACT

The 1957 decree of the United States Supreme Court limits the diversions from the Laramie River and its tributaries to 49,375 acre feet annually for the State of Colorado. Of that amount 19,875 acre feet are allocated to Transmountain Users and the remaining 29,500 acre feet to the Meadowland Users within the river basin. The Meadowland Users are further restricted to diversions of not more than 1800 acre feet after July 31 of each year. In the event that the Transmountain Users do not divert their full allotment, the Meadowland Users may divert the difference between the 19,875 acre feet and the actual amount so diverted within the same year.

Sand Creek, which arises in Colorado, later becoming tributary to the Laramie River in Wyoming, is not included within the terms of the compact. Instead Colorado and Wyoming have a working agreement whereby senior water rights on Sand Creek in Wyoming are recognized before junior diversions are made in Colorado through the Wilson Supply Canal, a tranbasin diversion.

In 1978 the transmountain diversions under the Laramie River Compact totaled 19,808 acre feet of the 19,875 acre feet Compact allowance. The meadowland diversions totaled 28,211 acre feet or some 96 percent of the allotment. Total Colorado diversions were 48,019 acre feet or 97.3 percent of the total allotment of 49,375 acre feet.

### Court Stipulations and Litigation

The Rules and Regulations governing the use of groundwater as adopted by the Water Court in W-7209 et al., on March 15, 1974, remained in effect. We still have several cases pending before the Water Court on regulation cases filed in 1977. We hope to have these resolved in the near future.

The big case filed in 1978 was the State against Weldon Valley. This case will attempt to address the question of expanded use of a surface diversion. It is our hope to have this case resolved before the 1979 irrigation season.

DAMS

A. RESERVOIRS

L. PLANS AND SPECIFICATIONS

The following list includes the dams for which plans and specifications have been approved this year. The list is arranged by water district and in order of approval within districts.

PLANS AND SPECIFICATIONS APPROVED

<u>NAME</u>	<u>WD</u>	<u>OWNER</u>	<u>TYPE</u>	<u>DATE APPROVED</u>
Raw Water Reservoir Dam	1	Public Service Co. of Colo.	New	5/16/78
Treated Water Reservoir Dam	1	Public Service Co. of Colo.	New	10/ 6/78
Intermediate Quality Water Dam	1	Public Service Co. Of Colo.	New	11/28/78
High Quality Water Dam	1	Public Service Co. of Colo.	New	11/28/78
Floodwater Retarding Dam #1	1	Richard Waine	New	11/30/78
Ranch Dam	2		New	2/ 3/78
North Gray Reservoir Dam	3	Lake Canal Reservoir Co.	New	4/27/78
West Greeley Lake Dam	3	City of Greeley	Imp.	4/28/78
Haviland Dam	3	Division of Wildlife	New	6/12/78
Floodwater Retarding Dam B-3	3	North Poudre Irr. Co.	New	7/ 7/78
Bush Dam	3	Glacier View Meadows	New	9/18/78
Warren Lake Reservoir Dam	3	Warren Lake Reservoir Co.	New	9/27/78
Warren Lake Dam	3	Warren Lake Reservoir Co.	New	9/28/78
Ish Reservoir	4	Ish Reservoir Co.	Repair	11/ 3/77
Idylwilde Dam	4	City of Loveland	New	5/11/78
Frederick Reservoir Dam	6	City of Frederick	Enlg.	8/11/78
AEC Surface Water Control Dams A-4, B-5, C-2	6	Atomic Energy Commission	New	12/ 1/78
Blunn Reservoir Dam	7	City of Arvada	Spec. Changes	6/12/78

PLANS AND SPECIFICATION APPROVED (CONTINUED)

<u>NAME</u>	<u>WD</u>	<u>OWNER</u>	<u>TYPE</u>	<u>DATE APPROVED</u>
Holly Dam	8		New	6/ 2/78
Strontia Springs Dam	8		New	8/11/78
Buffalo Creek Dam	23	Western Union Realty Co.	New	10/13/78
Spring Creek Dam	23	Western Union Realty Co.	New	10/13/78
Floodwater Re- tarding Dam SS-2	64	Soil Conservation Service	New	9/29/78
Floodwater Re- tarding Dam SS-1	64	Soil Conservation Service	New	12/ 1/78

DAMS

A. RESERVOIRS

2. INSPECTIONS

A considerable number of inspections were made this past year. The following partial list includes the final inspections for new construction and repair, as well as inspections where problems were encountered. A number of the routine inspections were made. In addition to state inspections several high-hazard dams were inspected by the Corps of Engineers as a part of the National Dam Safety Program.

DISTRICT NO. 1

<u>NAME</u>	<u>DATE</u>
Adams and Bunker Reservoir Dam No. 1	4/6/78
Adams and Bunker Reservoir Dam No. 2	4/6/78
Jackson Reservoir Dam	3/16/78
Booth Reservoir Dam	6/15/78
Heart Reservoir Dam	7/28/78
Jackson Reservoir Dam	9/20/78
Jackson Reservoir Dam	9/30/78

DISTRICT NO. 2

Standley Lake Dam	1/6/78
Great Western Reservoir Dam	5/9/78
Dam at 78th and Pecos	5/10/78
Niver Creek Dam	9/14/78

DISTRICT NO. 3

Angel Lake Dam	2/21/78
Windsor Reservoir Annex No. 8 Dam	2/27/78
Claymore Dam	4/21/78
Floodwater Retarding Dam B-4	11/1/78

DISTRICT NO. 4

Ryan Gulch Reservoir Dam	1/31/78
Lone Tree Reservoir Dam	3/7/78
South Side Reservoir Dam	7/7/78
Loveland Water Storage Dam	8/2/78
Rist-Benson Dam	9/1/78

DISTRICT NO. 5

Union Reservoir Dam	11/14/77
Lagerman Reservoir Dam	10/20/78

DISTRICT NO. 6

Six Mile Reservoir Dam	3/20/78
Marshall Reservoir Dam	4/11/78

DISTRICT NO. 6 (CONTINUED)

<u>NAME</u>	<u>DATE</u>
Mesa Park Reservoir Dam	4/ 4/78
Francis Smart Reservoir Dam	6/26/78
Waneka Dam	6/29/78
Gross Reservoir Dam	5/ 3/78

DISTRICT NO. 7

Dam located at 2755 Indiana Street, Golden	7/21/78
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DISTRICT NO. 8

Woodland Park Reservoir Dam	1/20/78
Smith Reservoir Dam	12/19/77
Main Reservoir Dam	12/19/77
East Reservoir Dam	12/19/77
Harris Park Estates Reservoir Dam No. 1	4/ 6/78
Harris Park Estates Reservoir Dam No. 2	4/ 6/78
McLelland Reservoir Dam	7/31/78
Pine Gulch Dams No. 1 and 2	8/22/78

DISTRICT NO. 9

Soda Lakes Dam	12/15/77
Bergen Dam No. 4	2/17/78
Kingfisher Lake Reservoir Dam	5/18/78

DISTRICT NO. 80

Pine Gulch No. 3 Reservoir Dam	9/ 6/78
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LIVESTOCK WATER TANKS - EROSION CONTROL DAMS

The total number of livestock water tanks and erosion control dams approved between November 1, 1977 and October 31, 1978 are presented below in tabular form:

DISTRICT	NO. OF LIVESTOCK TANKS	TOTAL CAPACITY (AF)	NO. OF EROSION CONTROL DAMS	TOTAL CAPACITY (AF)
1	16	69.6	7	43.3
2				
3				
4				
5	1	4.0		
6				
7				
8	1	1.5		
9				
23				
48				
49	5	38.4		
64			14	24.3
65			1	2.0
79				
80				
<b>TOTAL</b>	<b>19</b>	<b>113.5</b>	<b>22</b>	<b>69.6</b>



## WATER RIGHTS

### TABULATION AND ABANDONMENT

Early in 1978 water commissioners began preparing lists of water rights to be submitted for possible abandonment. These lists were reviewed by the Division Engineer. The 1978 abandonment list for Division 1 contained 522 structures which were abandoned in total or reduced in amount.

July was devoted to getting the tabulation-abandonment list prepared and mailed by the July 10 deadline. Approximately 300 tabulations and abandonments were sent out. Many of these rights have not been used for in excess of 30 years. Therefore, the owners were difficult to locate as was evidenced by the fact that only 203 copies were accepted by the addressees. Additional copies were sent to subscribers of the Court's resume list.

As of the end of October we have had 24 formal objections to abandonments and several inquiries as to what procedures people should follow. We foresee more objections being filed with the Division Engineer since the deadline for filing objections is not until July 1, 1980.

The section of the statutes dealing with the tabulation and abandonment list is CRS 37-92-402.

WATER RIGHTS

Water Division I - Cases Filed - No information available at this time.

Water Division I - Cases Decreed - No information available at this time.

A. CONSERVANCY DISTRICTS

Central Colorado Water Conservancy District	John W. Rayburn	Manager	315 Denver Avenue Ft. Lupton 80621 857-4352
Lower South Platte Water Conservancy District	Gary R. Friehauf	Secretary Treasurer	P.O. Box 1725 Sterling 80751 522-1378
Northern Colorado Water Conservancy District	Earl F. Phipps	Manager	P.O. Box 679 Loveland 80537 667-2437
St. Vrain & Left Hand Water Conservancy District	Verna Sigg	Secretary	1735 North Main Longmont 80501 772-4060
Upper South Platte Water Conservancy District	James Settele	President	Fairplay 80440

GROUNDWATER MANAGEMENT DISTRICTS

GROUNDWATER MANAGEMENT DISTRICTS

NORTHERN HIGH PLAINS

Arikaree Groundwater Management District	Francis Wrape Thomas J. Callahan	Manager Attorney	Cope 80812 Wray 80758 P.O. Box 191
Central Yuma Groundwater Management District			Wray 80758 P.O. Box 311 (332-4155)
East Cheyenne Groundwater Management District	Norman Arends	Manager & Attorney	Cheyenne Wells 80812 P.O. Box 606 (767-5318)
Frenchman Groundwater Management District			Holyoke 80734 P.O. Box 113 (854-3484)
Plains Groundwater Management District	Clifford Hawthorne	Manager	Burlington 80807 1453 Martin Ave. (346-8487)
Sandhills Groundwater Management District			Wray 80758 P.O. BOX 311
W-Y Groundwater Management	Fred Wurtsmith	Manager	Yuma 80759 220 South Main (848-5333)
Lost Creek Groundwater Management District	George Bush	Secy.	Keensburg 80643 P.O. Box 131
North Kiowa-Groundwater Management District	Loyd Musgrave		Hoyt 80641
Marks Butte Groundwater Management District			

D. WATER USER ORGANIZATIONS

DISTRICT

1	Irrigationists	John Samples	Secy.	104 West Beaver Ft. Morgan 80701
2	Consolidated Ditches	W.W. Gaunt	Secy.	25 South 4th Avenue Brighton 80601
3	Cache la Poudre Water Users	Harlan Seaworth	Pres.	11801 N Co. Rd. 9 Wellington 80549
4	Big Thompson Water Users	Elmer Stroh	Secy.	23344 Weld County Road 21 3/4 Milliken 80453
6	District & Water Users	Milt Nelson	Pres.	2040 Longs Peak Longmont 80501
64	District 64 Protection Assoc.	Alex Michels	Secy.	205 1/2 Main St. Sterling 80751

B. ORGANIZATIONS

WATER DISTRICT NO. 1

DITCH AND RESERVOIR COMPANIES

A.A. Smith Irrigating Canal Reservoir, Milling and Pipeline Company	Gene Peterson	Pres.	Snyder 80750
Associated Ditches	Jake Kausman	Chairman	Ft. Morgan 80701
Beaver Creek Ditch Company	John Higgins	Secy.	Brush 80723
Beaver Ditch Company	Charles Henry	Pres.	Brush 80723
Bijou Irrigation Company	John Samples	Secy.	104 West Beaver Ft. Morgan 80701
Bijou Irrigation District	John Samples	Secy.	104 West Beaver Ft. Morgan 80701
Corona Ditch Company	Jack Orr	Owner	Masters 80547
Duel and Snyder	E.L. Caneva	Pres.	Rt. 1 Ft. Morgan 80701
Fort Morgan Canal Company	Lindy Crumley	Supt.	111 East Railroad Ave. Ft. Morgan 80701
Gill and Stevens Ditch Company	Harold Hansen	Pres.	Rt. 1 Brush 80723
Hillrose Irrigation District	Roy Boyles	Secy.	Hillrose 80733
Hoover Ditch Company	Mrs. Pat Peterson	Secy.	Kersey 80644
Illiff Irrigation District	Adam Koehler	Secy.	Sterling 80751
Illinois Ditch Company	George Allard	Pres.	Kersey, 80644
Jackson Lake Reservoir Company	Lindy Crumley	Supt.	111 East Railroad Ave. Ft. Morgan 80701
Johnson & Edwards Ditch Company	William Tramp	Pres.	Hillrose 80733
Kiowa-Bijou Grandwater Basin	Donald F. McClary	Attorney	231 Main Street Ft. Morgan 80701
Lower Platte & Beaver Irrigation Company	Don Richardson	Pres.	Ft. Morgan 80701
Logan Irrigation District	Roy Boyles	Secy.	Hillrose 80733
Morgan, Prewitt Reservoir Co.	John Eisenach	Pres.	Sterling 80751
North Sterling Irrigation	John Samples	Secy.	104 West Beaver Ft. Morgan 80701
Putman Ditch Company	Alex Michel	Supt.	Foote Building Sterling 80751
Riverside Irrigation Company	Harlan Snider	Pres.	Masters 80547
Riverside Irrigation District	Cecil Osborne	Supt.	Box 455 Ft. Morgan 80701
Snyder Ditch & Reservoir Co.	Cecil Osborne	Supt.	Box 455 Ft. Morgan 80701
Tetsel Ditch Company	Gene Peterson	Pres.	Snyder 80750
Tremont Ditch Company	Ron Taylor	Pres.	Merino 80741
Trowell Ditch Company	Leon Lake	Secy.	Snyder 80750
Upper Platte & Beaver Canal Co.	Willis Elson	Pres.	Hillrose 80733
Union Ditch Company	John Higgins	Secy.	Farmers State Bank Brush 80723
Weldon Valley Ditch Company	B.B. Peterson	Pres.	Snyder 80750
	Maurice Jones	Pres.	Weldona 80653

WATER DISTRICT NO. 2DITCH AND RESERVOIR COMPANIES

Big Dry Creek Ditch & Reservoir Decree	Mrs. G.R. Norden	Secy.	Rt. 1, Box 196 Ft. Lupton 81038
Burlington Ditch & Reservoir Land Company	Adolph Bohlender	Pres.	LaSalle 80645
Brighton Ditch Company	George Stieber	Pres.	Rt. 1, Box 104 Ft. Lupton 81038
Coal Ridge Ditch Company	Robert Doughty	Pres.	Ft. Lupton 81038
Delta Ditch Company	Stanley Davis (352-3496)		712 10th Street Greeley 80631
Denver Water Board	James Oglivie	Manager	144 W. Colfax Denver
Farmers Independent Ditch Co.	John Briggs	Pres.	17787 Weld County Rd. 25 Platteville 80651
Farmers Reservoir & Irrigation Company	Tom Fisher (659-7373)	Supt.	LaSalle 80645
Fulton Ditch Company	W.W. Gaunt	Secy.	25 South 4th Avenue Brighton 80601
Gardners Ditch Company	Sylvester DiGacomo	Pres.	6820 York Street Denver
German Ditch Company	Casper Sack	Pres.	Brighton 80601
Godfrey Ditch Company	Jerome Loeffler	Pres.	LaSalle 80645
Henrylyn Irrigation District	Lawrence Gerkin	Manager	Box 141 Hudson 80642
Highland Ditch Company	Mrs. George Jurgens	Pres.	Rt. 4, Box 209B Greeley 80631
Lower Latham Ditch Company	Victor R. Klein	Pres.	Kersey 80644
Lupton Bottom Ditch Company	Roy Miller	Pres.	Platteville 80651
McCanne Ditch & Reservoir Co.	Al Robertson	Pres.	P.O. Box 38 Brighton 80601
Meadow Island No. 1 Irrigation Company	Wm. Mayer	Secy.	Rt. 2, Box 74 Platteville 80651
Meadow Island Irrigation Co.	Ruben Gustafson	Pres.	Rt. 2, Box 145 Ft. Lupton 81038
New Brantner Ditch Company	W.W. Gaunt	Secy.	25 South 4th Ave. Brighton 80601
North Star Reservoir Company	G.R. Norden	Pres.	Rt. 1 Ft. Lupton 81038
Platte Valley Irrigation Co.	Delbert Shable	Pres.	Platteville 80651
Platteville Irrigation & Milling Company	John Kunzman	Secy.	Rt. 2. Box 120 Ft. Lupton 81038
Slate Ditch Company	Robert Doughty	Pres.	Ft. Lupton 81038
Union Ditch Company	Mrs. Frances Hill	Secy.	LaSalle 80645
Walter & Roberts Ditch Co.	Roy Lunvall	Pres.	Greeley 80631
Western Mutual Ditch Co.	Ed. Fritzler	Pres.	LaSalle 80645
Wellington Reservoir Co.	Ron Heitman	Pres.	Brighton 80601
Yoxall Ditch Company	Louis Karsh	Pres.	Brighton 80601

WATER DISTRICT NO. 3DITCH AND RESERVOIR COMPANYS

Arthur Irrigation Company	Wm. Stover	Secy.	United Bank Building Ft. Collins 80521
B.H. Eaton Ditch Company	Wayne Miller	Pres.	Kodak - P.O. Box 98
Boxelder Ditch Company	Louise Kane	Secy.	Windsor 80550
Boyd Irrigation Company	Wm. Stover	Secy.	United Bank Building Ft. Collins 80521
Cache la Poudre Irrigation Company	Rodger Houtchens	Secy.	1007 9th Avenue Greeley 80631
Crystal Lakes	Greg Jeason	Secy.	Rt. 3 - Box 772 Ft. Collins 80521
Divide Canal & Reservoir Company	Don Weixelman		P.O. Box 2167 3200 E. Mulberry Ft. Collins 80521
Dixon Canyon Ditch & Reservoir Company	Don E. Engel	Secy.	106 Elm, Box 206 Eaton 80615
Greeley, City of	Wm. Stover	Secy.	United Bank Building Ft. Collins 80521
Greeley Irrigation Company	Darryl D. Alleman		Greeley City Hall Greeley 80631
Jackson Ditch Company	Edgar Bartels	Secy.	1301 9th Street Greeley 80631
Kern Reservoir and Ditch Company	Vivienne Woodward	Secy.	P.O. Box 1584 2319 E. Mulberry Ft. Collins 80521
Kitchell Reservoir Company	C.W. Kirby	Pres.	P.O. Box 220 Windsor 80550
Lake Canal Company	Alice Fisher	Secy.	Rt. 4 Ft. Collins 80521
Lake Canal Reservoir Company	John Hartman	Secy.	United Bank Building Ft. Collins 80521
Larimer County Canal No. 2 Irrigation Company	John Hartman	Secy.	United Bank Building Ft. Collins 80521
Larimer & Weld Irrigation Company	Wm. Stover	Secy.	United Bank Building Ft. Collins 80521
Larimer & Weld Reservoir Company	Don E. Engel	Secy.	106 Elm, Box 206 Eaton 80615
Mail Creek Ditch Company	Don E. Engel	Secy.	106 Elm, Box 206 Eaton 80615
New Cache la Poudre Irrigation Company	Wm. Stover	Secy.	United Bank Building Ft. Collins 80521
New Mercer Ditch Company	Jim Muroya	Secy.	708 8th St., Box 31 Greeley 80631
North Poudre Irrigation Company	Wm. Stover	Secy.	United Bank Building Ft. Collins 80521
No. 10 Ditch Company	Ben Dumler	Supt.	North Poudre Irr. Office, Box 4 Wellington 80549
	Alden Hill	Secy.	160 W. Mountain Ave. Ft. Collins 80521



