DIVISION OF WATER RESOURCES

STATE ENGINEERS OFFICE

IRRIGATION DIVISION NO. 4

ANNUAL REPORT

1972 Water Year

December 4, 1972

Mr. C. J. Kuiper, State Engineer
Division of Water Resources
1845 Sherman Street
Denver, Colorado 80203

Dear Mr. Kuiper:

On behalf of the staff and field personnel of Irrigation Division No. 4, I submit herewith the annual report for the water year 1971-1972, together with the reports of the district water commissioners. This report is submitted as required under the provisions of Colorado law, as stated in C. R. S. 148-12-7, 1963.

Respectfully submitted,

Ralph V. Kelling, Jr.

Ralph V. Kelling, Jr.
Division Engineer

RVK/mm

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IRRIGATION DIVISION NUMBER FOUR

INTRODUCTORY STATEMENT

Purpose:

The purpose of this report is the presentation to the state engineer of a summary of division activities for the 1972 water year, together with the reports of the district water commissioners.

Location:

The division is located in southwestern Colorado and is defined within the following drainage basins: Gunnison River, San Miguel River, Little Dolores River, Coates Creek, and that portion of the Dolores River within Mesa and Montrose Counties. Larger cities in the area include Gunnison, Montrose, and Delta.

As defined in the 1969 Annaul Report, the division boundary has been modified by the recent legislation of "Senate Bill 81". Thus Division Number Four has been deleted of those land areas whose streams are tributary to the Colorado River within former Water District Forty-two - excepting the Gunnison River drainage basin.

Land and Climate:

Elevations range from 4,500 feet to in excess of 14,000 feet in the San Juan Mountain range. The climate is

semi-arid with precipitation varying from 10-15 inches per year. Recent precipitation minimums at Grand Junction have been less than six inches annually. In excess of 650,000 acres are irrigated annually, with major crops being hay, sugar beets, small grains, and mountain fruits. Beef cattle and sheep are the primary stock production.

Industry:

Agriculture and ranching are the mainstay of the local economy, with orchards, lumbering and mining being important areas of employment. Uranium, coal and silver are the major mineral resources, with oil and gas exploration activity having a surge of renewal, primarily on the north slope of Grand Mesa. Tourism is very significant to the area's economy. Of current interest are the following:

1. Initial stages of development of a major ski facility and associated resort area near Telluride.
2. Initial construction phases are underway at the Russell Stover Candy Company plant in Montrose. The company will employ between 400-500 people at full capacity, of which approximately 80% will be women.
3. A land-rush boom encouraged by sub-division developers, realtors, and speculators. Also the resettling of retirees and younger families who want to improve their life-style.

4. Water and coal resource investigations relating to conditional reservoir decrees on the North Fork of the Gunnison River by several major oil companies interested in area coal reserves.
5. It has been recently reported in Delta area newspapers that preliminary studies are underway to determine the feasability of establishing a wood-pulp mill at Delta. If economic the plant reportedly will employ 100-150 people.

Water Resource Projects:

Existing projects are the Uncompahgre, which includes Taylor Park reservoir and the Gunnison tunnel, Fruitgrowers reservoir, Paonia project, Crawford project, the Bostwick Park project including Silverjack reservoir, all intially constructed by the U. S. Bureau of Reclamation. Blue Mesa and Morrow Point reservoirs of the Curecanti Unit are completed and in operation; construction at Crystal reservoir is in an early stage. Projects in various study phases by the Bureau of Reclamation include Grand Mesa, Fruitland Mesa, Dallas Creek, San Miguel, and Upper Gunnison, and Uncompahgre Extension.