WATER DISTRICT NO. 3 (Continued)

Oglivy Land & Irrigation Company	Shirley Waymen	Secy.	1007 9th Avenue Greeley 80631
Pleasant Valley & Lake Canal	Ward Fischer	Secy.	1st National Bank B Ft. Collins 80521
Taylor & Gill Canal Company	Wm. Seaworth	Pres.	2305 W. Taft Hill R Ft. Collins 80521
Tunnel Water Company	Vivienne Woodward	Secy.	2319 E. Mulberry P.O. Box 1584 Ft. Collins 80521
Warren Lake Reseevoir Company	Wm. Stover	Secy.	United Bank Buildin Ft. Collins 80521
Water Supply & Storage Company	Vivienne Woodward	Secy.	2319 E. Mulberry P.O. Box 1584 Ft. Collins 80521
Whitney Irrigation Company	Robert Tigges	Pres.	Box 1146
Wm. Jones Irrigation Company	Carrol Camfield	Secy.	Windsor 80550
	Geo. Firestien	Pres.	Farmers Spur Greeley 80631
Windsor Reservoir & Canal	Don Engel	Secy.	106 Elm, Box 206 Eaton 80615

DISTRICT 3 SUPERINTENDENTS

Arthur Irrigation Company	John Meyers	482-3175
B.H. Eaton Ditch Company	Allen Lamb	686-2441
Boxelder Ditch Company	Wilbert Trippel	493-4256
Cache la Poudre Irrigation Company (Little Cache)	Greg Jesson	482-7635
Cache la Poudre Irrigation Company (New Cache)	John Lindenberg (Supt.)	352-0222 352-4025
	George Boraker (Headgate)	482-1632
	Dick Rayburn (Windsor Lake)	686-2807
	Phillip Smith (Timnath Res.)	482-0732
Canal Number 3 Ditch Company	A.G. Brenkle	353-6014
Canon Canal	G.D. McGarvey	484-0541
Chaffee Ditch Company	John Meyers	482-3175
Coy Ditch Company	James Hoffman	482-4356
Fort Collins Filters	Ben Alexander (Supt.)	482-2231
	Vern Mobley (Operator)	
	Terry VanCleave (Operator)	
	Fred Jones (Operator)	
Gray Lakes	Dave Becker	482-3649
Greeley Filters		482-2446
	Verlyn Richardson (Supt.)	484-1592
	Norman Magnuson (Supt.)	482-2446
	Jack Greer (Reservoirs)	
Jackson Ditch Company	Allyn Tedmon	482-8588
Wm. Jones Irrigation Company	Reynold Herbst	352-2293
Lake Canal	Dave Becker	482-3649

DISTRICT 3 SUPERINTENDENTS (CONTINUED)

Larimer County Number 2 Ditch Company	George Hoff	482-8688
Larimer and Weld Irrigation Company	(Eaton)	454-3377
	John A. Johnson	482-7671
	(Supt)	
	Clarence Hutchinson	482-7701
	(Hdgt.)	
	Dale Simpson	686-2952
	Lake Lee	
Larimer and Weld Reservoir Company	Greg Jesson	482-7635
New Mercer Ditch Company	Shawn Hoff	484-5828
North Poudre Irrigation Company		568-3612
	Ben Dumler	482-8398
	(Supt.)	
	Jim Greenacre	493-6108
	(Hdgt.)	
Ogilvy Ditch Company	Bill McMurry	352-4468
Pleasant Valley and Lake	Don Brewster	482-8645
	(Supt.)	
	Art Wendel	221-0335
	(Ditch Rider	
Taylor and Gill Ditch Company	Greg Jesson	482-7635
Water Supply and Storage		482-3433
	Jim McFall	482-7083
	(Supt.)	
	Jimmy McFall (Hdgt.)	482-3699
	George Yost	
	(Black Hollow Res.)	
Whitney Ditch Company	Allen Lamb	686-2441
Windsor Reservoir and Canal	(Eaton)	454-3377
	John A. Johnson	482-7671
	(Supt.)	
	Jim Johnson	482-3290
	(Hdgt.)	
	Victor Reynolds	686-2636
	(Windsor Res.)	

WATER DISTRICT NO. 4DITCH AND RESERVOIR COMPANIES

Arkins Water Association	Mrs. Joy Cross	Secy.	P.O. Box 6 Masonville 80541
Bald Mountain Water Association	Charles McAfee	Secy.	Rt. 2, Box 319N Loveland 80537
Beeline Ditch Company	Guy A. Shable	Secy.	Rt. 1, Box 65 Milliken 80543
Big Thompson Manufacturing Ditch Company	Robert Christensen	Secy.	P.O. Box 642 Loveland 80537
Big Thompson & Platte River Ditch Company	Guy A. Shable	Secy.	Rt. 1, Box 65 Milliken 80543
Blower Ditch Company	Henry Pope, Jr.	Supt.	Rt. 1, Box 138 Longmont 80501
Boulder & Larimer County Irrigation & Manufacturing Ditch Company (Ish)	L.V. French	Secy.	Rt. 2, Box 23 Berthoud 80513
Buckhorn Highline Ditch Company	Dale L. Lewis	Secy.	Star Route, Box 320 Loveland 80537
Buckhorn Water Users Associa- tion	Mrs. Orlene Smith	Secy.	P.O. Box 98 Masonville 80541
Central Weld County Water District	Dale D. Olhausen	Secy.	115 18th Street Greeley 80631
Consolidated Hillsborough Ditch Company	Don Davis	Secy.	1st National Bank B1 Johnstown 80534
Consolidated Home Supply Ditch and Reservoir Company	W.R. Keirnes	Secy.	Star Route, Box 450 Loveland 80537
Culver Irrigation Company	George Landers	Secy.	P.O. Box 209 Longmont 80501
Diagonal Water & Sanitation District	Jim Hudson	Secy.	1200 28th Street Boulder
Eagle Ditch Company	Mrs. Donald H. Lemmon	Secy.	Rt. 2, Box 120 Berthoud 80513
Eglin Ditch Company	Wayne Hicks	Secy.	Rt. 2, Box 127 Berthoud 80513
Evans Ditch Company	Town Clerk of Evans	Secy.	Evans 80620
Fairport Reservoir Company	Nellie VerStraten	Secy.	Rt. 1 Ft. Collins 80521
Farmers Irrigation Ditch and Reservoir Company	F. Ray DeGood	Secy.	P.O. Box 657 Loveland 80537
Greeley-Loveland Irrigation Company	Ron Brinkman	Secy.	803 23rd Avenue Greeley 80631
George Rist Ditch Company	W.R. Keirnes	Secy.	Star Route, Box 450 Loveland 80537
Handy Ditch Company	Louis Bein	Secy.	Box 460 Berthoud 80513
Hill & Brush Ditch Company	Jim Nelson	Secy.	Rt. 1 Milliken 80543
Kershner Ditch Company	Dale L. Lewis	Secy.	Star Rt., Box 320 Loveland 80537
Little Thompson Valley Water District	Lovilo Fagan	Mgr.	307 Welch Avenue Berthoud 80513
Longs Peak Water Users Assn.	Mrs. Joanne Macy	Secy.	P.O. Box 714 Longmont 80501

WATER DISTRICT NO. 4 (CONTINUED)

Louden Irrigation Reservoir and Canal Company	Ralph Benson		925 West 29th Loveland 80537
Loveland & Greeley Reservoir Company	Ron Brinkman	Secy.	808 23rd Avenue Greeley 80631
Lykins Ditch	Mrs. Tressie Debuse	Secy.	Rt. 3, Box 211A Longmont 80501
Mariana Water District	Lovilo Fagan	Secy.	307 Welch Avenue Berthoud 80513
Minor Longdon Ditch Company	Mrs. Elmer Rutt		Rt. 1, Box 3 Berthoud 80513
New Ish Ditch & Reservoir Co.	Horace G. McCarty	Secy.	P.O. Box 658 Longmont 80501
North Carter Lake Water District	Lovilo Fagan	Secy.	307 Welch Avenue Berthoud 80513
Osborn & Caywood Ditch Co.	Donald J. Befus	Secy.	716 S. County Rd. 1 Berthoud 80513
Perkins Ditch Company	Arnold Friend	Owner	Star Route Loveland 80537
Rist & Benson Reservoir Co.	Ralph Benson	Supt.	925 West 29th Loveland 80537
Rockwell Ditch Company	Max H. Schaal	Secy.	Rt. 1, Box 50 Berthoud 80513
Ryan Gulch Reservoir Co.	Lavilo Fagan	Secy.	307 Welch Avenue Berthoud 80513
Seven Lakes Reservoir Co.	Ron Brinkman	Secy.	808 23rd Avenue Greeley 80631
South Side Irrigation and Reservoir Company	Robert Ausenus	Secy.	203 East 5th Street Loveland 80537
Union Ditch	Bill Smith	Secy.	P.O. Box 98 Masonville 80541
Victory Irrigating Canal Co.	Cal Carter	Secy.	Star Route Loveland 80537
Wind Cliff Water Association Inc.	Mrs. Vivien Wylene Buser	Secy.	62 Elmhurst Lane, Riverdale Bettendorf, Iowa

WATER DISTRICT NO. 5DITCH AND RESERVOIR COMPANIES

Allen Lake Reservoir Company	Jesse Parrish	Supt.	2515 Parish Rd. Berthoud 80513 (772-7678)
Baker & Wesse	Western Paving Co.	Owner	Denver (772-7864)
Wesse Pvt.	Western Paving Co.	Owner	Denver (772-7864)
Beckwith	Dick Tanaka	Secy.	Rt. 2 Sugar Factory Rd. Longmont 80501 (776-8206)
Bonus Ditch Company	Sam Tanaka	Secy.	Rt. 2 Longmont 80501 (776-3495)
Boulder & Left Hand Irrigation Company	Nels Jensen	Secy.	436 Coffman Street Longmont 80501
Chapman & McCaslin	Charles Ramey	Secy.	Rt. 3 Longmont 80501 (776-1945)
Clough Private	Friz Bartley	Owner	Rt. 3 Longmont 80501 (776-1437)
Clough & True Clover Basin Ditch & Reservoir Company	Public Service Co. Wayne Jurgens	Owner Secy.	Denver 512 4th Avenue Longmont 80501 (776-5122)
Cushman	Vernon Golden	Owner	12911 Hillcrest Drive Longmont 80501 (776-5880)
Davis & Downing	Gordon Kennedy	Secy.	Rt. 3 Longmont 80501 (776-1161)
Denio & Taylor	Pete Humphry	Secy.	Civic Center Longmont 80501 (776-6050)
Dickens Pvt.	Lloyd Dickens	Owner	136 S. Main Longmont 80501 (776-0325)
Dixon Mill	G.W. Sugar Company	Owner	Longmont 80501 (776-5070)
Goss Pvt. 1 & 2	Western Paving Co.	Owner	Denver (772-7864)
Hager Meadow	Russell Zweck	Owner	Longmont 80501 (776-5198)
Hayseed	Louis Rademacher	Owner	Longmont 80501 (535-4345)
Highland	George Landers	Secy.	First National Bank Longmont 80501 (776-5800)
Ide & Starbird Reservoir Co. Independent Reservoir Co. Island	L.A. Biddle George Reynolds Vernon Golden	Secy. Secy. Owner	Mead 80542 Longmont 80501 12911 Hillcrest Drive Longmont 80501 (776-5880)

WATER DISTRICT NO. 5 (CONTINUED)

James Ditch Company	Clarence Johnson	Secy.	8090 Nelson Road Longmont 80501 (776-3273)
John Rice	Bob Seewald	Owner	Longmont 80501 (776-0744)
Last Chance Ditch Company	Harold Nelson	Secy.	Longmont 80501 (776-2336)
Left Hand Ditch Company	Frank Gould	Secy.	Foothills Highway Boulder (442-2546)
Lyons, Town of	Ralph Leum	Supt.	Lyons 80540 (823-6622)
Longmont, City of	Frank Humphry		Longmont 80501 (776-6050)
Longmont Supply Ditch Company	Dan Bernard	Secy.	First National Bank Longmont 80501 (776-5800)
Lower Baldwin Ditch Company	Dean Prieskorn	Secy.	Rt. 2 Longmont 80501 (776-2916)
Mason Meadow	Vernon Golden		12911 Hillcrest Dr. Longmont 80501 (776-2135)
Mead, Town of	Harvey Potts	Supt.	Mead 80542 (535-4557)
Montgomery Pvt.	Public Service Co.	Owner	Denver (442-2776)
Nelson	Wayne McGill	Owner	10075 N. 75th Longmont 80501 (776-9327)
Niwot	Bob Seewald	Secy.	Rt. 2 Longmont 80501 (776-0744)
North Mutual Life Insurance Company	Robert Hazelbush		Longmont 80501 (776-2832)
Oligarchy	Dan Bernard	Secy.	1st National Bank Longmont 80501 (776-5800)
Palmerton Consolidated Ditch Company	James Goss	Pres.	Rt. 3 Longmont 80501 (776-4984)
Peck	George Wagner	Secy.	Longmont 80501 (776-5628)
Pella Ditch Company	Sidney Fredstrom	Secy.	Rt. 3 Longmont 80501 (776-3057)
Pleasant Valley Reservoir and Company	Russell	Secy.	1264 6th Avenue Longmont 80501 (776-5625)
Rice	Brian Rundle	Owner	Longmont 80501 (776-5098)
Rough and Ready	Russell Palmer	Secy.	1264 6th Avenue Longmont 80501 (776-5625)

WATER DISTRICT NO. 5 (CONTINUED)

Runyon	Willis Marlatt	Owner	Longmont 80501 (776-0791)
Snead Ditch Company	Warren Bashor	Secy.	Rt. 3 Longmont 80501 (823-6474)
South Flat Ditch Company	David Wagner	Secy.	Longmont 80501 (776-0865)
South Ledge Ditch Company	Reinhold Loukonen	Secy.	Lyons 80540 (823-6268)
St. Vrain and Palmerton	William Schell	Supt.	802 Francis Longmont 80501 (776-3475)
Supply Ditch Company	Dan Bernard	Secy.	1st National Bank Longmont 80501
Swede	Charles Bliss	Pres.	Longmont 80501 (776-4865)
True and Webster	Edward Darby	Secy.	Longmont 80501 (776-2722)
Upper Baldwin	Dean Prieskorn	Secy.	Longmont 80501 (776-2916)
Union Ditch Company	Frances Hill	Secy.	LaSalle 80645
Union Reservoir Company	Frances Hill	Secy.	LaSalle 80645
Webster and McCaslin	Wallace Gage (Mrs.)	Owner	Longmont 80501 (776-9301)
Weese Pvt.	Western Paving Company	Owner	Denver (772-7864)
Zweck and Turner Ditch Company	Russel Zweck	Secy.	Rt. 3 Longmont 80501 (776-5198)



WATER DISTRICT NO. 6DITCH AND RESERVOIR COMPANIES

Andrews & Farwell Ditch Co.	Forest White	Secy.	2994 North 75th Boulder
Autrey Eggleston	Stanley Medsker		5050 South Emporia Denver
Baseline Land & Reservoir	Margaret Nelson	Secy.	Rt. 1, Box 218 Erie 80516
Boulder Ditch (Town of)	City of Boulder	Owner	City Hall Building Boulder
Boulder & left Hand Irrigation Company	Richard Frisk	Secy.	735 Bowen Longmont 80501
Boulder & Weld County Ditch Company	Ethel Ziegler	Secy.	831-17th Longmont 80501
Boulder & White Rock Ditch & Reservoir Company	Chas. Haley	Secy.	401 Main Street Longmont 80501
Butte Irrigation & Milling Company	Gene Sawhill	Secy.	6967 Valmont Drive Boulder
Carr & Tyler Ditch Company	Milton Nelson	Secy.	2040 West Longs Peak Longmont 80501
Church Ditch Company	Marcus Church	Pres.	Broomfield 80020
City of Lafayette	City Manager		Lafayette 80026
City of Louisville	City Manager		Louisville 80027
Coal Ridge Ditch	Mildred Sarchet	Secy.	Rt. 2, Box 162 Ft. Lupton 80621
Community Ditch	M.L. Sarchet	Pres.	80-South 27th Ave Brighton 80601
Consolidated Lower Boulder Reservoir & Ditch Company	Mrs. Ray Nelson	Secy.	Rt. 1, Box 218 Erie 80516
Davidson Ditch & Reservoir Company	Helen Domenico	Secy.	10315 Baseline Lafayette 80026
Dry Creek Davidson	Ralph Bixler	Pres.	9849 Isabelle Road Lafayette 80026
Dry Creek No.2 Ditch Co.	C.B. Beitelshes	Secy.	Rt. 1, Box 322 Boulder
East Boulder Ditch Company	Public Service Company of Colo.		Denver
Eggleston No. 1	%Van Valkenburg Stanley Medsker	Pres.	5050 South Emporia Denver
Eggleston No. 2	Stanley Medsker		5050 South Emporia Denver
Enterprise Irrigation Ditch Co.	Van Valkenburg	Pres	Denver
Erie Coal Creek Ditch and Reservoir Company	Dave Oscarson	Pres.	Rt. 1 Erie 80516
Farmers Ditch Company	Boyd Sheets	Secy.	3016 Kalmia Boulder

WATER DISTRICT NO. 6 (CONTINUED)

Goodhue Ditch & Reservoir Company	Lois J. Waneka	Secy.	11761 E. Pauline Lafayette 80026
Godding Daily & Plumb Ditch	Richard Frisk	Secy.	735 Bowen Longmont 80501
Godding Ditch Company Highland South Side	Richard Frisk	Secy.	735 Bowen Longmont 80501
Green Ditch Company	Roger Fell	Secy.	7861 Valmont Boulder
Harden	City of Boulder	Owner	Boulder
Harris	K. Warenburg	Owner	Louisville 80027
Houck No. 2 Ditch	Milton Nelson	Owner	2040 W. Longs Peak Longmont 80501
Howard Ditch Company	Bill Suittes	Secy.	65 Manhattan Drive Boulder
Jones & Donnelly Ditch Co.	Gene Sawhill	Secy.	6967 Valmont Boulder
Kerr No. 1 & 2	Mrs. J.D. Mayhoffer	Owner	Louisville 80027
Kinnear Ditch & Reservoir	M.L. Sarchet	Pres.	80 South 27th Avenue Brighton 80601
Last Chance Ditch Company	City of Westminister	P. Owner	Westminister 80030
Leggett Ditch & Reservoir Company	Richard Frisk	Secy.	735 Bowen Longmont 80501
Lynner-Cottonwood Consolidated Ditch Company	Walter Wise	Secy.	11587 Jasper Road Canfield, Erie 80516
Lower Boulder Ditch Company	Mrs. Carol Nelson	Secy.	Rt. 1, Box 218 Erie 80516
Martha M. Mathews	A.F. Bailey	P.Owner	11975 Konosha Road Erie 80516
Marshall Reservoir	M.L. Sarchet	Pres.	80 South 27th Avenue Brighton 80601
Marshallville Ditch Company	Ewalt Anderson	Secy.	Rt. 3, Box 325 Boulder
McGinn Ditch Company	Alice Clyncke	Secy.	7123 Baseline Road Boulder
McKay Reservoir	M.L. Sarchet	Pres.	80 South 27th Avenue Brighton 80601
N.K. Smith & Tyler Ditch	Max Serafina	Owner	Rt. 4 Longmont 80501
New Anderson Ditch Company	Wm. Light	Pres.	City Hall Boulder
North Boulder Farmers Ditch Company	John Reich	Secy.	P.O. Box 227 Boulder
Original Cottonwood No. 2 Ditch Company	Albert Kolb	Secy.	Rt. 3, Box 316
Rural Ditch Company	Richard Frisk	Secy.	735 Bowen Longmont 80501
Silver Lake Ditch Company	Everette Long	Secy.	3240 Broadway Boulder
Schearer Ditch Company	L.W. Van Fleet	Owner	Denver
Smith & Emmons Ditch Company	Ward Burrett	Secy.	Rt. 4, Box 54 Longmont 80501
Smith & Goss Ditch Company	City pf Boulder	P.Owner	Boulder
South Boulder Canon Ditch	Joe Beauprez	Pres.	1042 North 95th Lafayette 80026

WATER DISTRICT NO. 6 (CONTINUED)

South Boulder & Bear Creek  
Ditch  
South Boulder & Coal Creek  
Irrigating Ditch Company  
Tom Delehant Ditch

William C. Hake

City Clerk  
Lafayette  
Ruth Bowes

Milton Nelson

Mrs. J.D. Mayhoffer

Secy.

Secy.

Pres.

Owner

201 East Simpson  
Lafayette 80026  
9182 Dillon Road  
Louisville 80027  
2040 W. Longs Peak  
Longmont 80501  
Louisville 80027

WATER DISTRICT NO. 7DITCH AND RESERVOIR COMPANIES

Bayou Association of Ditches	Robert Rock	Secy.	4360 Tabor Street Wheatridge
Boyle	A.T. DeBell		3951 W. 56 Way Denver
Church (Golden City & Ralston Creek) and Croke Canal	Barbara Fulton	Secy.	Farmers Reservoir Irrigation Company 80 South 27th Brighton
Colorado Agricultural	Louis Rullo	Secy.	11621 Riverdale Road Denver
Cort Graves and Hughes	Sam Spano		6640 West 52nd Ave. Aravada
Denver View Water Company	Wayne Harkness	Secy.	Rt. 1, Box 590 Golden
Farmers Highline	Mrs. Duran	Secy.	Farmers Highline Canal and Reservoir Company 8889 Washington Ave. Denver
Fisher	Henry Johnson	Secy.	Box 840 Denver
Kershaw	Allan Jones		West 71 & Mariposa Denver
Lee Stewart & Eskins	Albert F. Ervin	Secy.	12703 W. 52nd Avenue Arvada 80002
Lower Clear Creek Company (Clear Creek and Platte River Ditch) Manhart	Jim Fukaye	Secy.	Rt. 1, Box 027 Denver
Ouelette	George Ditolla		6030 Wolff Arvada 80002
Reno Juchem & Swadley Longan	R.C. Lyon		4240 Garland Lakewood
	Mrs. Ray Gieble	Secy.	Consolidated Juchem Ditch & Reservoir Company 7050 West 61st Avenue Arvada
Rocky Mountain, Miles & Eskins and South Side United Water Company	Lyle Bush	Secy.	Adolph Coors Company Golden
	Henry J. Johnson	Secy.	Box 840 Denver
Wannemaker	Lyle Bush	Secy.	Adolph Coors Company Golden
Welch and Agricultural	Wilson B. Roup	Secy.	Agricultural Ditch and Reservoir Company 10080 West 27th Ave. Denver

CLEAR CREEK DITCHES AND SUPERINTENDENTS

Welch	Eugene Cress Office	922-2815 238-3606
Church	Art Young Terry Millwood	424-6636 278-0755
Agricultural	Eugene Cress	922-2815
Coors Industrial	Coors	279-8060
Farmers High Line	Bill Baker	422-4658
Wannemaker	Coors	279-8060
Lee Stewart Eskins	J.O. Greenfield	279-2974
Croke	Art Young Terry Millwood	424-6636 278-0755
Rocky Mountain	Coors	279-8060
Reno Juchem	Robert Dextra	424-4563
Slough	Bob Rock	424-4563
South Side	Coors	279-8060
Ouelette	Robert Claxton	455-1231
Boyles	Vincent DeBell	429-0210
Kershaw	Allan Jones	429-1881
Fisher	Giudo Ursine Van Valkenburg P.S. CO.	429-4840 571-8203
Clear Creek & Platte	F. Wooley J. Fukaye	452-8238 452-8208
Colorado Agricultural	Roy McIntosh Louis Ruzzo	452-8275 452-8260
*Manhart	George Ditolla	429-0139 429-1839
Standley Reservoir	Art Young	424-6636
Ralston Reservoir	Wally Wilcox	279-4222
Consolidated Reservoir		233-5945

DITCH RIDERS

Lyle Bush	Coors	986-5426
Bill Robie	Coors	278-2862
Neil Jaquet	Coors	278-8507
Bob Adams	Farmers High Line	279-3747
Wade Isham	Rocky Mountain	422-7039
Joe Griggs	Rocky Mountain	278-3870
M/M Ray Leister	Reno Juchem	237-8581
*Ralston Creek		

WATER DISTRICT NO. 8

DITCH AND RESERVOIR COMPANIES

City of Aurora	Tom Griswold 750-5000 Ext. 321		City of Aurora 1470 E. Havana Aurora
City and County of Denver	Gary Bishop 623-2500 Ext. 273		Board of Water Commissioners 144 W. Colfax Denver
City of Englewood	Vince Wertin 761-1140 Ext. 270		City of Englewood 3400 S. Elati Englewood
Last Chance Ditch Company No. 2	Paul Johnson 623-2500	Secy.	Board of Water Commissioners 144 W. Colfax Denver
Nevada Ditch Holding Company	Paul Johnson 623-2500	Secy.	Board of Water Commissioners 144 W. Colfax Denver
Northern Colorado Irrigation Company	Robert Rosendale 733-4292	Supt.	Board of Water Commissioners 144 W. Colfax Denver
Platte Water Company	Paul Johnson 623-2500	Secy.	Board of Water Commissioners 144 W. Colfax Denver
Tri City Trust	Paul Johnson 623-2500	Secy.	Board of Water Commissioners 144 W. Colfax Denver

WATER DISTRICT NO. 9

DITCH AND RESERVOIR COMPANIES

Bergen Ditch & Reservoir Company	Wm. Grant	Owner	Western Federal Savings Building Denver
Bowles Ditch Company	Wm. Grant	Owner	Western Federal Savings Building Denver
Colorado Central Power Company Harriman Ditch Company (AKA Arnett Ditch)	Leonard Reichwein	Engr.	Evergreen Denver Water Board
Hodgson Ditch Operating Association	B. F. Lowell	Pres.	Mt. Morrison
Independent Highline Ditch Company	Stan Harwood	Owner	Mt. Morrison
Pioneer Union Ditch Company	Jack McCoy	Pres.	Mt. Morrison
Ward Ditch Company	Wm. V. Hodges, Jr.	Secy.	Denver Club Bldg. Denver
Warrior Ditch Company	Gordon Koon		Mt. Morrison

WATER DISTRICT NO. 23

Jefferson Lake Ditch Company	Paul Anschutz	Pres.	Jefferson
Tunnel Water Company	Viviene Woodward	Secy.	P.O. Box 1584 2319 East Mulberry Ft. Collins
Water Supply & Storage Company	Viviene Woodward	Secy.	P.O. Box 1584 2319 East Mulberry Ft. Collins

WATER DISTRICT NO. 48

Comet Ditch	Rainbow River Ranch Inc. Ron Hunt	Mgr.	Glendevey Rt, Jelm, WY 82063
Hills Ditch	Rainbow River Ranch Inc. Ron	Mgr.	Glendevey Rt. Jelm, WY 82063
Homestead	Rainbow River Ranch Inc.	Mgr.	Glendevey Rt. Jelm, WY 82063

WATER DISTRICT NO. 49

Austin Ditch	Ernest MacArthur	Owner	Stratton 80836
Hale Ditch	Harold W. Hodsen	Admin.	Hale 80730
Newton Ditch	John Lingel	Owner	Burlington 80807
Ragan Ditch	Howard Homm	Owner	Burlington 80807
Republican Ditch	Howard Homm	Owner	Burlington 80807
Tuttle Ditch	Ernest MacArthur	Owner	Stratton 80836

DITCH AND RESERVOIR COMPANIES

Batton Ditch Company	Clifford Sherwin	Owner	P.O. Box 63 Sterling 80751
Bravo Ditch	Ivan Barden	Secy.	Iliff 80736
Carlson Ditch Company	Hulbert Reichelt	Secy.	Julesburg 80737
Chambers Ditch	Wm. Condon	Owner	916 Fairhurst Street Sterling 80751
Davos Brothers Ditch Company	Paris Accomasso	Secy.	Atwood 80722
Farmers Pawnee Ditch Company	Robert Roberts	Secy.	P.O. Box 70 Sterling 80751
Harmony Ditch Company No. 1	Mrs. Howard Hamilton	Secy.	P.O. Box 205 Crook 80726
Henderson & Smith Ditch Co.	Scalva Brothers	Owner	R.R. Sterling 80751
Iliff & Platte Valley Ditch Company	Kent Reynolds	Secy.	205 1/2 Main Street Sterling 80751
J.B. Ditch Company	Frank Manuella	Owner	Iliff 80736
Julesburg Irrigation District	Herbert Bonesteel	Secy.	Julesburg 89737 474-3737 474-2189
Liddle Ditch Company	Don Liddle	Pres.	Ovid 80744
Lone Tree Ditch Company	Kent L. Reynolds	Secy.	P.O. Box 111 Sterling 80751
Long Island Ditch	State Game, Fish & Parks	Part Owner	Crook 80726
Low Line Ditch Company	Kent Reynolds	Secy.	205 1/2 Main Street Sterling 80751
North Sterling Irrigation District	Alex Michel	Secy.	205 1/2 Main Street Sterling 80751
Peoples Ditch Company	Sam Karg	Secy.	Rt. 2 Sterling 80751
Peterson Canal & Reservoir Company	Jacob Sanger	Pres.	Ovid 80744
Powell & Blair Ditch	Proctor Water Co. Kent L. Reynolds	Secy.	P.O. Box 111 Sterling 80751
Prewitt Reservoir Company	Alex Michel	Secy.	205 1/2 Main Street Sterling 80751
Proctor Water	Kent L. Reynolds	Secy.	P.O. Box 111 Sterling 80751
Ramsey Ditch Company	Don DeMers	Secy.	708 Elm Street Sterling 80751
Red Lion Ditch Company	Maynard Sonnenberg	Secy.	P.O. Box 1271 Sterling 80751
Schneider Ditch Company	James Williamson	Secy.	Atwood 80722
Settlers Ditch Company	Charles Atkinson		Crook 80726
South Platte Ditch Company	Charles Bartlett	Secy.	Merino 80741
South Reservation Ditch Co.	James Parker	Secy.	Ovid 80744
Springdale Ditch Company	Robert Roberts	Secy.	P.O. Box 70 Sterling 80751
Sterling Hereford Cattle Company Ditch	Cliff Sherwin	Owner	Sterling 80751



WATER DISTRICT NO. 64 (CONTINUED)

Sterling Irrigation Company	Lawrence Giacomini	Secy.	P.O. Box 1013 Sterling 80751
Sterling No. 2 Ditch Company	Maynard Sonnenberg	Secy.	P.O. Box 1271 Sterling 80751
Tamerack Ditch	State Game, Fish & Parks	Owner	Crook 80726
Upper Harmony Ditch Company	Garold Marick	Secy.	Crook 80726

DISTRICT NO. 64 OFFICIALS

BRAVO

Pres.	Victor Ramey	17340 Co. Rd. 370	Sterling	522-0477
Secy.	Ivan Barden	19679 Co. Rd. 55	Iliff	522-8002
Rider	John Held	17915 Co. Rd. 370	Sterling	522-2416

CARLSON

Owner	Hub Reichelt		Julesburg	474-4300
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DAVIS BROS. DITCH

Pres.	Justin Jones	4304 Co. Rd. 31	Atwood	522-2706
Secy.	Paris Accomasso	15465 Co. Rd. 12	Atwood	522-6429
Rider	Perry Accomasso	15465 Co. Rd. 12	Atwood	522-6429

FARMERS PAWNEE CANAL

Pres.	Herb Vandemoer	225 Country Club	Sterling	522-3372
Secy.	Robert Roberts	717 So. 7th Avenue	Sterling	522-4343
Rider	David Littler	13698 Corrine Rd.	Sterling	522-3101

HARMONY NO. 1

Pres.	James Roberts		Crook	886-3462
Secy.	Mrs. Howard Hamilton		Crook	886-2833
Rider	Lorrin Lowery		Crook	886-3665

HARMONY NO. 2

Pres.	Alvin Brunkhardt		Crook	886-2682
Secy.	Garold Marick		Crook	886-3641

HENDERSON SMITH

Scalva Brothers		13407 Co. Rd. 370	Sterling	522-2539 522-4577
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ILIFF AND PLATTE VALLEY

Pres.	Basil Stieb	22782 Co. Rd. 55	Iliff	522-8084
Secy.	Kent Reynolds	209 Main Street	Sterling	522-1015
Rider	William Huey	24081 Highway	Iliff	522-8302

JULESBURG IRRIGATION DISTRICT AND PETERSON DITCH

Julesburg Irrigation Office			Julesburg	474-3737
Pres.	Clarence Jenik		Ovid	463-5732
Supt.	Tom Frame		Sedgwick	563-5737
Coordinator	Bud Bonesteel		Julesburg	474-2189

LIDDLE

Pres.	Don Liddle		Ovid	474-2300
Secy.	Hub Reichelt		Ovid	474-3400

LONE TREE

Pres.	Maynard Sonnenberg	406 Highland Drive	Sterling	522-1390
Secy.	Maynard Sonnenberg	406 Highland Drive	Sterling	522-1390
Rider	Ralph Freeman	101 East 1st Avenue	Iliff	522-8088

DISTRICT NO. 64 OFFICIALS (CONTINUED)

LOWLINE

Pres.	Rbbert E. Fritzler	21575 Co. Rd. 74	Sterling	522-1376
Secy.	Kent Reynolds	209 West Main Street	Sterling	522-1015
Rider	Albert Workman	13524 Co. Rd. 37	Sterling	522-7198

PEOPLES

Pres.	Tom DeSoto	24355 Co. Rd. 40	Sterling	522-2609
Secy.	Sam Karg	23690 Co. Rd. 40	Sterling	522-1469
Rider	Tom DeSoto	24355 Co. Rd. 40	Sterling	522-2609

POWELL

Pres.	Maynard Sonnenberg	406 Highland Dr.	Sterling	522-1890
Secy.	Kent Reynolds	209 Main Street	Sterling	522-1015
Rider	William Huey	24081 Highway 138	Iliff	522-8302

SCHNEIDER

Pres.	Elmer Rasmussen	8917 Co. Rd. 370	Sterling	522-2322
Secy.	James Williamson	17880 Co. Rd. 16	Atwood	522-1910
Rider	Perry Accomasso	15465 Co. Rd. 12	Atwood	522-6429

SOUTH PLATTE DITCH

Pres.	Keith Propst	2464 Co. Rd. 25	Merino	522-0090
Secy.	Charles Bartlett	13244 Co. Rd. 6	Merino	522-7586
Rider	Elmer Higgason	419 Park Street	Merino	522-3314

SOUTH RESERVATION

Pres.	Jim Parker 111		Ovid	463-5382
Rider	Jim Parker 111		Ovid	463-5382

SPRINGDALE

Pres.	Virgil Rieke	16470 Co. Rd. 41	Sterling	522-2624
Secy.	Robert Roberts	717 South 7th Avenue	Sterling	522-4343
Rider	Alfred Leckler	13614 Co. Rd. 37	Sterling	522-1460

STERLING IRRIGATION COMPANY 1

Pres.	Richard Ramey	1005 Co. Rd. 39	Sterling	522-5705
Secy.	Lawrence Giacomini	131 Hamilton Street	Sterling	522-0751
Rider	Glen Mayerholz	13572 Rd. 37	Sterling	522-5719

WATER DISTRICT NO. 65DITCH AND RESERVOIR COMPANIES

Bar Eleven No. 2	Miller & Goodman	Owners	Wray 80758
Chief Creek Ditch	Wiltfang & Goodman	Owners	Wray 80758
Hays Creek Ditch	Archie Miller	Owner	Wray 80758
Hays Creek Ditch #3	Archie Miller	Owner	Wray 80758
Laird Ditch	Richard Galvin	Secy.	Laird 80739
O'Donnell Ditch	Lee Archer	Owner	Wray 80758
Pioneer Ditch (Head)	Lynn Adamson	Secy.	Wray 80758
Pioneer Ditch (St. Line)	Lynn Adamson	Secy.	Wray 80758
Wlay Ditch	Henry Wiltfang	Secy.	Vernon 80755

WATER DISTRICT NO. 76

Sand Creek Ditch	Chimney Rock Grazing Association		S.W. of Laramie, WY
	Frank Lilley	Ranch Mgr.	745-9575
Spring Creek Ditch	Chimney Rock Grazing Association		S.W. of Laramie, WY
	Frank Lilley	Ranch Mgr.	745-9575

WATER DISTRICT NO. 79

Rosenklans Ditch	Robert Jones, Sr.	Owner	Laird 80739
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WATER DISTRICT NO. 80

Altura (Duck)	Ron Heitman	Pres.	838-5496 839-1406
Denver Water Board			
Cheesman Reservoir			647-2213
District Foreman	Hank Bode		838-5314
Asst. District Foreman	Gene Bode		838-4185
Roberts Tunnel East Portal	Bob Woods		838-5921
Lininger Reservoir	Kenosha Trout Club		838-5684
J. O. Hill Reservoir	West Creek W & S District		Rt. 2, Box 154 Sedalia 80135 687-9067
Wellington Reservoir	Ron Heitman	Pres.	838-5496 839-1406
Westcreek Reservoir	West Creek W & S District		Rt. 2, Box 154 Sedalia 80135 687-9067

WATER COMMISSIONER'S SUMMARY

WATER TABULATION FOR 1977 BY SOURCE AND USE

ALL FIGURES IN ACRE FEET

A. DIRECT FLOW DIVERSIONS

B. STORAGE REPORT

WATER DISTRICT	1 - 0	1 - 1	1 - 2	1 - 4	1 - 10	2 - 0	2 - 1	2 - 2	2 - 4	2 - 10	3 - 1	3 - 2	3 - 10	4 - 0
1	174227	88925		7879		80	13639			12278				
2	37016	154506		7891									702	
3	23446	46847	10636		108416	18216	4332	2113	290	223172	27169		21277	31
4	35499	53626	2664			320	13994			1113				6
5	12631	42614				97	7512			2400				8
6	10733	46335	4530		5	160	8734	22312		4				173
7	10869	56113	1273	16214	17025		1230	194		37				
8	141	18380	32837	22870		353	1378	5735		1377	5050	659		
9	2307	3297	573				2733	300						
23		33517	4403	1644			421	197						
48		11929												
49		2156												
64	10761	75975			699		4974				3355		2194	
65		10711												
80	10973	3541					40			4796				
<b>TOTAL</b>	<b>328603</b>	<b>648472</b>	<b>56916</b>	<b>56498</b>	<b>126145</b>	<b>19226</b>	<b>58987</b>	<b>30851</b>	<b>290</b>	<b>245177</b>	<b>35574</b>	<b>659</b>	<b>24173</b>	<b>219</b>