Land Use Planning:

With tourism and recreationalism being major activities and creating significant income

Water Usage:

The economy is agriculturally dominated, and consequently the major water usage is for irrigation. Farms and ranches are oriented to the regions drainage systems, and related water diversions are tied to the irrigable lands. Many major reservoirs are located on major rivers, and long canals and tunnels are required to transport available water to the point of use. Recently greatly increased usage of water in the division furnishes electrical power, as generated at the Curecanti Unit reservoirs of the Colorado River Storage Project. Hydropower plants of the three dams will have a combined total installed capacity of 200,000 kilowatts. The availability of water and power will undoubtedly help to promote the industrial development of the potentially vast supply of fossil fuels and mineral resources throughout the Upper Colorado River Basin.

Listed below are the various power plants in the division and water usage of each for the 1972 water year:

NAME	OWNER	DIVERSION, A. F.
Oliver Electric	Colorado-Ute Elec. Assn.	Not used
Ames-Illium	Western Colorado Power Co.	8,832
Blue Mesa reservoir	U. S. Bur. of Rec.	807,440
Morrow Point reservoir	" " " " "	897,210
Nucla Power Plant	Colorado-Ute Elec. Assn.	14,600
Redlands Power Co.	Redlands Water & Power Co.	475,293
	DIVISION 4 TOTALS	2,203,375

PERSONNEL DATA SHEET

Personnel:

Name & Position	District	Months Worked/ Budgeted	Mileage
Division Engineer (W. R. E. IV)			
Ralph V. Kelling, Jr.	Staff	Annual	13,500
Asst. Division Engineer (W. R. E. III)			
Ronald I. Blewitt	Staff	Annual	10,500
Intermediate Clerk-Typist			
Melita Maten	Staff	Annual	--
Water Commissioners:			
Richard L. Drexel	WD 40	Annual	10,000
Chalmer Garber	WD 61	Jan-Dec	7,200
Ralph Glendening	WD 41	Annual	12,000
Edwin S. Hofmann	WD 59-62	Annual	9,000
Howard G. Noble	WD 60-68	Annual	9,250
William E. Rhodes	WD 28	Jan-Dec	6,500
*W. W. Saunders	WD 42,63,73,74	Annual	15,000
Elton J. Watson	WD 40	Annual	10,600
Deputy Water Commissioners:			
Clifford G. Aldridge	WD 40	Apr 22-Oct 31	4,100
Richard Belden	WD 40	Apr 22-Oct 31	2,800
Russell Bertram	WD 40	Apr 15-Oct 31	2,600
James E. Carr	WD 40	Apr 15-Oct 31	7,000
Buck L. Catt	WD 42	Apr 7--Oct 15	6,500
Lloyd Connell	WD 40	Apr 22-Oct 31	7,200
Harold D. Cyphers	WD 40	Apr 22-Oct 31	6,700
Silas Freshour	WD 40	Apr 22-Oct 31	1,900
William Glendening	WD 59	Apr 15-Oct 15	6,300
Mack Gorrod	WD 40	Apr 22-Oct 31	4,300
Jack McHugh	WD 40	Apr 22-Oct 31	6,700
Robert Pearce	WD 40	Apr 15-Oct 31	7,500
Frank Peterson	WD 40	Apr 15-Oct 15	5,100
Dwayne C. Mansker	WD 60	Apr 1--Oct. 31	10,000
Stephen W. Tuck	WD 40	Apr 22-Oct 31	7,200
Charley E. Woolley	WD 40	Apr 1--Oct 31	5,100
*Douglas Gilbreath	WD 42	Apr 15-Oct 31	1,500

*These personnel have transferred to Irrigation Division No. 5 but are retained on Irrigation No. 4 roster as their duties are partially herein utilized. However, salary and mileage accounting are in Division No. 5.