SOURCE

USE	
1. River	0. Storage
2. Reservoir	1. Irr.
3. GW	2. Mun.
4. TB	3. Comm.
5. NS	4. Ind.
6. Collective	6. Fish
	10. Other

4 - 1	4 - 2	4 - 4	4 - 10	5 - 0	5 - 1	5 - 3	5 - 4	5 - 5	5 - 10
253	1090	1	18841	931	4083				216
13520	1881		1627						1158
8428									
	23261								
268	188		538						1885
	56668		150						
	5544		95						401
			72452						
22469	88632	1	93703	931	4083				3660

1978

ANNUAL SUMMARY - DIVISIONS  
ACRE FEET (11-1-77 thru 10-31-78)

Divisions	Non-Exempt Wells #	Ditch Structures Reported #	IRRIGATION			CURRENT YEAR Acres Irrigated	TRANS-MOUNTAIN	
			Direct Diversions To Irrigation	Diversions To Storage	Storage To Irrigation		Export	Div. to Div. Import
1	7819	4704	648472	328603	58987	11,37,000	-	1133043
2								
3								
4								
5								
6								
7								
TOTAL								

Divisions	MUNICIPAL			INDUSTRIAL		RECREATION Storage - Wildlife Parks	ACTUAL STORAGE For Year All Reservoirs	# Decreed Applications	# Water Court Applications
	Direct Diversions	Diversions To Storage	Storage Releases	Direct Diversions	Diversions To Storage				
1	56916	-	30851	56498	21942	-	328603	479	841
2					262700				
3									
4									
5									
6									
7									
TOTAL									

1978 CALLS ON SOUTH PLATTE RIVER

DATE OF ISSUE	PRIORITY CALLING DISTRICT	NAME	APPROPRIATION DATE	DISTRICTS AFFECTED																	
				1	2	3	4	5	6	7	8	9	23								
1. 11/01/77	64	Julesburg Reservoir	2/12/1904	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
2. 11/01/77	1	North Sterling	6/15/1908																		
3. 12/06/77	2	CALL OFF Burlington	11/20/1885	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
4. 12/14/77	2	(Ab.St.Vrain) Milton	5/29/1909																		
5. 2/11/78	1	Riverside	8/01/1907	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
6. 3/03/78	2	(Ab.St.Vrain) Barr Lake	1/13/1909																		
7. 4/04/78	64	Harmony #1	4/28/1895																		
7A. 4/04/78	1	Written Schneider Ditch	4/10/1873	x																	
7B. 4/04/78	64	Written Farmers Pawnee Canal	7/15/1875																		
7C. 4/04/78	64	Written South Platte Ditch	9/17/1873																		
7D. 4/04/78	64	Written Springdale Ditch	6/22/1882																		
7E. 4/04/78	64	Written Peoples Ditch	5/01/1872																		
7F. 4/04/78	64	Written Harmony #1	7/19/1886																		
8. 4/12/78	64	Written Harmony #1	7/11/1895																		
9. 4/13/78	64	Written Pawnee	4/28/1895																		
10. 4/17/78	1	Fort Morgan	4/28/1895	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
11. 4/17/78	64	Written Springdale	6/22/1882																		
12. 4/26/78	2	(Ab.St.Vrain) Western	7/19/1886																		
13. 4/30/78	2	CALL OFF Western	5/05/1866																		
14. 5/02/78	1	Riverside	5/05/1866																		
15. 5/06/78	1	Bijou	8/01-1907	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
16. 5/08/78	1	Jackson Lake Refill	1/15/1909	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
17. 5/09/78	2	(Ab.St.Vrain) Barr Lake	12/31/1929	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
18. 5/11/78	1	No Demand	1/13/1909																		
19. 5/14/78	1	Riverside Direct	5/31/1907	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
20. 5/16/78	8	Highline Canal	1/18/1879																		
21. 5/16/78	2	(Ab.St.Vrain) Burlington	11/20/1885																		
22. 5/18/78	1	Jackson Lake Refill	12/31/1929	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
23. 5/19/78	1	No Demand																			
24. 5/22/78	64	Written Harmony #1	4/28/1895																		
25. 5/26/78	1	Written Prewitt	5/25/1910																		
26. 5/30/78	2	(Ab.St.Vrain) Fulton	7/08/1876																		
27. 6/01/78	2	(Ab.St.Vrain) Burlington	11/20/1885																		
28. 6/01/78	8	Highline	1/18/1879																		



1978 CALLS ON SOUTH PLATTE RIVER

DATE OF ISSUE	DISTRICT	PRIORITY CALLING NAME	APPROPRIATION DATE	DISTRICTS AFFECTED																
				1	2	3	4	5	6	7	8	9	23							
29. 6/05/78	2	(Ab. St. Vrain) Barr Lake	1/13/1909																	
29A. 6/05/78	2	CALL OFF Highline		X	X															X
30. 6/07/78	No Demand Below Burlington Ditch																			
31. 6/12/78	2	(Ab. St. Vrain) Horse Creek Reservoir	3/17/1911																	X
32. 6/14/78	2	(Ab. St. Vrain) Burlington	11/20/1885	X	X															X
33. 6/20/78	2	(Ab. St. Vrain) Barr Lake	1/13/1909	X	X															X
34. 6/20/78	2	(Ab. St. Vrain) Burlington	11/20/1885	X	X															X
35. 6/22/78	1	Upper Platte & Beaver	4/01/1888				X	X	X	X										X
36. 6/22/78	2	(Ab. St. Vrain) Brantner	1/15/1881										X	X	X	X				X
37. 7/03/78	64	Lowline	10/14/1882	X	X					X	X	X	X	X	X					X
38. 7/05/78	64	Pawnee	6/22/1882	X	X															X
39. 7/25/78	2	Brighton Ditch	11/01/1871							X	X	X	X	X	X					X
40. 8/20/78	8	Last Chance	12/30/1863																	X
41. 8/21/78	8	Petersburg	11/30/1861																	X
42. 8/30/78	8	Platte Canyon 2 <sup>nd</sup> Enl.	12/30/1864																	X
43. 9/02/78	1	Duel & Snyder	4/07/1884							X	X	X	X	X						X
44. 9/04/78	8	Petersburg	11/30/1861																	X
45. 9/06/78	8	Nevada	8/30/1861																	X
46. 9/08/78	1	Ft. Morgan	10/18/1882					X	X	X	X	X	X	X						X
47. 9/11/78	8	(Ab. Chatfield) Platte Canyon	12/30/1863					X	X	X	X	X	X	X						X

## SUGGESTIONS AND RECOMMENDATIONS

### PERSONNEL

#### Office Expenses

The administrative field personnel, namely the water commissioners and their deputies, maintain some type of an office in their own homes since they are on call at all times due to the nature of their work. The size, equipment, and use of that office are, of course, not only related to their administrative responsibilities and functions but also to the availability and convenience of space. Nevertheless the need for office space in the home does exist and is provided by the individual at the expense of a reduction of space for the family. Further, most of those employees rely upon their telephones, a business necessity, for communication with the various water users and other staff members. Since these field people are out checking diversions, streamflow, and water use much of the time, their wives or other members of the family must take and relay calls as necessary. Secretarial help is additionally provided by family members, generally the wife, in the generation of diversion reports and other correspondence.

It is again proposed, as it has been in the past, that the budget include, and approval be granted for the payment of a minimum of \$50 per month in addition to the regular salary to each such person maintaining a field office in his own home. To provide some equity, the allowance suggested could be scaled according to the circumstances in each case with the maximum being \$100 per month.

Although such allowance would at least be a token payment for a long unrecognized responsibility of field personnel, in most cases it would scarcely cover the capital cost to the individual for space and utilities nor even approximate scale wages for the secretarial help he receives.

#### Enforcement

The enforcement of orders made to water users through the injunctive procedures provided by the statutes is proving to be very slow and quite costly. Too often it is to the water users advantage to ignore orders, take water in violation of others rights and enjoy the benefits of that water use until the court takes action. The fine, if any, would be much less than the benefits gained from the extra water.

It is suggested that the law should be changed in a manner that would get the offender into court for immediate hearing. This could be done through the issuance of a citation for observed offenses similar to the procedures used by traffic control officers.

## Water Court

Since the remodification of water law in 1969, many thousands of water rights have been adjudicated through the division water court and many more are awaiting such determination whenever the court is able to get to them. Due to the weight of numbers alone, the division staff cannot physically administer these myriad rights. The situation is further complicated by the complexity of many of the decrees, i.e. subdivision augmentation plans and alternate points of diversion.

The continuing application and adjudication process places an excessively expensive burden upon the owners of the old water rights, many of which may have been established and used more than 100 years ago. Although their rights were adjudicated properly in a timely manner, they must remain constantly alert to encroachment upon those rights by others seeking some court action which could conceivably cause injury to them such as some change in water right application. The individual relying upon an old established water right all too often does not recognize the possibility of injury even though he reads the published resumes, which he likely fails to do through oversight or lack of time. Even recognizing the potential danger he cannot afford to hire the legal assistance necessary to defend what is already his. In the absence of an objection the court is likewise unaware of the problems and, unless a strong consultation objection is raised by the division engineer, the court is likely to approve the application to the ultimate injury of existing water rights.

The above discussion upon the water court situation is included merely to point out some of the problems inherent in the present procedures. No remedy is suggested although some may exist.

Richard D. Lamm  
Governor



C. J. KUIPER  
State Engineer

## DIVISION OF WATER RESOURCES

DEPARTMENT OF NATURAL RESOURCES

JAMES R. CLARK  
IRRIGATION DIVISION ENGINEER  
ROOM 208 8th AND 8th OFFICE BLDG.  
GREELEY, COLORADO 80631  
OFFICE: 352-8712

November 8, 1978

### MEMORANDUM

TO: Lana Cook  
FROM: Jim Clark *JRC*  
SUBJECT: October Water News

We just completed another irrigation year on October 31st. Time is now being spent finalizing records and preparing the Annual Report.

The rain and snow of October 21st brought approximately 2 inches of moisture to a large portion of Division I. Most of it was soaked up by the thirsty ground but there was enough from the cities, etc, to produce a peak of 2600 cfs at Kersey. This storm stopped irrigation and made it possible for farmers to work their ground and dig the remaining sugar beets easily.

Some interesting rainfall figures for Greeley include the following:

September 78' - 1 of 5 driest since 1893  
Total for July-August-September 77 (Drought Year) = 4.26"  
Total for July-August-September 78 = 1.08"

The Greeley hydrographic unit ran a seepage check on the South Platte in District 64 on October 30th.

Happy Thanksgiving to all!



## DIVISION OF WATER RESOURCES

DEPARTMENT OF NATURAL RESOURCES  
JAMES R. CLARK  
IRRIGATION DIVISION ENGINEER  
ROOM 208 8th AND 8th OFFICE BLDG.  
GREELEY, COLORADO 80631  
OFFICE: 352-8712

October 4, 1978

### MEMORANDUM

TO: Lana Cook

FROM: Jim Clark, Division Engineer *JRC*

SUBJECT: September Water News

Division I has enjoyed a very good irrigation season this year. Some ditch company personnel in Larimer and Weld counties claim it to be the best supply in fifteen years.

There was a hearing before Judge Carpenter recently on a contempt citation brought by the State Engineer against a party pumping in violation of an injunction issued last year. The Judge found this party guilty of irrigating out of priority for one day and he had to post \$500.00 bond to be forfeited if any further violation of the injunction or decree is shown on any wells owned by the defendant.

The short supply of water from the upper reaches of the Division drove the call to 1860 in September. The call in the lower reaches has remained on for the entire month also, with the 1888 call in effect at the present time.

The Division Engineer was very pleased to be included on a tour of Colorado Big Thompson Facilities this year. It was an informative trip and the weather cooperated beautifully.

A new girl has begun working in the Water Court office. She is Linda McGuirk and comes to the Water Court with 8 years of court experience in Minnesota.

We congratulate Ray Liesman on his appointment as Assistant Division Engineer, effective August 1, 1978.

After 32 years on the bench Judge Carpenter retires September 22, 1978. Judge Robert A. Behrman has been appointed Water Judge of Water Division #1.

JRC/slw



## DIVISION OF WATER RESOURCES

DEPARTMENT OF NATURAL RESOURCES  
W. G. WILKINSON P.E.  
IRRIGATION DIVISION ENGINEER  
ROOM 208 8th AND 8th OFFICE BLDG.  
GREELEY, COLORADO 80631  
OFFICE: 352-8712 HOME: 484-3917

August 11, 1978

### MEMORANDUM

TO: Lana Cook  
FROM: Jim Clark, Division Engineer  
SUBJECT: July Water News

The early part of July was devoted to getting the tabulation-abandonment list prepared and mailed. Approximately 300 tabulations and abandonments were sent out, of that 97 have been returned for insufficient address or the addressee was unknown. As of the end of July we have had 2 formal objections to abandonments and several inquiries as to what procedures people should follow. Anyone with objections to water rights which are on the abandonment list must file a written statement with the Division Engineer before July 1, 1980, in accordance with CRS 37-92-402(3), together with a \$10.00 objection fee. Copies of the abandonment list are available for inspection in Division offices and County Clerks offices. We would like to thank Sandy Lenz of the Denver office for coming to our rescue July 6<sup>th</sup> and 7<sup>th</sup>. Sandy's very efficient help assisted us in meeting the July 10<sup>th</sup> deadline for mailing of the tabulation-abandonment list. We would like to give a special pat on the back to our own two secretaries Susi and Rachel for their extra effort, without such effort the project could not have been completed.

Mark Johnson, our new Deputy Water Commissioner, started working for the Division this month. His main assignment has been to field locate irrigation wells that are not part of augmentation plans. We have been receiving many calls from well owners whose wells have been posted by Mark. Most of these well owners either have or are making arrangements to get into existing augmentation plans. He is mainly working in the lower reaches of Districts 2,3,4,5, and 6, and the upper reaches of District 1. He will be based out of the Greeley office although his primary duties will be in the field checking on wells that are not in compliance with the rules and regulations. Any well owners that have questions about the status of their well should contact their Water Commissioner or the Greeley office at 352-8712.

There has been a continuous call on the South Platte River during the month of July for 1882 water in the lower reaches. The upper reaches have gone to calls as senior as 1871.

There has been scattered hail throughout Division 1 with some sections receiving severe damage and other sections receiving no moisture at all. No large scale crop damage has been reported.

Tom Aron the Division 1 Water Referee has terminated his employment with the Water Court effective July 31, 1978. The Judge has issued an order that he may still sign cases that he was involved with before he left court employment. Judge Carpenter will be retiring September 22, 1978 after 32 years on the bench. Judge Carpenter was first named County Court Judge in 1946 and became District Judge in 1952. Judge Carpenter has already been replaced as Chief Judge of the 19<sup>th</sup> Judicial District by Judge Robert A. Behrman, and will be replaced as District Judge by John J. Althoff, a Greeley attorney. The selection of Water Judge has not been made and will be named at a later date by Supreme Court Chief Justice Pringle. The Water Judge may be any District Court Judge within the 23 county area that comprises Water District 1.

Because of the referee's resignation and Judge Carpenter's retirement we see added delays in court applications being processed through the Division 1 Water Court. Water applicants must remain patient. There is still a backlog of over 1,000 cases in the Water Court that have yet to be heard. Some of these cases date back to the early 1970's when the Water Court was first formed.

Several subdivisions were visited by members of the Greeley and Denver offices recently. Compliance with decrees were woefully lacking. Reservoirs to supply replacement water were not in compliance. Well permit applications for these subdivisions will be returned until the problems are corrected. Additional subdivision inspections are planned in the near future.





DIVISION OF WATER RESOURCES

DEPARTMENT OF NATURAL RESOURCES  
W. G. WILKINSON P.E.  
IRRIGATION DIVISION ENGINEER  
ROOM 208 8th AND 8th OFFICE BLDG.  
GREELEY, COLORADO 80631  
OFFICE: 352-8712 HOME: 484-3917

July 6, 1978

MEMORANDUM

TO: Lana Cook  
FROM: Jim Clark, Division Engineer  
SUBJECT: Water News - June

We were pleased with the outcome of the Farner well case W-8612 on June 28th. In this case the state issued a Cease and Desist Order for expanded use of a well. Judge Carpenter ruled from the bench that the well would be limited to the decreed acreage and rate of use. We feel this gives us the direction we need to stop expansion of the court's decrees.

It is interesting to note that we only lost 2600 AF out of state at Julesburg this spring. This low loss occurred at a time when the Cache LaPoudre River was higher at Greeley than it has been for 14 years and the Big Thompson and St. Vrain were very high also.

Our new secretary Susi Wycaver is recovering slowly after a difficult tonsillectomy. Keep your chin up Susi!

WATER NEWS

MAY 1, 1978

JAMES R. CLARK, ACTING DIVISION ENGINEER

A beautiful rain began falling on a good portion of Division 1 on Saturday, April 28th. We hope it continues for two weeks. With conditions so dry, it was beginning to look like our good snowpack wouldn't go very far. This moisture should help stretch the runoff through the season.

The April meeting of Larimer and Weld Council of Governments Drought Committee was held on Monday, April 24th. Two interesting presentations were made. One was made by Atty. Jack Ross. He was seeking support for a Federal Senate Bill which attempts to set aside a 1902, 160 acre limitation statute. This old statute has three requirements which have been pretty much ignored in the intervening years. These three requirements are: (1) Owner must live within 50 miles of the land. (2) Owner must be actively engaged in farming. (3) Owner is limited to one 160 acre parcel, except that his wife may also own a parcel of like size. The proposed legislation would make it necessary to offer for sale at dry land prices any acreage held that does not meet these criteria.

The second presentation was made by Dr. Emmett McCord, agronomist with the Weld County Experimental Farm. He addressed the question of nitrates in groundwater. He stated that the water used at the farm contained about 25 ppm nitrate, which would give a substantial nitrogen application with each irrigation. This factor should be considered when calculating fertilizer needs.

Our secretary, Dorothy Neutze, announced her resignation recently, effective May 31st. We wish her well in her activities as a full time housewife.

We welcome Sue Wyscarver to the Greeley Office as Dorothy's replacement. She is transferring here from the Denver Office.

We also welcome Ann Ehrlich, new Clerk of the Water Court, who replaces Mac Danford. Mac is the new clerk in the Denver Court of Appeals.

We are a little more optimistic about summer water supply this month. Snow-pack remains above normal at selected stations on South Platte tributaries. The big plus this month is a significant increase in reservoir storage. Normal precipitation for the rest of the season is still the critical factor for a successful irrigation season. Indications are that valley soils remain deficient in soil moisture.

The March meeting of the Larimer and Weld Council of Governments Drought Committee was held Monday, March 27th. Jeri Danielson and Hal Simpson presented an interesting program to the committee at that meeting outlining some possible solutions to drought related problems.

John Romero and Andy Wacinski presented a very good hydrogeological program to the Division One Staff on March 21st at our Water Commissioner Meeting. They are conducting several ground water investigations in the South Platte Drainage Area.

Water Commissioner Jack Neutze's activity level has been reduced temporarily due to a snowmobile mishap. We wish you a speedy recovery Jack.

Congratulations are in order to Bob Cooper who was recently registered as a professional engineer.

We also congratulate Dugan Wilkinson on 27 years of service to the Division of Water Resources. Dugan will be retiring at the end of the month and we wish him every success in his future endeavors.