WATER SUPPLY

Snow Pack:

The water supply outlook as of May 1, 1972, in Division No. 4 is taken from the Soil Conservation Service monthly water supply bulletins, the prints of pertinent pages being included as a reference in this report. Pertinent data are as follows:

Summary of Snow Measurements:

Basin or Watershed	No. of Courses Averaged	This Years Snow Water as % of: Last Yr.	Average
Gunnison	12	67	59
Surface Creek	3	68	64
Uncompahgre	3	85	75

Streamflow Forecasts (1000 Ac. Ft. - Apr. - Sept.):

Forecast Point	Forecast	% of Avg.	Average
Gunnison River inflow to Blue Mesa	500	65	767
Gunnison River near Grand Junction	700	62	1137
Surface Creek near Cedaredge	14	81	16
Uncompahgre River at Colona	80	62	129

Weather modification:

1. The Grand Mesa Water Users Association this year completed the sixth year of a six year contract cloud seeding operation with the Water Resources Development Company of Palm Springs, California.

Ten regionally located generators discharged silver-iodide crystals into moisture bearing clouds in an effort to induce rain or snow. No definitive study of results is available, however the Grand Mesa area snowpack is consistently among the best in the state.

2. The U. S. Bureau of Reclamation and Colorado State University are jointly involved, along with other groups, in a research project entailing cloud-seeding operations in the San Juan mountains. The program is titled The Colorado River Basin Pilot Project, and headquarters are located in Durango. Seedings will continue through the next two seasons, and should affect the snow-pack in the headwaters of the San Miguel, Uncompahgre, and Lake Fork of the Gunnison rivers in Division 4. Studies to date have shown that certain seeding techniques may produce a 10 to 30 percent increase in snowfall. Seeding the warmer storms may cause increases in snowfall averaging about 55% per storm. The Bureau expects an initial annual yield of 250,000 A. F. of water from one season of cloud-seeding.

Run-off from snow melt is somewhat variable, and in part dependent upon watershed. Records from three selected U.S.G.S. gaging stations are included for recent years, from published Surface Water Records annual reports. The Uncompahgre river normally peaks twice during the spring run-off, normally latter May and latter June. The current years records are not yet available, but peak flow this spring was almost nil, and administration of water rights on the Uncompahgre began unseasonably early.

Precipitation:

As was the case in 1971, drought conditions again existed throughout the division much of the year, however regional storms beginning in early October showed promise of increasing annual precipitation to near normal by the end of the year. An indication of the extent of the regional drought are the following precipitation figures: 2.3" at Paradox from January through July (of which 1.6" was received in July); 2.4" at Blue Mesa reservoir from Januray through July; and 2.58" at Montrose during the period January through August. Normally summer rains arrive in July and August to give a good boost to growing crops, however this year we received only 0.17" in August, which normally is a month of very good yield. Precipitation at Montrose through November 15, 1972 is 7.01", and our average annual Montrose is 9.11". Hydrometeorological data, including precipitation, are supplied for Blue Mesa reservoir for several recent years as a supplemental to this report. No hail suppression work is being carried on in the division.

Figures of a general nature relating to effective water supply are as follows:

County	Avg. Mean Temperature, F.	Avg. Annual Rainfall, In.	Avg. Annual Snowfall, In.
Delta	51.0	7.75	18.5
Mesa	52.5	9.06	27.3
Montrose	49.6	9.11	28.4
Ouray	44.5	23.27	146.0
San Miguel	39.5	23.79	165.7
Gunnison	38.5	10.67	50.2
Hinsdale	36.5	20.00	145.0
Saguache	43.6	8.10	26.3

Floods:

No flooding of consequence occurred within the division during the water year, however two flood alert warnings were issued by the Weather Bureau during the summer - fortunately neither materialized. Division 4, upon request furnished a list of personnel, phone numbers, and areas of responsibility, and additionally regional radio and T V station locations and phone numbers to the River Forecast Center of the National Weather Service in Salt Lake City, Utah. Thus the general public in future areas of concern may be more promptly and effectively informed and alerted in the event that emergency conditions develop.

Water Budget:

The divisions initial attempt to establish a water budget in 1971 recognized that records of diversions are obtained from a small percentage of all decreed rights, among these records are numerous owner reports, and additionally any report of total water diversions by area necessarily includes a large duplication relative to a total streamflow volume of water. For example, reservoirs and ditches in many localities are accounting for practically the same water,most decreed rights are based on return flows, and two of the Curecanti Unit reservoirs are accounting in duplicate for essentially the same water for power. Drainage area yields from many gaging station records are not

compatible with the "common source" doctrine in many cases, and do not normally conform with district boundaries. Depletions by irrigation, municipalities, and by other uses are unknown quantities, and our records are just beginning to show municipal diversions. Selected districts with primarily agricultural diversions for 1971 are the following:

Discharge, A.F./W.Y., by Water District

	28	60	68	59	62
Average yield of drainage area	123,900	245,600*	193,400	564,400	340,700
Irrig. diversions	343,134	321,294	113,908	354,757	412,916
Irrig. depletions	85,784	57,824	28,477	88,689	103,299
Municipal diversions	---	10,035	394	9,317	---
Municipal depletions	---	---	---	---	---

*San Miguel at Naturita

Attached to this report are water year flow records at selected gaging stations, taken from the U. S. G. S. publication "Water Resources Data for Colorado - Part I, Surface Water Records", for the year 1971.

Underground Water:

Aquifers of significance in the division are not well known at this time due to a paucity of ground water literature and very scattered regional drilling, much of which has been confined to alluvial valleys. A few deep water wells, including oil well dry holes, exist, in addition to shallow seismic survey drill holes, but it is probably that water logs of only very few of these holes have been retained. Potentially all formations may prove productive, with the

shale sections having a minimal water content and sands, especially of the Dakota and Entrada formations, capable of containing large volumes of water. A number of good water wells in the Grand Junction area produce from Morrison sands; in the Montrose area the Dakota formation is the primary aquifer. At this time most wells are for domestic and stockwater purposes, and as such do not contribute effectively to the area economy.

Of special interest is the recently published thesis - 'Ground Water of the Uncompahgre Valley, Montrose, County, Colorado' by Ted W. Craig, in partial fulfillment of the requirements for the M. S. degree in geology from the University of Missouri at Rolla. A synopsis of this paper will be published in the Rocky Mountain Geologist early in 1973. Ted Craig has recently advised the Division 4 office of his interest in a position as head of a field crew on a special ground water project with the University of Delaware, and we all wish Ted success in this endeavor and for his future in the water business.

Colorado Geological Survey Bull. 33, Bibliography of Hydrogeologic Reports in Colorado, by Richard H. Pearl, published in 1971, is the most recent publication on water resources in Colorado West. This bulletin is a welcome and necessary compilation of all published literature in the field, and should serve as an excellent reference for those interested in Colorados' water resources.

TRANS-MOUNTAIN DIVERSIONS:

NAME	SOURCE	RECIPIENT AND/ OR CLAIMANT	ANNUAL AVG. DIVER. A.F.	AMOUNT A.F.
Red Mountain Ditch	Mineral Ck.	Ouray Ditch Co. Montrose, Colo.	260	133
Carbon Lake Ditch	" "	" "	--	248
St. John Ditch	E. Fk. Animas River	Charles, Gunn, & % W. Worley Olathe, Colorado	--	No Diversion
Mineral Pt. Ditch	Burrows Ck., tr. to North Fk. Animas River	W. Gibbs Ouray, Colorado	--	No Record
Larkspur Ditch	Tr. of Tomichi Creek	Rocky Ford High-line Canal Co. Rocky Ford, Colo.	125	327*
Tabor	Cebolla Ck.	Colo. Game, Fish, & Parks Dept. Alamosa, Colorado	670 ('69 W.Y.)	514*
Tarbell	Cochetopa	Saguache Land & Water Company Saguache, Colo.	410 ('69 W.Y.)	453*
Divide Ck. High-line Feeder Ditch	Divide Ck.	F. M. Starbuck, Mgr. Silt, Colorado	2125	1300
Leon Lake	Leon Creek	Sam Oaks Eckert, Colo.	1550	1426