MARCH 1, 1978

DIVISION NO. 1

W.G. WILKINSON, DIVISION ENGINEER

BY: JAMES R. CLARK

The snowpack has continued to improve this past month in most of our mountain areas. However, moisture is still needed badly in much of our farming area. This soil moisture deficiency together with a shortage of stored reservoir water still causes us some concern.

Approximately 20,000 new tabulation cards, representing water rights which have been decreed since 1969, are in the hands of our computer section in Denver. These have been prepared for the list to be published in July of this year.

The Water Court hearings on W-7595 commenced on January 30, continued through the month of February and are expected to be completed in mid-March. This is action initiated by the City of Aurora and the Huron Investment Company to transfer the consumptive use of 36 decreed water rights comprising nearly 857 cfs from the Eleven Mile Ranch in South Park to the use of Aurora. The transfer is being opposed by the City and County of Denver, Englewood, The Farmers Reservoir and Irrigation Company and The Upper South Platte Conservancy District.

A similar transfer in W-7934 commonly referred to as the Aurora-Janitell Transfer, was decreed by the Water Court in January of this year.

The Water Court has 300 cases set for Term Day, March 7th, before referee Tom Aron.

Judge Carpenter extended the protest period for the December Resume to May 1st due to the delay in its publication.

## OPPOSITION

STATEMENTS OF ------ filed against USA reserved rights in Case W-8439 have been accepted by Water Court as also being effective against the USA cases filed in December 1977.

The division office was honored by the visit of the Division Engineer and his assistants from Division II on February 3. Their presence provided an opportunity for an interchange of administrative information and problem discussion. It is somewhat comforting to realize that we are not the only ones beset with administrative problems.

FEBRUARY 1, 1978

WATER NEWS - DIVISION NO. 1

W.G. WILKINSON, DIVISION ENGINEER

BY: JAMES R. CLARK, ASSISTANT DIVISION ENGINEER

Recent snowfall in the mountains is encouraging, but doesn't have us out of the woods yet. South Platte drainage area reservoirs stood at 67 percent of the 10 year average\* on January 1st. This deficit will require considerably more than normal precipitation to overcome.

The gaging station on the South Platte near Kersey provides an index to the availability of water for storage downstream. The December average daily flows were 614 cfs in 1977 as compared to 778 cfs for the 10 year December average.

Looking back at 1977 Court activity it is seen that 784 new cases were filed and 807 cases were decreed.

\*\*382 cases were filed by the U.S.A. in December of 1977. All these cases involve reserved rights which means the government is seeking a priority date based on the acquisition of the land rather than the date of appropriation or date of filing in Water Court. The U.S.A. filings are estimated to contain 5000 pages. These may be purchased at 75 cents a page from the Water Court.

We offer our sympathy to Helen Owens and family on the death of her husband and former State Engineer Ralph Owens.

\*1967-1976

\*\*Total cases filed through December 31, 1977 is 9171 with about 2000 pending Court action.

DECEMBER 1, 1977

WATER NEWS - DIVISION NO. 1

W.G. WILKINSON, DIVISION ENGINEER

BY: JAMES R. CLARK, ASSISTANT DIVISION ENGINEER

We were saddened in early October by the news of Jack Fisher's untimely death in a farm accident. He was our Water Commissioner at Wray. We offer our sympathy to his wife and family.

We also wish Bob Samples, Water Commissioner at Brush, a speedy release from the hospital where he was confined with severe chest pains Saturday, November 26.

Our hydrographers have been quite busy in recent months. Two new stations and cableways were installed in Big Thompson Canyon — one below the powerhouse and one at the mouth. The Buckhorn Creek station was repaired and the channel of the North Fork of the Big Thompson at Drake was dredged out. The above work was all made necessary by the destructive flood of July 31, 1976. More recently a new well was installed in the station on the St. Vrain at Lyons, with a considerable amount of riprap also being installed and grouted in.

Three hydrographer crews conducted a seepage run on the South Platte River from the North Sterling inlet to the state line on November 30.

Winter stream flows and subsequent storage continue to reflect the effects of the past year's drought. Some hope is offered by the early reports of mountain snow accumulations exceeding those of last year at this time.

Hearings in Water Court on Aurora-Huron and the Aurora-Cheek transfers will begin on January 30th.

Merry Christmas and Happy New Year to all our readers.

# Bureau of Reclamation urges Front Range aqueduct, Poudre River dam

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By Don McMillen  
Publisher 1-13-78

The U.S. Bureau of Reclamation has issued a report suggesting a 53-mile long aqueduct may have to be constructed along the Front Range to supply water to Larimer, Weld and Boulder counties.

The report pinpoints sites for nine potential new reservoirs as part of the system including a proposed Gray Mountain Dam in Poudre Canyon.

Other potential reservoir sites outlined include Cactus Hill east of Fort Collins on the Weld County line on Black Hollow Creek, Devil's Backbone west of Loveland on Buckhorn Creek and Little Tom near Lyons on the Little Thompson River.

The new water concept is contained in an October 1977 Bureau of Reclamation "status report" on studies of the Front Range undertaken by the bureau. A law passed by Congress in 1969 required the study.

Larry Nelson, project leader in the Denver regional office, said the survey revealed potentially serious water shortages in the Coal Creek drainage which presently are being studied. This would affect the Erie, Lafayette and Louisville areas.

Bureau work on the new reservoir and aqueduct-concept will be held back until cities complete work on Windy Gap, Joe Wright and other current reservoir projects, according to Nelson.

The project leader said, "It (the plan) probably will not be necessary for a few years yet although it could possibly be feasible right now."

He stressed details in the plan are subject to change. "We may only need one or two reservoirs," said Nelson.

The report outlines nine proposed new reservoirs, enlargement of dams at Horsetooth Reservoir and Carter Lake by up to 20 feet and a buried, multi-barrel conduit stretching from Boulder to Fort Collins.

Six foothills reservoirs would capture flood runoff and store new supplies.

Pressures from the uphill reservoirs on the aqueduct system would force water both north and south and make exchanges of water possible.

Three proposed new reservoirs on the plains would be used to regulate water and make delivery to rural and urban users.

Also contemplated is the consolidation of irrigation canals in an overall water system to cut seepage losses.

Nelson described the plans as "a concept envisioned to alert everyone to the long range possibilities for water resource development."

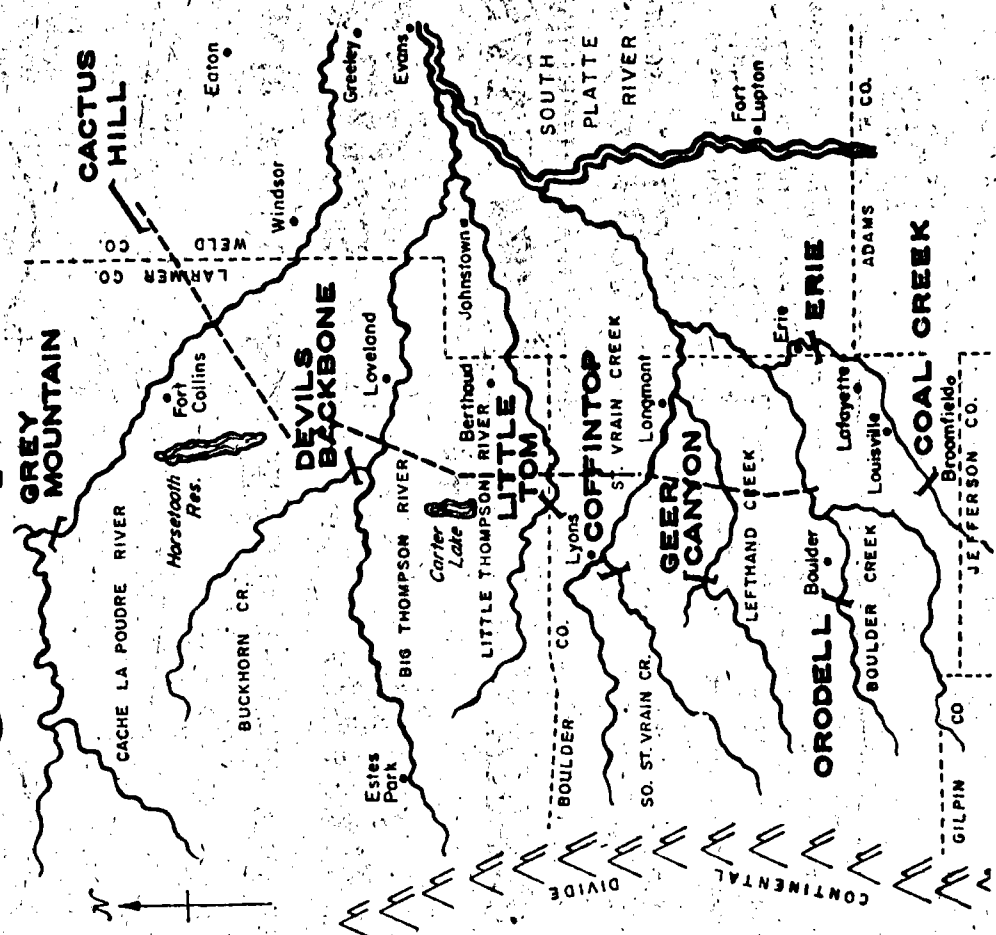
Potential reservoirs listed in the report were described as follows:

"Grey Mountain Dam site is located in Larimer County on the Cache la Poudre River 11 airline miles northwest of Fort Collins. A thin double-curvature concrete arch dam was studied for this site.

"Devil's Backbone Dam site is located in Larimer County on Buckhorn Creek about six airline miles northwest of Loveland. An earth or rockfill structure was studied for this site.

"Cactus Hill Dam site is located northeast of Fort Collins. An earth dam, up to 150 feet high, could be located in this area on Black Hollow Creek. This structure could serve primarily as a reregulating reservoir and could benefit existing irrigated lands in the Windsor and Eaton areas of Weld County."

Fort Collins officials said they have received the report but have not yet had adequate time to study it.



This October 1977 U.S. Bureau of Reclamation map shows the proposed route of a Front Range aqueduct (dotted line) and the location of several proposed dams, including one at Grey Rock in the Poudre Canyon.

# Whooping crane plight may end Narrows plans

Jan '78

DENVER (AP) — The whooping crane, an endangered waterfowl, may deal the death blow to the proposed Narrows Dam and reservoir on the South Platte River in northeastern Colorado.

The National Wildlife Federation has asked Interior Secretary Cecil Andrus to declare the marshy Big Bend area of the Platte River in Nebraska a critical habitat.

The Big Bend area, near the confluence of the North and South Platte downstream from the damsite, is a nesting area for the endangered whooping cranes.

The federation alleges that the dam could alter the habitat and further endanger the whooping cranes by reducing streamflow.

The Endangered Species Act prohibits federal projects which "jeopardize the continued existence" of any endangered species.

If the designation is applied to the Big Bend area, it could halt construction of the 1,500-megawatt Missouri Basin Power Project which includes the Grayrocks Dam on the Laramie River near Wheatland, Wyo., also upstream from the whooping crane nesting grounds.

The \$139.53-million Narrows Dam-reservoir unit is on President Carter's "hit-list" of western water projects. It would provide about 119,000-acre feet for crop irrigation and would provide flood

control and recreation facilities.

The Bureau of Reclamation Narrows project is on dead-center pending further federal review on safety, economic and environmental issues.

The \$1.6-billion Missouri Basin power plant in Wyoming is already 20 percent complete.

Bureau of Reclamation and utility spokesmen agree the whooping crane issue poses new problems for both projects.

Win Curtis, spokesman for Basin Electric Power Cooperative — a partner in the Wyoming project — said studies by his company concluded the project would have no adverse effect on either whooping cranes or sandhills.

And Curtis suggested that downstream flow impact could be reduced by adjusting flows on the McConaughy Reservoir near Ogallala, Neb.

Bureau of Reclamation spokesman Clark Germann said South Platte streamflows from Colorado into Nebraska will be reduced by 11 percent by existing water compacts between the states regardless of whether the Narrows Dam is built.

However, National Wildlife Federation executive vice president Thomas L. Kimball said the time has come to rule on the Big Bend area.

## High court reverses earlier ruling

2 GREELEY (Colo.) TRIBUNE

Mon., Jan. 23, 1978

# Colorado water unit blasted for not doing job

DENVER (AP) — The Colorado Ground Water Commission has not been following the law in considering the "quantity of existing claims" to decide whether to grant a well permit, the Colorado Supreme Court ruled today.

The ruling came as the court reversed the decision by a Yuma County District Court judge in the case of Gordon L. Thompson. Thompson was

seeking a permit to construct a well and use the ground water from the Northern High Plains Ground Water Basin in Yuma County.

Thompson's application was denied by the commission and that decision was upheld in July 1976 by Judge Francis L. Shallenberger of Yuma County District Court.

The Supreme Court agreed with Thompson's contention

that it is not proper for the commission to assume that all conditional permits represent valid water rights in determining how many claims have been made on underground water.

The commission argued that it is required by statute to assume that all holders of conditional permits will exercise their rights to the fullest extent when it calculates "quantity of

existing claims"

Conditional permits are granted for one year, but may be extended. During that time, the holder of a conditional permit is required to submit evidence to the commission showing how much water is being pumped from the well and for what purpose it is being used.

The court chided the commission for failing to follow through and issue final permits

when it is determined that the water used by the conditional permit holder is being put to beneficial use as required.

"The commission cannot rely upon conditional permits as though they are enforceable 'existing claims' without implementing the legislative scheme which includes the issuance of final permits," the court said.

The commission, by consid-

ter by holders of conditional permits in its decision on whether additional permits should be issued, may be allowing some persons "to sleep on water rights which are not validly appropriated under Colorado law," the court said.

The court also upheld several other portions of Colorado water law, including the so-called three-mile test and state-line



# Mtn. area well permits in question

CANYON COURIER 2-1-78

by Jacque Scott

It will be difficult, if not impossible, to get a household well permit approved for any exempted parcels of land under 35 acres without a water supply plan approved by the Division of Water Resources.

That is the latest word from the water resources division and the Jeffco Board of Commissioners. The two agencies have been going round and round recently on the issuance of well permits for exempted parcels of land under 35 acres with charges and countercharges of "confusion, misunderstandings and misinformation."

State Water Engineer C. J. Kuiper sent the Jeffco Board of Commissioners a letter criticizing the commissioners' handling of exemptions saying it was putting the state water engineer (Kuiper) in an "impossible situation."

"Kuiper is saying groundwater wells in the Evergreen area are tributary to the South Platte River and that the South Platte is over-appropriated," commissioner Joanne Paterson explained.

"So the needs of downstream users make restricted issuance of new well permits for exempted parcels of land under 35 acres in the mountain area necessary," she said.

"What we have done is to make all exemptions subject to State Water Resources issuance of a well permit," she said.

In a letter to Kuiper, the commissioners said the county is now placing a notice on all exemption applications announcing "no exemption will be approved" for parcels of land until the applicant has:

- submitted proof of adequate water supply to serve the property, or
- entered into a written agreement with the county providing no sale of any exempted parcel nor issuance of any building permit until the Colorado Division of Water Resources issues a well permit.

or until a special water supply district certifies in writing that water taps have, in fact, been issued.

The commission is also stating on all exemption applications that "the Colorado Division of Water Resources has advised the Board of County Commissioners that individual household well permits will probably not issue any exempted parcel in the absence of a water supply plan approved by the Division of Water Resources."

The letter to Kuiper concludes: "The county is hopeful that you will continue to process those pending well permits approved by the Division of Water Resources."

Continued on Page 22

plications that have been withheld as a consequence of this recent misunderstanding. The county understands clearly and acknowledges that your office has the sole authority and responsibility to determine whether or not an individual well permit should or should not be granted to the applicant."

A recent Colorado Supreme Court decision "might" have an effect on this matter, Paterson said. The ruling declares the Colorado Ground Water Commission procedure for approving wells "invalid." The ruling says well owners were claiming "more water than they were using - prohibiting others who wanted wells from having access to the limited water."

Paterson said that "may mean the South Platte is not as over-appropriated as originally thought."

# High court: Carpenter erred in water rule

TRIBUNE 2-21-78

DENVER (UPI) — Weld County District Court Judge Donald Carpenter erred when he granted a conditional decree for an underground irrigation well over the objections of State Water Engineer Clarence J. Kuiper, the Colorado Supreme Court ruled today.

The case involved Jerry Bohn, who sought permission to drill a well to irrigate 80 acres. The well would have pumped 2,000 gallons per minute and

would have had an annual average appropriation of 200 acre-feet.

The state engineer denied the well permit after ruling he was unable to find available unappropriated water for the well. Kuiper also said there was no proof that the vested water rights of senior appropriators would not be materially damaged by the well.

Despite Kuiper's objections, the water court concluded that operation of the well, in accordance with an approved plan of augmentation, would eliminate any injury which might be suffered by vested senior rights.

The Supreme Court noted that the conditional decree had been approved, even though the court had no plan of augmentation of the depleted water supplies. During the proceedings, Bohn conceded that pumping of the well during

the irrigation season would injure senior rights unless the pumped water was replaced. "If we were to permit this conditional decree to stand, then anyone desiring to drill a well might obtain such a conditional decree," the court said. "This is not consistent with orderly adjudication of water rights.

"It opens the door to chaotic conditions in the offices of water clerks, the state engineer and division engineers. Before being awarded a decree, the applicant must submit a plan of augmentation for approval or show that he has joined an organization which has an approved plan of augmentation."

In another water case, the court said Jefferson County District Court Judge Joseph P. Lewis acted correctly by refusing to dismiss the Federal Youth Center from a lawsuit.

The case was initiated by a local landowner, Dudley Taylor, who filed an action in district court seeking quiet title to water from Warrior Ditch. His action was challenged by the Warrior Ditch Co., which included the Federal Youth Center as a stockholder.

The agency argued the state court had no jurisdiction because the United States had not waived its sovereign immunity. The lower court disagreed, saying it did have jurisdiction. "We have concluded that, under the special circumstances here presented, the district court has jurisdiction over the Youth Center as an instrumentality of the United States," the Supreme Court said. "Therefore, we hold that the motion to dismiss was properly denied."

The court said federal laws showed it has been the intent of Congress "to defer

to the respective water adjudication and administration systems of the states."

In other decisions, the court:

— Said Adams County District Judge Jean Jacobucci erred by refusing to grant a continuance to Charles Pollard in a rent refund dispute. The court said the trial judge abused his discretion when he refused a continuance, although Pollard was sick and could not appear in court.

— Ruled that suspended attorney Carl L. Harthun, who was convicted of defalcation and theft of a client's funds, must return all the records and files of his former clients. The court said that did not prejudice the attorney's right to assert alleged claims for unpaid fees or costs, but the return of the files was essential to the protection of the clients' interests and rights.

— Ruled Denver District Court Judge

# Expert accuses Colorado of poor water management

RKY-MTN. NEWS 2-22-78

By JONATHAN DEDMON

News Staff

Colorado manages its water resources as poorly as any state in the country, a top water expert charged in Denver Tuesday.

Dr. Jay Lehr, executive director of the National Water Well Association and editor of several water journals, said that as a result of the poor management, "People are suffering."

Lehr spoke at a seminar at Stouffer's Denver Airport Inn. The seminar is a prelude to the annual convention of the Colorado Water Congress Thursday.

Lehr charged that the state is ignoring the vast reserves of ground water less than a half-mile beneath the state's surface.

"It's like a manufacturing enterprise that has a lot of money in the bank and won't take it out for a new venture or to expand," Lehr said.

"You have vast supplies of ground water in various parts of the state which aren't being utilized because the state doesn't understand it and

fears that in some way it is related to surface water," Lehr said.

He said the San Luis Valley has some 2 billion acre feet of water being pumped out at the rate of no more than 100,000 acre feet a year.

Some ground water, he said, is directly connected with surface water. He said pumping it does affect surface water rights in streams and rivers.

However, he estimated that the ground water which is a direct tributary to rivers and streams constitutes only 5 to 10 percent of the total.

It is generally accepted, Lehr said, that there is 20 times more ground water available than surface water and that it is far cheaper to get than surface water obtained by building dams and reservoirs.

He also said it is an excellent way to manage weather conditions. Water can be pumped out from the large underground reservoirs during dry conditions and will be replenished when there is plenty of rainfall.

Currently, he said, much pumping actually stops during dry conditions because of the fear of

affecting valuable surface rights during droughts.

"It doesn't make any sense to lower your quality of life just so you can have a lot of money in the bank," he said.

Despite the preponderance of ground water, Lehr said that during 1975 the state used only 2.7 billion gallons a day of ground water compared to 7.3 billion gallons daily of surface water.

He said that failing to take advantage of the state's ground water could lead to a situation in

which neighboring states could take the lead in mining ground water and deplete Colorado's supply.

"It would be like the Colorado River. You gave that away," he said, referring to the interstate compacts guaranteeing other states a certain stream flow when the river leaves Colorado's borders.

The National Water Well Association conducts research and disseminates information on ground water issues.

Tues., Feb. 28, 1978

Committee he chairs begins hearing testimony

GREELEY (Colo.) TRIBUNE

# Younglund: Water amendment vital to agriculture

DENVER (UPI) — The chairman of the House Agriculture, Livestock and Natural Resources Committee Monday said he will begin hearing testimony Wednesday on one of the most important proposals of the 1978 legislative session — a constitutional amendment restricting the rights of home rule cities to seize water through con-

demnation proceedings. Rep. Walt Younglund, R-New Raymer, is both committee chairman and sponsor of the amendment. He said he considers it so important that he intends to spend the summer months traveling across the state to urge support for the measure rather than campaign for reelection.

If the constitutional amendment wins approval in the Legislature, it will have to be approved by voters in the November general election before it could become law.

Younglund introduced the proposal because a state law restricting water condemnation proceedings does not apply to home rule cities, according to an opinion issued last month by the Colorado Supreme Court.

Younglund was sponsor of the 1975 law which limited local governments in their efforts to take over water rights allocated to farmers, ranchers and other users. That law prevents cities from condemning water used for agriculture unless the cities can prove immediate need.

## Array reaffirms Blue River water ruling

RKY MTRN NEWS 2-26-78

U.S. District Judge Alfred A. Array has reaffirmed his decision regarding use of water from the Blue River and rebuked Denver officials for trying to get him to change his order.

The board last summer rescinded releasing 29,622 acre-feet of Blue River water from Dillon Reservoir to Green Mountain, citing low runoff last spring as grounds for the refusal.

At Friday's hearing, the result of motions filed by the city, Array rebuked city officials for failing to accept his order.

Array said any challenges should be taken to the 10th U.S. Circuit Court of Appeals or the U.S. Supreme Court.

In November, Array ruled that Western Slope agricultural interests take precedence over Denver for use of water from the Blue River and said that the Denver Water Board can't divert runoff water from the Blue River for city use until Green Mountain Reservoir is filled.

A group of Western Slope water districts filed a complaint in Denver U.S. District Court against the water board in July. They were joined by the U.S. Bureau of Reclamation, which operates Green Mountain Reservoir as part of the Colorado Big Thompson project.

Array ruled Friday that under agreements made during construction of Dillon

Array said any challenges should be taken to the 10th U.S. Circuit Court of Appeals or the U.S. Supreme Court. "My patience is growing thin about this unwillingness to go through the judicial system to see who's right," Array said.

Green Mountain stores agricultural water for Western Slope use at the confluence of the Blue and Colorado rivers near Kremmling. It is down-

Array ruled Friday that under agreements made during construction of Dillon

Array said any challenges should be taken to the 10th U.S. Circuit Court of Appeals or the U.S. Supreme Court.

# Long-time Greeley attorney marks 95th year

TRIBUNE 2-28-78

By JOE PICCOLI  
Tribune-UNC Intern

"I became an observer of the need for water at age seven when the ditches went dry in the middle of July," long-time Greeley resident Bill Kelly recalls.

Kelly, who for many years was a prominent Greeley lawyer, celebrated his 95th birthday Wednesday and reminisced about the importance of water in the development of Greeley and northeastern Colorado.

"I was born in Missouri and came to Greeley in February, 1880," Kelly said. The population was 2,500 in

After trying to start a law business in Fort Collins in 1907 that "never got a foothold" Kelly returned to Greeley where he gradually built up a good practice until 1911 when he was appointed referee for 350 water adjudication cases.

"The job didn't pay much but I got a knowledge of water," Kelly said.

Kelly was soon appointed water referee for the entire area from Denver north to the Cache La Poudre River. He spent 15 years as the attorney for the Colorado-Big Thompson Project and the Northern Colorado Water Conservancy District.

During his years as a lawyer Kelly also served as attorney for both the city and Weld County. He held the city attorney post for five years at a salary of \$600 a year.

"Part of the pay for the job was the prestige that went with it," Kelly said.

Kelly was influenced to try a career in law by the respect one of his uncles, a lawyer and justice of the Missouri Supreme Court, commanded from his family. Kelly went to the University of Colorado at a time when "half the students were from mining towns. Cripple Creek, Victor, Ouray, Idaho Springs and Aspen were the towns college students were from."

"The students in my day went on to become governors and senators," Kelly said.

Aside from his city and county posts Kelly never held any public office but he was very active in the community.

He was on the original board of the Weld County General Hospital and served 26 years as director of the Greeley Public Library. He was the president of the Colorado Bar Association in 1939.

Apart from the time he was in college, Kelly has been a resident of Greeley for 88 years and he said "I think Greeley is the best town I've ever seen and that doesn't exclude consideration of other foothills towns. I like the four season climate of Greeley and the municipal and

**'I think Greeley is the best town**

**I've ever seen and that doesn't exclude consideration of other foothills towns.**

educational facilities make it an attractive place to have one's career."

Kelly said he has seen and worked with some prominent men in developing Greeley over the years. "I led a very active life and was busy."

**The job didn't pay much but**

**I got a knowledge of water**

1890 and it has never been smaller from one census to the next since then.

"A part of that growth came from the assurance of a water supply for the city."

Much of the credit for the water Greeley grew on rests with Kelly. For more than two-thirds of his 60 years as a lawyer Kelly was involved in various aspects of water adjudication.

# Narrows To Benefit From Tax Base

FT. MORGAN TIMES

WASHINGTON — A spokesman for Citizens for The Narrows Wednesday told U.S. House and Senate subcommittees that the Narrows Project will benefit the nation's economy and tax base — and avoid the necessity for future northeast, Colorado residents to look to urban areas for jobs.

Don Ament, of Iliff, vice president of the Fort Morgan-based citizens' group, appeared before the Senate Public Works Subcommittee on Appropriations and the U.S. House of Representatives Public Works Subcommittee on Appropriations in separate hearings.

Two other northeast Colorado leaders, K. Ted Pollock, former mayor of Fort Morgan and President of Citizens for The Narrows, and Earl D. Franklin Jr., incumbent mayor of

Sterling, also made brief statements on behalf of the citizens' committee.

Ament told both bodies that having Narrows placed on the White House "hit list" last year "was hard to take....but some good did come from the further delay. The vast majority of the residents of Northeast Colorado rallied behind the project as never before — not content to let the district carry the entire burden of the fight this time. To be sure, The Narrows — like all major Reclamations projects — has its detractors, but quickly it was demonstrated that they were a very small and not particularly well-informed minority."

He described Narrows as a "very sound investment" for the United States taxpayer. "The dividends which it will pay, in terms of increased

earning power in the Northeast Colorado community, goes far beyond the benefit-cost ratio, which in itself is very favorable," he said. "And, earning power is what keeps the nation's economy and tax base growing."

"But the human dividends are even more important, in the eyes of Citizens For The Narrows. For some of us, it will mean that our children and grandchildren, in increasing numbers, will be able to look forward to good and productive lives in an environment which we feel is best for them. Without Narrows, I'm afraid that a lot of them would have to look to the cities for jobs — and I think all of us would agree that urban population concentration is a growing national crisis."

(Continued on Page 3)

## Narrows To Benefit From Tax Base

(Continued from Page 1)

The immense recreational potential offered by the Narrows reservoir and another body of water which will be included in the project, Jackson Lake, was described by Ament as "nothing but good for the region and the state.

"Not only will our own citizens derive a lot of enjoyment from The Narrows Reservoir and Jackson Lake, which is part of the project," he said, "but the residents of the metropolitan areas to the West will find a major new place to relax and play.

"Believe it or not, Colorado is not made up entirely of high mountains, trout streams and cold mountain lakes. Some of our most important recreational areas are found on the Eastern Plains. And Narrows will become the biggest and best of these areas.

# Safe Dam Possible--With Enough Money

By JOHN LA PORTE  
Times Staff Writer

(Editor's note: This is the first in a series of three articles written from a Times and Associated Press interview with C.J. Kuiper, Colorado's state engineer. The interview was initiated by a request from The Times, and Kuiper repeatedly stressed that he was not taking a position either for or against the Narrows project. Kuiper's Narrows files are being kept at the state attorney general's office pending a lawsuit filed against the project by an opposition group into which the state has entered as a defendant.)

"You can build a safe dam anywhere if you spend enough money," C.J. Kuiper, state engineer, replied to a question on whether a safe dam can be built at the proposed Narrows site near Fort Morgan. Kuiper figured that another cost estimate would be needed

before it was known whether the cost of safety measures at the dam would be prohibitive, but he thought the U.S. Bureau of Reclamation, construction agency for the project, would have to make some alterations as a result of a recent independent review panel study by several experts of safety and seepage issues at the dam.

Final design of the project has not yet been completed.

"If I were building a dam with my own money," he stated, "there's no way I'd build it." Review panel recommendations point to possible extension of slurry trenching, pressure relief wells and drainage blanketing on the dam's downstream toe.

The safety-seepage issue is just one of several on which Kuiper has repeatedly expressed concern to the bureau and to state officials. Apparently, that concern has not hit home with the dam going

forward and the state's official position in favor of it with little or no consideration given to those concerns.

For example, Kuiper's office does not normally comment on federal projects, but early in 1976 his office was asked for comments on the Narrows. His office's report called attention to channel losses that pointed to probable heavy seepage at the Narrows site and to possible safety ramifications. His department's reports appeared in news media about the same time Gov. Richard Lamm announced state support for the project.

Kuiper pointed to heavy channel losses between Kersey and Weldona gauges in the area where Narrows is to be built. From May 21 to July 16, 1965, there were 62,000 acre-feet lost to channel losses, 76,698 in 72 days in 1967 and 252,756 in 53 days in 1973.

In all cases, Kuiper noted, diversions between the two gauges were taken into account and added to the Weldona gauge which meant heavy seepage losses.

This, the engineer said, was enough of a loss for concern about whether the reservoir would hold water.

Steady state studies have been made based on the reservoir being filled to a certain level and held there, but Kuiper said a transient state study should have been made with water going up and down. When alluvial material in the dam area drains, he pointed out, the movement of ground water is accelerated. The U.S. Geological Survey is making such a study, he added, with completion about a year away.

A Woodward and Clyde engineering report also said that the bureau design was reasonable under a steady state but that there could be some

slumping under rapid drawdown. The upstream side of the dam should be redesigned for rapid drawdown, the report suggested.

Kuiper outlined the basic problem at Narrows as alluvium sloping downward to a bedrock of shale with the shale getting deeper and deeper from near the end of the dam going south to an ancient river channel far underground, some 150-feet lower than the existing river channel. The alluvium — silt, gravel and other porous material — is highly pervious, allowing water to slip through easily. River flows over 500 cubic feet per second push water over a hump in the shale and it travels down the alluvium toward the old channel.

Kuiper is concerned with water slipping around the end of a slurry trench the bureau proposes to put down to shale at the dam's south abutment and

(Continued on Page 8)

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back to the downstream to the dam.

The material is different from the Teton dam, but basically, the pattern was the same — badly fractured rhyolite rock allowed leakage to the downstream toe, although it was thought grout had sealed the leaks. The dam collapsed from the downstream side.

The Narrows dam might need extension of the slurry trench, depending on the extent of porous material. Also, pressure relief wells to keep water pressure from becoming excessive in the downstream toe area of the dam and a drainage blanket on the downstream toe to allow water out without tearing up the downstream toe might be needed.

Geology well logs near the dam, Kuiper noted, supported the concern about pervious material with 2,500 to 3,000 gallons a minute coming through indicating, he said, "pretty damn porous" material.

All of this led to a memo to Harris Sherman, director of the state's Department of Natural Resources, on the concerns of Kuiper's department.

Members of the Regional Landowners Group, the opposition coalition with the pending lawsuit, obtained a copy of that memo when they asked for it. The memo, Kuiper

said, was public record: "They can come in and have a copy of anything in this office."

Kuiper was asked at a meeting of the review panel of geological and engineering people if he had questions, and he asked the experts if they would like to wait for the transient study. They indicated they would. The report, however, was due too soon.

His questions also addressed porosity of the material, and the panel indicated a safe dam could be built. However, cost was unknown, as the slurry trench might have to be extended and the alluvium is up to 250 feet deep south of the dam.

He had no argument with the consultants, he said, but they did not specify how far the safety measures would have to go. The apparent course is to start building first, then decide.

"I'd like to know what it's going to cost," he said.

(Next: Water supply.)

# Getting Water Downstream Big Question

By JOHN LA PORTE

Times Staff Writer  
(Editor's note: This is the second in a series of articles written from a Times and Associated Press interview with C. J. Kuiper, state engineer. The interview was initiated by a request from The Times, and Kuiper repeatedly stressed that he was not taking a position either for or against the Narrows project. Kuiper's Narrows files are being kept at the state attorney general's office pending a lawsuit filed against the project by an opposition group into which the state has entered as a defendant.)

of 15 per cent are very low, Kuiper claimed. "My biggest complaint is I don't think people know what the hell they're getting."

He cited an example of a meeting in Sterling in which an official of the Fort Morgan Canal, which comes right out of the reservoir, thought the canal was safe from any large losses because of its proximity to the project.

Kuiper, however, claimed at that meeting—a claim he said he would have to share downstream losses equally.

In other words Morgan Canal would have as much downstream loss to stand as South Reservation Ditch near Sterling.

Those losses could be very high—to an individual requesting information on how much Narrows water he could expect at South Reservation

Ditch, Kuiper's office replied, after study of stream flows, that based on one year's experience he might not get any—zero to 10 per cent of the water released would get to the headgate from Narrows. During one year South Reservation cut off 40 second-foot upstream and never saw any.

There is also the question of an exchange program in the Central Water Conservancy District upstream from Narrows.

"They use the magic word 'exchange,'" Kuiper said. The idea is that water from the Narrows could be used to alleviate damage to other water rights from wells in the district by replacing water drawn by those wells. However, those wells injure rights upstream from Narrows, according to the engineer.

How does the water get upstream? he asked—the answer is the magic word "exchange."

He commented, "We do an awful lot of water exchange, but I've never found a way to run water uphill."

As for use of Chatfield to store exchange water, Kuiper reported that the U. S. Army Corps of Engineers has prohibited that—that reservoir is for flood control and the Corps will not allow storage of conservation water there.

In short, there is the word "exchange," but apparently no real viable method of exchange shown to make that word any more than a "magic word."

The same channel losses that led to Kuiper's concerns about safety, discussed in the first article of this series, also lead to water supply problems—holding the water impounded in the reservoir for use as needed without excessive seepage losses. Bureau estimates figured year-round losses instead of losses during the peak irrigation season in mid to late

summer when users will draw water, Kuiper asserted.

Kuiper also questioned whether the bureau could get enough water to fill Narrows in the first place—of the over 130,000 acre-feet the bureau is figuring will be available. Kuiper figures a substantial amount will not be, as does his deputy, Jeris A. Danielson.

The bureau is counting on 32,000 acre-feet from the Weldon Valley ditch, the engineer said. That will not be so even if the bureau would get all of that water, Kuiper and Danielson claimed. The 32,000 acre-feet is based on consumptive and return flow use—consumptive use being about 40 per cent and return flow about 60 per cent.

In other words with all Weldon Valley water rights only 40 per cent 12,800 acre-feet of the 32,000 acre-feet would be

(Continued on Page 3)

As far as getting water downstream is concerned, the proposed Narrows reservoir near Fort Morgan is "a pig in a poke," in the words of C. J. Kuiper, state engineer. U. S. Bureau of Reclamation estimates of downstream losses

the project. The estimated \$160 million cost of received, Kuiper said, for the water will not be much water. There will get as much water as its estimates indicate. The bureau will get as much downstream losses, the engineers say there is no way losses, other decrees and in short, with the channel Wildcat under construction.

under construction near Brush and is working with Riverside to build the Wildcat. Plans are now being prepared to put the its Pawnee Power Plant now engineers added. Public Service far down the road, either, the The Wildcat is not something senior to Narrows.

is gone elsewhere—to decrees acre-feet of the bureau's 130,000 Weldon Valley and over 89,000 Add that to the 32,000 for 57,580 acre-feet. The decree date is 1904 and is decree for its proposed Wildcat. reservoir and a secondary decree for filling the existing Riverside has a primary district. particularly to the Riverside are being sold off to other users, water rights, senior to Narrows, available. Weldon Valley ditch If any of that water will be The engineers claim that little available for Narrows.

available for Narrows. The engineers claim that little available. Weldon Valley ditch If any of that water will be available. Weldon Valley ditch are being sold off to other users, particularly to the Riverside district. Riverside has a primary decree for filling the existing reservoir and a secondary decree for its proposed Wildcat. Add that to the 32,000 for 57,580 acre-feet. The decree date is 1904 and is acre-feet of the bureau's 130,000 is gone elsewhere—to decrees senior to Narrows.

Water Downstream Is Big Question (Continued From Page 1)



# Recharge A Better Alternative?

By JOHN LA PORTE  
Times Staff Writer

(Editor's note: This is the third and final article in a series written from a Times and Associated Press interview with C.J. Kuiper, Colorado's state engineer. The interview was initiated by a request from The Times, and Kuiper repeatedly stressed that he was not taking a position either for or against the Narrows project. Kuiper's Narrows files are being kept at the state attorney general's office pending a lawsuit filed against the project by an opposition group into which the state has entered as a defendant.)

a ground water recharge demonstration project conducted by the U.S. Geological Survey, Colorado State University and Ground Water Appropriators of the South Platte that indicates ground water could be stored for about \$2 an acre-foot. In the project culverts were borrowed and a canal extended to two storage ponds in the Merino area. The canal and ponds were abandoned due to heavy leakage, but the ground water storage principle calls for just that — leakage to get the water underground.

Monitoring wells and gauges at the entry point and below the recharge area were used. Obviously, when compared to Narrows (about \$14.25 an acre-foot), the water in the recharge project would be cheaper, Kuiper pointed out.

The U.S. Bureau of Reclamation, construction agency for the proposed

Narrows reservoir near Fort Morgan, has claimed it would cost more for ground water recharge than for the dam and reservoir.

Kuiper cited the proposed Badger-Beaver project south of Fort Morgan and Brush as having "tremendous potential" if there is a free river. However, Narrows would stop any possibilities of a free river, stopping everything when there is no call downstream.

It is an either-or proposition — you cannot have both Narrows and further development of recharge. "If you do build Narrows, it's an irreversible act," Kuiper said. Upstream water development, he said, would be impossible.

Kuiper's office has a staff member checking out bureau figures on ground water recharge. The bureau claims a 3 to 1 benefit-cost ratio for ground water recharge. However, bureau studies ap-

parently include a number of new wells where existing wells could be used.

Jeris A. Danielson, Kuiper's deputy, questioned whether benefits and flood control. Recreation use, he said, would be heaviest in July and August, precisely when drawdowns for irrigation are at the maximum. Kuiper referred to a mud flat situation being possible in those months with the heavy drawdowns.

As for flood control, Danielson felt Chatfield, Mount Carbon and Cherry Creek would handle upstream waters that could create flooding. Tributary flooding such as Bijou Creek would not be controlled by Narrows.

Proponents of the dam often point to unused water flowing into Nebraska as a reason for building Narrows. This, Kuiper said, is a fallacy. Although one-third of one million acre-feet a

(Continued on Page 2)

year have slowed past the Julesburg station and into Nebraska, it is mostly return flow from below Narrows.

In other words it is water that has been used. Most of the flow, Kuiper said, would continue even if Narrows were built. Some could be preserved by Narrows, but there is a compact between Colorado and Nebraska concerning minimum stream flows of the South Platte into Nebraska.

Kuiper questioned whether liens were on homes in the water districts buying Narrows water. Bureau and Lower South Platte Water Conservancy District Officials have said there are not — there is a slight mill levy, and non-payers of property taxes could wind up with liens, and customers for Narrows water not making payments could wind up with liens also, officials of those entities said.

Detractors of the Narrows have said a possibility of clear water damage exists — water with silt and other solids settled out as the water sits in the Narrows reservoir.

Kuiper said that this possibility does exist, particularly for two ditches drawing directly from the reservoir and for those short distances downstream before the water would, by scouring action on the river, pick up more solids.

Narrows opponents claim that the bureau has divested itself of any liability for clear water damage and passed the responsibility on to the customer districts. Although bureau officials said that a Lower South Platte and bureau contract does not say anything one way or the other about liability for clear water damage, it does say that the bureau does not guarantee water quality.

Gary Frieauf, secretary-manager of the Lower South Platte, calls the clear water damage argument a "when did you quit beating your wife" argument, presupposing a problem. He does not think there will be any such problem. There is no evidence, he said, that a claim there might be such damage has any validity.

The bureau, Frieauf added, has contracted with the U.S. Geological Survey to study the river and canal systems to see what the silt content is now at various times of the year. If it changes after Narrows is built, it would then become a matter of discussion.

Detractors have indicated that the Lower South Platte has not sold any Narrows water with no contracts with prospective users. Frieauf acknowledges that no such contracts have been completed but said negotiations were stopped when the Carter administration withheld Narrows funding pending further studies. He said he has two letters of intent from prospective users and numerous queries — along with requests for more water than Narrows could supply, according to the bureau's figures.



Frieauf's comments came by telephone from Washington, D.C., where he and several members of the Citizens for the Narrows group were to testify before congressional subcommittees on the fiscal year 1979 national budget and discuss the Narrows funding situation with Colorado's Congressional delegation.

The Carter budget request did not include Narrows — a special report the administration requested on several key issues was not ready at the time of the request but has since been completed and several members of the Colorado congressional delegation have indicated that they will seek funding for the project for fiscal year 1979.

The official state position, Kuiper noted, is pro-Narrows. His office has expressed concerns, as outlined, in several areas, but, he said, "no one else seems excited."

P 108-ADAMS-WELD MARKET PLACE, TUESDAY, APRIL 11, 1976

# Water agent's double role challenged three years ago

Jim Erger survived an ouster attempt in May, 1975 when he was still president of the Wellington Reservoir Co. because of his double role as head of the farmer-owners of the Wellington ditch company and as water agent for the city of Aurora and the South Adams Water and Sanitation District.

Erger had entered an agreement with Aurora and South Adams to serve as their water agent April 11, 1973. He terminated his agreement by letter dated Feb. 9, 1976.

South Adams Water District and Aurora were purchasing water rights from both Wellington and

Burlington ditch companies on a 50-50 cost agreement. During that time the two bodies acquired outright 140.25 shares of Wellington water rights and options on another 63.84, as well as 75.25 shares of Burlington water rights outright and options on another 53.84.

The District has also paid an additional \$32,848 for its share on option contracts. Most receipt and option contracts will be paid off by the end of this year, although one set of 43.35 pair shares of the two stocks will not be paid off until 1985.

South Adams records also show that Bill Monson,

a plaintiff in the court suit against Erger, had approached South Adams Water District in November or December, 1974 and expressed an interest in selling his water rights.

Larry Ford, manager of South Adams, told Monson the District could not purchase water directly from him but that Monson would have to deal through Erger since he was under contract to act as water

agent for South Adams and Aurora.

Ford said last week that the water rights were obtained "because it was a good investment and would serve the District in case it ever expanded."

Originally it was announced the buying program was needed to help the District develop its augmentation plan (replacing water its wells drained from the South Platte River basin). The

District's water consultants, he said, maintained it did not actually need the water rights for the augmentation program. They are included, however, in the plan filed with the state engineer as "back up" in case the call is on for water.

## Implications for Arkansas River Basin

# High court affirms water court rule

By DANIEL TAYLOR

News Staff

The Colorado Supreme Court Monday affirmed a water court decision invalidating a rule proposed by the state engineer that would have severely curtailed well water diversions from the Arkansas River Basin.

The high court decided that State Engineer C.J. Kuiper's proposed rule was not based on operating experience as required by law.

Acting under legislative authority, the state engineer adopted rules governing the use of ground water in the basin in February, 1973. Those rules curtailed well diversions for no more than four days a week.

But in January, 1974, the state engineer proposed an amendment to Rule 3 of the 1973 policy. The amendment provided for well curtailment

for five days each week during 1974, six days during 1975 and total curtailment in 1976.

Before the amendment became effective, it was protested in water court by the Atchison, Topeka and Santa Fe Railroad, Stratmoor Hills Water District, Security Water District, Colorado Water Protective and Development Association, and the American Crystal Sugar Co.

The water court consolidated the protests and eventually ruled against the state engineer.

The state engineer appealed to the Supreme Court, which ruled in favor of the water court.

"Among many other findings and conclusions, the water court in effect found that the state engineer was in error in adopting the amendment because it was not (based) on ... investigations and experience under the 1973 rules," the high court said.

The high court pointed out that the Arkansas

River Basin contains both surface and subsurface water from the Arkansas River.

They are interconnected, "and withdrawal of water from one affects the flow in the other," the high court said.

The purpose of the state engineer's proposed amendment was to protect decreed rights to surface water against encroachment by wells, the court said.

"This is not, however, a case in which surface appropriators generally are pitted against well owners," the Supreme Court said. "A substantial part of the farm ground water users also have surface water rights and they use the surface water and ground water conjunctively for irrigation."

In other action, the Supreme Court:

— Affirmed a La Plata District Court decision denying a high school diploma to a student who

had completed enough credits for graduation at the Lathrop Park Youth Camp. The youth had petitioned Durango High School for a diploma, but the school district denied the petition because the youth had not met requirements on classroom hours of instruction or number of semesters and had not completed his final semester at Durango High School.

— Reversed a Court of Appeals decision awarding a lump sum payment to the widow of a state employee from the Public Employees' Retirement Association. The high court directed the trial court to rule in favor of PERA, which had argued that a designated beneficiary was not entitled to a lump sum payment when there were other survivors besides the widow. PERA argued the benefits should be transferred to the survivors' benefit reserve fund and the high court agreed.

# Water division chief sees delegation as goal

By BILL JACKSON  
Tribune Staff Writer

Jim Clark has been on the job as division engineer for the Colorado Water Resources Division I office for nearly a month now and sees as his personal goal to "get stuff delegated around here in order that things can get done."

Clark took over the head job at the division in Greeley last month, following the retirement of W. G. Wilkinson, who had been division engineer at the Greeley office since July 1, 1969.

"Delegation is the big secret in this office; to

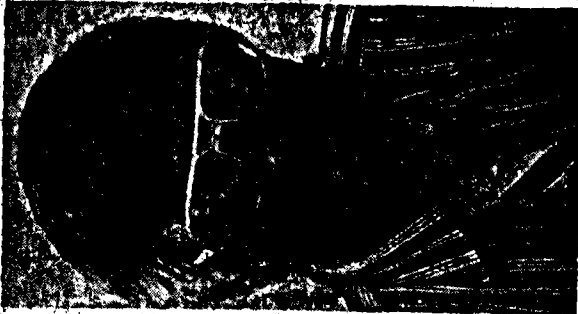
to administer both surface and underground water within the division according to court decree, Clark explained. Division I encompasses the entire northeast corner of Colorado, approximately 28,500 miles, and has 15 districts within the division.

It is one of the two largest divisions in the state. Under Clark's supervision fall 13 district water commissioners within the division, 11 deputy water commissioners, in addition to four other engineers and two other water commissioners headquartered in the Greeley office.

After the water court decrees water rights, Clark and his personnel administer those rights.

"We're involved in a lot of disputes over water rights. It's almost a daily occurrence during the irrigation season," Clark said, which means he and the other engineers and commissioners spend a lot of time in court trying to resolve those disputes.

"Some of those disputes are never ended; there's so many loose ends when you get involved with water. We just try and do the best we can," Clark said.



Jim Clark

A native of California, Clark was graduated from Fresno State College with an engineering degree and moved to Colorado in 1966, where he worked out of the Denver office of Water Resources until 1970 when he moved to Greeley.

Clark said that he plans no immediate changes in the operation of the office.

"I plan on running things as they have been in the past. There may be some minor shifting of duties of some of the personnel, but that will come at a later date," he said.

Clark is single and lives east of Greeley.

# Idledale's residents lose water supplies

By GARY DELSOHN  
News Staff  
RKY ARTN. NEWS 9-8-78

Two years after being assured their water problems were over, residents of Idledale, a tiny mountain community southwest of Denver, are again without water in their homes.

About 100 families lost their water service earlier in the week when pumps in two of the town's four wells "burned up" from the warm temperatures and low water levels.

But even if the pumps are fixed, the town, which recently replaced its network of water lines, will be plagued with irregular service for quite some time, according to a water district spokeswoman.

"WE'VE HAD WATER problems before," said Sandy Mayes, secretary for the Idledale Water District, "but we thought they were solved with the new lines. Now it's just the drought and lack of moisture in the ground."

Two years ago, after similar problems, residents were told by Jefferson County and state officials that spending about \$18,000 to replace the city's antiquated water lines would solve Idledale's water problems. Work on the new lines was completed last summer.

Since Saturday, when the pumps broke down, many of Idledale's 500 residents have been traveling to nearby towns to carry water in containers so they could bathe and do household chores, Mrs. Mayes said.

For emergency use, residents have been drawing small amounts of water from two Jefferson County government trucks stationed around the clock on Colorado 74 at one of the town's two grocery stores.

"I have four kids and it's really a handicap," Mrs. Mayes said. "We've been saving water we've used to wash and sticking it in the tubs to use later to flush the toilets."

**TO BATH HER CHILDREN**, who range in age from 3 to 11, Mrs. Mayes said she has driven to relatives' homes in Golden, about 10 miles away.

Since Saturday, the water district has been hauling 3,000 gallons of water to the town.

from the Public Service Co. in Kittredge and dumping it into the town's two near-empty reservoirs, which normally are filled by the pumps, Mrs. Mayes said.

"But we're trying not to use too much of that water because we're holding it back for fire protection," she added.

Mrs. T. Speece, who's lived in Idledale for five years, said water shortages are nothing new for the town.

"You usually can expect this to happen at least once a summer," she said, "but I don't remember a time when it's lasted this long."

"We've been going down into the gas station at Morrison (four miles away) and getting water for our use," Mrs. Speece said. "I'll tell you one thing, you don't realize how much water you use until you run out of it."

**AS THE WATER** district has seen fit, water has flowed for brief periods into Idledale homes since Saturday, usually for less than an hour at a time, residents said.

"You can't take a shower in the morning, you can't flush the toilets and barley have enough time to wash a load of clothes in the afternoon," Mrs. Speece said.

Idledale is not the only nearby mountain town suffering the effects of the summer drought, though. Several small communities have started hauling water and warning residents that they soon may run out of the precious commodity.

Marge Gostic, secretary for the Brook Forest Water District, said that community's three water tanks are nearly empty.

And, although the Idledale Water District board would like to drill a few more wells if an engineer studying the problem determines the extra holes would fill the town's needs, it seems the only help for the town will come in the form of heavy rain and snow.

Reiner Haubold, the state's engineer in charge of issuing well permits, said it "looks rather bleak" as far as Idledale having the water rights to be able to drill new wells.

"I just don't think they have the rights," Haubold said.

Both the Colorado Division of Water Resources and the Tri-County Health Department have made strong recommendations in at least four recent rezoning applications to the commissioners that deep wells be drilled, central sewage-disposal systems be installed and water-storage tanks centrally located be set up for firefighting.

**DR. JERRY** Danielson of the state division said his agency earlier this year changed its regulations on the digging of shallow wells.

Most permits given for shallow wells are for domestic use, which includes irrigation of one acre surrounding a home.

Other in-house-use well permits are given for only house use without the outside irrigation where it is shown through engineering studies that there is adequate underground water for the irrigation, he said.

Developers have come to his division seeking permits for wells whose use would include a limited amount of outside irrigation.

But the division has had to tighten its regulation, he said, because it doesn't have the personnel to police the amount of outside use of well water.

**THERE NOW** has to be very definite engineering proof for the issuance of domestic well permits, he said.

The water level in the two shallow formations has dropped considerably in the Denver area over the years, Danielson noted.

One downtown Denver office building once used water pressure from a flowing well from the Denver formation to lift and lower its elevators. That can't be done these days, he said. There hasn't been that kind of flow pressure off underground aquifers (water-bearing rock strata) for many years, he said.

Although no one seems to be worried that there may soon be a lack of water in the Dawson and Denver aquifers, there is a slight rumble of discomfort among engineers.

**THE DIVISION** of Water Resources and the planning departments of some Denver-area counties have joined with the U.S. Geological Survey to study the area's aquifers over the next few years.

The study is to be limited and probably won't answer too many questions, Danielson said.

No one yet has started any study on just how much population the prairies of the suburban counties—as distinguished from the Denver alluvium area—can accommodate, he said.

"No, we just haven't gotten around to that yet," he said.

# METROPOLITAN NEWS

SECTION B

\*THE DENVER POST Tues., Sept. 5, 1978 17

# LOVELAND DAILY HERALD HERALD-10 VIPs tour 'Big Tom' project

"Pictures and statistics can't tell as much as seeing the Colorado-Big Thompson Project in person," says Chet Waggener, Loveland's new city manager.

Waggener's assessment was shared by other guests of Northern Colorado Water Conservancy District Directors after the annual two day tour of "Big Tom" facilities. The tour was held last Thursday and Friday and included an overnight stop at Granby.

Guests of the NCWCD Directors and staff included residents of Fort Collins, Greeley, Loveland, Longmont, Boulder, Windsor and Estes Park.

Of special interest was the Willow Creek inlet chute at Lake Granby, which is in the final stages of construction. Installation of the replacement structure started last spring, timed to take advantage of the low water level that had been brought about by last year's drought-caused low inflow and heavy use of Project water reserves.

The new structure was designed from a model that not only gave guidelines for efficient control of water flows at the inlet, but also gave design engineers a simulation of water, ice and wind effects on the chute after construction.

The Colorado-Big Thompson Project brings an average

of 237,000 acre-feet of supplemental water each year to eastern slope farms, municipalities and industry.

Guests of the NCWCD were given the background and operating experience of the Project since construction started in 1938. Total cost of the project was \$162 million, advanced by the government through the Bureau of Reclamation.

Revenues to the federal government, being paid on schedule, will total as follows: direct from the NCWCD, \$29 million, plus \$195 million from power for a total of \$224 million, or 140 percent of the cost. Increased income taxes on taxable income, (figuring that one-fourth of the water used on crops was Project water accounting for an average of \$65 million per year over a period of 40 years plus an economic multiplier of seven for each dollar of crop value) would be, at a 10 percent rate, \$1.82 billion.

The grand total will be at least \$2.044 billion, 12.6 times the initial investment by the government.

At the monthly meeting following the Project tour, the Directors were told by Bob Smith, Operations and Maintenance Superintendent that 1978 precipitation over the District is now 113 percent of the 1957-77 average. The

August figure was 109 percent of average.

August precipitation from the recording stations: Fort Collins, .79 inches; Greeley, .53 inches; Longmont, 1.35 inches; Fort Morgan, 2.63 inches; and Sterling, 1.33 inches. Total for the year averages 12.76 inches, compared to the 1957-77 average of 11.32.

Storage in project reservoirs remains well ahead of last year's drought drained figure, with 363,493 acre-feet, or 74 percent of the average for this time of year. Storage last year at this time was 212,069 acre-feet.

Ditch company reservoirs held 213,067 acre-feet, 106 percent of average. This compares to 161,561 at this time last year.

Guests of the District on the tour were: Thomas Aron, Jr., Bob Beckwith, Morgan Bentley, Dennis Bode, John Bottom, Chester Brooks, Henry Brunner, John Caldwell, Jim Clark, Thomas Cowan, Ben Drumler, W.M. (Buz) Emerson, Wally Grant, Gene Hines, Frank Johnson, Charles King, Bob Lauffer, Greg Lefferdink, Jim Miller, John W. Neutze, Wendell Randle, Steve Ray, Rex Scott, Jack Stephenson, Art Stromquist, Bob Trenka, Chet Waggener, David Weitzel and Ken Whitney.

# 'Big Tom' facilities impress touring unit

TRIBUNE 9-21-78

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Guests of the NCWCD directors and staff included residents of Fort Collins, Greeley, Loveland, Longmont, Boulder, Windsor and Estes Park.

Of special interest was the Willow Creek inlet chute at Lake Granby, which is in the final stages of construction. Installation of the replacement structure started last spring, timed to take advantage of the low water level that had been brought about by last year's drought-caused low inflow and heavy use of project water reserves.

The new structure was designed from a model that not only gave guidelines for efficient control of water flows at the inlet, but also gave design engineers a simulation of water, ice and wind effects on the chute after construction.

The Colorado-Big Thompson Project brings an average of 237,000 acre-feet of supplemental water each year to eastern slope farms, municipalities and industry.

Guests of the NCWCD were given the background and operating experience of the project since construction started in 1938. Total cost was \$162 million, advanced by the government through the Bureau of Reclamation.

Revenues to the federal government, being paid on schedule, will total — direct from the NCWCD, \$29 million, plus \$195 million from power for a total of \$224 million, 140 percent of the cost. Increased income taxes on taxable income (figuring that one-fourth of the water used on crops was project water accounting for an average of \$63 million per year over a period of 40 years plus an economic multiplier of seven for each dollar of crop value) would be, at a 10 percent rate, \$1.82 billion.

The grand total will be at least \$2.044 billion, 12.6 times a the initial investment by government.

At the monthly meeting following the tour, the directors were told by Bob Smith, operations and maintenance superintendent, that the 1978 precipitation over the district is now 113 percent of the 1957-77 average. The August figure was 109 percent of average.

August precipitation from the recording stations included, Greeley, .53 of an inch, Fort Collins, .79 of an inch, Longmont, 1.35 inches, Fort Morgan, 2.63 inches and Sterling, 1.33 inches.

Total precipitation for the year averages 12.76 inches, compared with the 1957-77 average of 11.32 inches.

Storage in project reservoirs remained well ahead of last year's drought drained figure, the directors were informed, with 353,493 acre-feet, or 74 percent of the average for this time of year. Storage last year at the same time was 212,069 acre-feet.

Ditch company reservoirs held 213,067 acre-feet, 108 percent of average. Last year's ditch company storage at this time of year was 161,561 acre-feet.

# Lamm, state official testify on water policy

TRIBUNE 9-22-78

DENVER — The Carter Administration's proposed water policy presents major concerns to Colorado and the other western states, Gov. Richard Lamm and Harris Sherman, executive director of the Colorado Department of Natural Resources, told members of a U.S. Senate subcommittee meeting in Denver recently.

In prepared testimony presented before co-chairman Gary Hart of Colorado and Mike Gravel of Alaska, Lamm told members of the Senate Environmental and Public Works Committee's subcommittee on water resources that Colorado has both general and specific concerns regarding the proposed federal water policy.

While praising the Carter policy for its emphasis on water conservation and planning and technical help for the states, Lamm called the "absence of carefully delineated national-regional goals" the fundamental weakness of the administration's water policy. "There is considerable emphasis on benefit-cost ratios, cost-sharing requirements, conservation proposals,

planning efforts, etc.," Lamm's statement said. "However, these are not goals, but are simply the means of achieving goals."

Taking up the state's specific objections to the proposed federal water policy, Sherman told subcommittee members that its cost-sharing requirements "could erode the important, delicate balance that Colorado has achieved between agriculture and other economic interests."

Cost-sharing requirements in the proposed federal water sharing policy, Sherman said, would require states seeking federal funds for local water projects to put up to 15 percent of the total project cost as front-end money.

That, in turn, could result in growth and land use changes that would impact on the state's economic and environmental health as well as its public and social institutions, Sherman said.

Under Carter's proposed water policy, mandatory cost-sharing with states would require the states to put 10 percent of the vendible costs of a project (that is, of the agricultural, industrial and

municipal costs) and 5 percent of the non-vendible costs (for example, the costs of environmental, recreational and wildlife benefits from a federal water project) as front-end money before the projects could be approved.

In return, Sherman said, the states would receive 10 percent of whatever revenues are generated by those projects.

In small states with large irrigation projects pending, Sherman continued, irrigators and agricultural interests as well as environmental and recreational interests would be at a significant disadvantage in competing with industrial and urban interests for available water under the Carter plan.

Sherman said that tight fiscal limitations on state legislatures might make it impossible for them to assist irrigators who wish to develop water resources.

"State legislatures will probably not have sufficient general or special fund dollars to protect the economic balance (between agricultural, municipal, and industrial interests) that currently exist," the state natural resources director told subcommittee members.



# Judge Carpenter honored upon retirement-Friday

Retiring District Judge Donald A. Carpenter was honored Friday night at the Greeley Elks Lodge with a recognition dinner which attracted more than 400 Greeley, Weld County and state politicians and civic leaders.

Judge Carpenter retired Friday, after serving more than 32 years on the bench in Weld County.

He is the state's senior trial judge and is a recognized water law authority and served as the water judge for the 23-county water division in northeastern Colorado.

Friday afternoon a reception was held for Judge Carpenter in the Weld County Courthouse.

Judge Carpenter's recognition dinner was held at the Elks Lodge in conjunction with the annual Weld County Bar Association meeting.

# Weld judge named under pressure

By JOHN SEELMEYER  
Tribune Staff Writer  
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Greeley Daily Tribune

An aide to Gov. Richard Lamm has said the appointment of John Althoff as district judge in Weld County came after political pressure was applied by a group of local Democrats at a fund-raising party.

"I'm not going to lie to you and tell you that didn't have some effect on him," said David Greenberg, an assistant to the governor for legal affairs.

Greenberg made his comments to Greeley attorney A.M. Dominguez Jr., a member of the seven-person committee which nominated three persons for the judicial vacancy created by the retirement of Judge Donald A. Carpenter.

Dominguez taped his mid-August

conversation with Greenberg. Dominguez released the tape recording Friday, along with tapes of a late-August conversation with Lamm and an early-September talk with Greenberg.

That night, Lamm appeared at a fund-raiser at the Greeley home of real estate

man John R.P. Wheeler. Among the approximately 20 guests were a number of prominent local Democrats, including Wheeler, Ken Monfort, Harold Winograd and attorney James Shelton, another former party chairman.

Shelton made a short speech during the

fund-raiser in which he urged appointment of Althoff.

"I encouraged him (Lamm) to appoint the best man and told him the best man was John Althoff," Shelton said later.

The next morning, said Greenberg in his conversation with Dominguez, the governor rejected the recommended appointment of Clugston.

"He said, 'Hold up for four days and I'm going to review the whole thing all over.' That's what happened," Greenberg said.

The appointment of Althoff was announced on Aug. 2, although the executive order which made the appointment was dated July 27.

# Behrman designated as water judge of district

10-5-78 TRIBUNE

District Judge Robert A. Behrman has been designated as water judge in District 1, which consists of the northeast Colorado counties that are in the drainage basin of the South Platte River and its tributaries. Behrman was designated as water judge for the district by an order signed by Chief Justice Paul V. Hodges of the Colorado Supreme Court. The appointment was effective as of Sept. 25. Judge Behrman, who was appointed chief judge of the 19th Judicial District here June 23, succeeds former District Judge Donald A. Carpenter as water judge. Carpenter, who retired as a full-time district judge Sept. 22, had been water judge for the district since 1969. The district was established in 1969.

# State residents jeer, cheer water projects veto

TRIBUNE 10-7-78

By DEBORAH FRAZIER  
United Press International

Rural Colorado residents responded with some jeers and a few cheers to the House's failure to override President Carter's veto of public works bill, which included funding for five Colorado water projects.

"I can't talk like I feel, because I don't talk like that. Carter doesn't know anything about it. Where he comes from, there is too much water," said Wendall Shaw of the Fruitland-Mesa Water Conservancy District.

The Fruitland-Mesa project, among those killed by the veto, would cost \$128 million and would collect water to irrigate 18,000 acres of land near Crawford. Opponents said the project would benefit only 69 landowners.

Shaw said although the number of ranchers was small, they

would be able to increase their crop and livestock production and benefit all consumers.

He said the original \$30 million cost of the project, first proposed in 1964, had risen due to inflation and efforts to kill the project by anti-growth groups.

"Carter is making Republicans of a lot of good Democrats. We only get about 13 inches of precipitation a year and unless we can stop some of the water and pen it up, it's lost," said Shaw.

The Narrows project, a \$217.5 million earthfill dam on the South Platte River near Fort Morgan, was the fifth proposal killed by the veto. The project would destroy several wildlife habitats, archeological sites and three towns.

Although some area farmers would benefit from the construction, residents of the three towns were among the few

Colorado residents who cheered Carter's veto and the House's action.

"We are pleased that we have a president that is interested in balanced budget and is interested in cutting out pork barrel. Any irrigation project that won't pay its own way and has to be subsidized is not a good project," said Marvin Etchison.

Etchison, a resident of Orchard, said he has been fighting the proposal since the 1940s because it would flood his town as well as raise water cost for area farmers.

"It would be legalized robbery, all the way around," said Etchison. "Hopefully, this is the last we will hear of it. I used to be the youngest person against it and now I am about the oldest and I'm getting tired of it."

Colorado officials and their political challengers agreed Carter's veto signified a break with state Democrats, but

disagreed on the significance of the dispute.

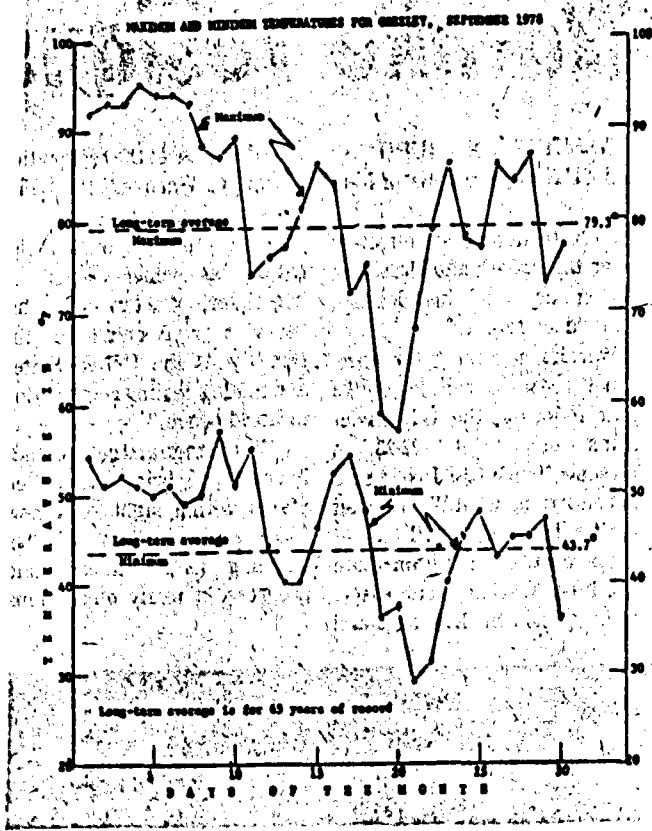
"It is a disgrace that a Democratic governor cannot communicate with an administration of his own part. We should send a Republican senator to Washington and elect a Republican governor," said state GOP chairman Marion Carter.

Gov. Richard Lamm and Sen. Floyd Haskell, D-Colo., both Democrats have fought with Carter over the projects, but failed to change his opposition.

Although Colorado Democratic Chairman Sheila Kowal agreed the political ramifications were troublesome, she said Republicans were looking for a scapegoat.

"I find it inconceivable they (Republican candidates) could mount the kind of effort in Congress that could bring this off (change Carter's view)," said Kowal.

10-10-78  
TRIBUNE



# September warmer, drier than normal

By BILL JACKSON  
Tribune Staff Writer

Contrary to the National Weather Service's outlook for cooler and wetter than normal, the weather in Weld County during September was abnormally warm and unusually dry, according to Dr. Glen Cobb, meteorologist at the University of Northern Colorado in his monthly weather summary.

Cobb said the mean maximum temperature for the month was 81.8 degrees or 2.5 degrees above the 65-year average for the month, while the mean minimum was 45.9 degrees, 2.2 degrees above the long-term average.

And, he said, only a trace of precipitation was recorded for the month, coming on Sept. 11, while the normal amount for the month is .97 of an inch.

Looking ahead to October, Cobb said that, "generally, it is a quite variable month."

A record maximum of 91 degrees was recorded in 1921 and a record minimum was eight below zero, coming in 1905.

"The average daily maximum during the month decreases from 74 degrees on Oct. 1 to 58 degrees on Oct. 31. In general, most daily maximums will fall between 54 and 80 degrees, with the minimums between 20 and 35 degrees; however, there will be a few days

beyond both ends of the ranges," Cobb said.

Turning back to September, Cobb said maximum daily temperatures ranged between 95 degrees on Sept. 4 to 57 degrees on Sept. 20. Mean minimum temperatures ranged between 57 degrees on Sept. 9 and 29 degrees on Sept. 21.

"Both Sept. 21 and 22 had below freezing temperatures, so the first killing frost for the fall occurred during the month," Cobb pointed out.

"As can be seen from the graphs, one major cold front passed over the area during the month, with a couple of other minor incursions in the area. The area was dominated by high pressure and generally clear skies," the UNC meteorologist said.

The total lack of measurable precipitation during the month made it one of the five driest Septembers since records began in 1893, Cobb said.

"Only 1900, 1928, 1943 and 1953 had no precipitation during the month. It was the driest summer since the drought period of 1953, with that year, 1948, 1949 and 1939 being worse," Cobb said.

The UNC professor said the dry September leaves the year's total precipitation at 10.37 inches, which is slightly behind the normal of 10.46 inches, with 5.22 of this year's total coming during the month of May.

10-17-78 TRIBUNE

# Hikes in water bills stir public comment

Since city water-sewer bills came out early this month, a number of telephones at the city complex have been ringing off the hook due to high increases in billing — with a few extreme cases seeing bills more than doubling.

City officials themselves said an "average" utility bill for a one-family home with a water meter during the late summer quarter of 1977, when using 100,000 gallons, would have been \$34.30 — with the rate hiked 56 percent, to \$53.47, for the quarter just ended.

Reasons for this, said Water-Sewer Director Darryl Alleman and Finance Director Leonard West, included a far drier summer quarter this year, significantly greater water use and utility rate hikes coming this year.

West said one extreme case involved Villa West Mobile Home Estates, 2700 C

St., which has mobile home parts of 179 and of 154 spaces.

In the larger park, July through September water use, compared to the third 1977 quarter, increased by 72 percent to 17.7 million gallons, while the period's water-sewer billing went up by 114 percent to \$6,415.

For the smaller mobile home park, in similar comparisons, the quarter's water use was up by 60 percent to 12.3 million gallons, and the billing up by 108 percent to \$4,754.

Sid Brooks of Denver, one of the Villa West owners, said "we were quite surprised" by the increases, had contacted city officials and were awaiting further responses. Brooks said his firm owns mobile home parks in other Eastern Slope cities, and utility rate costs in each are being studied.

West said his agency "easily" has received 300 to 400 telephone calls on water-sewer bills in the past two weeks.

He said homeowners are questioning the large amounts of water use they have been billed for, and a number of mobile home owners are concerned with the city's sewer-rate system, feeling a method used to discount lawn sprinkling water not entering the sewer system should be based on the no-watering. Last Jan. 1, the sewer rate for a one-family home went from \$7.50 to \$11.70 a quarter, with commercial users going to a system based on a charge of 39 cents some watering usually occurs.

Meanwhile, Alleman pointed to factors of low rainfall, far greater water use and raised water-sewer rates.

He said September was one of the five driest Septembers since 1883, and that rainfall for the quarter just ended was

1.08 inches compared to 4.26 inches for the same 1977 period.

Water use for the quarter just ended was up 27 percent compared to the 1977 quarter, he said, at 2.61 billion gallons.

Alleman also pointed out the city has raised water-sewer rates during 1978, with metered users receiving increased billings for the first time recently under a water rate hike that took effect July 1.

Last Jan. 1, the sewer rate for a one-family home went from \$7.50 to \$11.70 a quarter, with commercial users going to a system based on a charge of 39 cents per thousand gallons of wintertime water consumption.

Water rates were hiked July 1 by 26 percent, with the base rate for one-family homes inside the city going from 31 cents to 39 cents per thousand gallons.

Continued on page 29

# Platte water said deteriorating

By THOMAS W. NETTER  
Associated Press Writer

LINCOLN, Neb. (AP) — Past, present and future conditions in the Platte River Basin indicate that the usable water in the basin is gradually deteriorating or being consumed to the point that some segments of the river are drying up, according to an engineer testifying against a proposed diversion plan here Wednesday.

Roger G. Fry, a civil engineer and water specialist with a California engineering firm, began his testimony at a state Department of Water Resources hearing. The hearing concerns a request by the Little Blue Natural Resources District to divert water from the Platte River for irrigation and storage in the Little Blue River Basin.

Fry's testimony was presented as a report on his studies of the river at the request of opponents of the Little Blue NRD. They include the Lower, Central and Twin Platte NRD's, and the cities of North Bend, Fremont and Lincoln.

Fry's report was sharply critical of the proposed diversion project.

"It is my opinion that any removal of water from the basin, however large or small, will have a detrimental effect upon the overall Platte River Basin and associated groundwater aquifers," Fry wrote. "It is also my opinion that removal of water from the basin would not be in the best interests of the residents of the basin."

Based on projects of future water supply in the river, Fry's report says a transbasin diversion of 125,000 acre-feet of water to the Little Blue Basin would remove about 26 percent of the average annual streamflow under 1985 conditions and more than the average annual

streamflow under 2020 conditions.

"This severe level of depletion indicates that the Little Blue project diversion would be hydrologically unsound at best," Fry wrote.

"During a repeated dry period such as 1951-56," Fry noted, "additional water consumption of the Grayrocks project in Wyoming, combined with other dry period conditions, would completely empty Lake McConaughy. Therefore, no water would be available for the Little Blue Project."

Based on a similar dry period, Fry wrote, removing 125,000 acre-feet of water from the river would cause the river at Grand Island to run dry for about eight months out of the year and threaten several municipal water supplies which he did not list.

Fry also predicted that a depleted Platte River could result in conditions that during storms would lead to increased flooding from McConaughy to Overton and downstream to Ashland.

"As streamflows drop, the channel will degrade, fill with vegetation, and otherwise become less hydraulically efficient," he wrote. "The result will be that during momentary periods of high storm runoff the water levels will be higher because the additional retardance factors will slow the flow, and increased flooding will result."

To put in perspective the amount of water the Little Blue wants to divert, Fry said 125,000 acre-feet of water is equivalent to 29 times the current annual water demand of Kearney, 16 times that of Grand Island, 26 times that of Fremont, and 3.4 times that of Lincoln.

Meanwhile, if retained and used in the Platte Basin, that amount of water could irrigate

from 160 to 200 percent of the land area proposed for irrigation in the Little Blue Project Area which amounts to from 105,000 to 135,000 acres, Fry's report said.

Generally, the report concludes that "consumptive uses of Platte River waters will:

—Cause increased nitrate content in the groundwaters.

—Reduce the river's capability of diluting storm runoff, irrigation return flows and effluent from municipal and industrial water-treatment plants.

—Lower the levels of groundwater, water ponds, recreational lakes.

—Damage fish habitat and some wildlife habitat.

"The Little Blue water resources project report prepared by the Boyle Engineering Corp. (for the irrigation district) does not adequately document the availability of a surplus water supply in the Platte River Basin," Fry's report said.

Fry's report also noted there are many applications from Nebraska landowners for water rights on the river that were filed prior to the Little Blue application.

"As these are perfected, the Platte River streamflows will be greatly diminished and proportionately less water will be available for the Little Blue Project," the report said.

"The federal government has recently filed for all water rights for water originating on federal lands in Colorado," the report said. "This action could cause further streamflow depletions in the river than those projected elsewhere and used in the analyses presented here, still further diminishing water availability for the Little Blue Project."

# Water engineer hopes storm a sign of things to come

By BILL JACKSON

Tribune Staff Writer

He's hoping it was a good sign.

Jim Clark, Water Resources Division 1 engineer, hopes the storm which swept across the region during the weekend is a

sign of more of the same to come.

"It was a beautiful storm," Clark said. "This dry old ground around here really soaked it up; because of it I doubt that we'll get many more calls for irrigation water."

And, because of that, water is starting to re-fill reservoirs downstream from Greeley on the South Platte River.

"We got a little runoff from the storm; it provided a little bump on the river. But there wasn't a lot," Clark said.

Flow on the river, Clark said, is gauged at Kersey. It was up to a peak of 2,400 cubic feet per second late Monday afternoon as a result of the storm.

It was back down to 1,800 cfs by Tuesday morning.

"That really won't put that much water in the reservoirs;

you'd be surprised at really how little that is, but it helps," Clark said.

But the water engineer said return flow from irrigation this year has helped much more this year than last.

"Because of the good return flow the river has been running between 400 and 500 cfs all year long this year. Last year it

averaged between 200 and 250 cfs and we were really hurting. We're in much better shape this year," Clark said.

This all means area farmers should be in much better shape when the next irrigation season rolls around — providing the area is blessed with some more storms similar to the first one of the winter this past weekend.

"If we could get one of those a month, we'd have no worries," Clark said.