*Published one year in arrears by USGS - Water Resources Data for Colorado, Part I - Surface Water Records 1971

TRANS-BASIN DIVERSIONS:

Leopard Ck. Ditch	Leopard Ck.	Harry McClure Ridgway, Colo.	1372	1233 1971 W.Y. 1000 1972 W.Y.
No. Fk. of the Paxton Ditch	Cottonwood & Horsefly Cks.	William Hofmann Montrose, Colo.	30	10 1971 W.Y. 13 1972 W.Y.
Cimarron Feeder of the Garnet Ditch	W. Fk. of the Cimarron	Unc. Valley Water Users Ass'n. Montrose, Colo.	2500	2516 1971 W.Y. 2785 1972 W.Y.
Gunnison Tunnel	Gunnison River	" "	350,000	346,729 ('65-70 Avg 335,850 (1971)
Head & Ferrier Ditch	Soap Creek	H. Head & Ferrier Delta, Colorado	146	164 ('65-70 Avg 200 1972 W.Y.
Lake Brennand	Lake Brennand	Town of Crested Butte, Colorado	--	No Record
Meek Tunnel	Crystal Ck.	Carton Meek Maher, Colorado	--	No Record
Mesa Ck. Ditch	Mesa Creek	" "	--	75

RECAPITULATION SHEET

CURECANTI UNIT RESERVOIRS - COLORADO RIVER STORAGE PROJECT

BLUE MESA RESERVOIR

WATER YEAR	CUMULATIVE DISCHARGE A. F.	PEAK STORAGE A. F.	CUMULATIVE STORAGE A. F. (10-1-66--12-31-66)
1966	50,110 (10-1-66--12-31-66)		
1967	473,535	574,900 (7-20-67)	360,100
1968	979,468	796,854 (8-30-68)	
1969	948,793	853,659 (11-2-69)	
1970	1,327,822	831,700 (7-8-70)	
1971	1,077,340	647,700 (1-1-71)	
1972	807,440	542,500 (7-2-72)	

MORROW POINT RESERVOIR

1971	1,483,974 (12-1-71--9-31-71)	118,700 (12-26-70)
1972	897,210	117,600 (11-28-71)

CRYSTAL RESERVOIR

Initial bids have been let, and primary construction is now underway.

BOSTWICK PARK PROJECT - SILVERJACK RESERVOIR

WATER YEAR	CUMULATIVE DISCHARGE, A. F.	DISCHARGE THRU OUTLET WORKS	DISCHARGE THRU SPILLWAY
1971	10,129 (July-Sept., Incl.)	6970	3159
	Reservoir filled and spilled first time on May 24, 1971		
1972	31,191 (May-Sept., Incl.)	31,101 (May-Sept., Incl.)	90

Daily diversion records are kept at the local Power Operations office of the U. S. Bureau of Reclamation, and in turn furnished to the Division No. 4 office.

Agriculture:

Any account of agriculture should involve governmental programs and restrictions, supply and demand, distance from markets, and other domestic factors which are not pertinent to a report on water rights administration. Suffice it to say that agriculture is the major source of income in the division, and consequently the area is economically depressed. The farm labor force is seasonal.

A brief resume by area is presented below:

County	Avg. Growing Season Days	Crop Production* Irrigated - Land			Livestock**	
		Barley	Beets	Corn	Cattle & Calves	Stock Sheep
Delta	146	62	16.5	77	41,700	31,000
Montrose	153	59	16.6	73	52,700	66,000
Mesa	188	57	18.1	95	67,500	57,000
Ouray	48	66	21.0	75	15,400	9,750
San Miguel	45	65	--	--	9,100	31,000
Gunnison	49	--	--	--	39,000	17,500
Hindsdale	45	--	--	--	3,200	5,200
Saguache	105	54	--	--	43,700	22,400

*1968; Colorado Agriculture Statistics, June 1970, in bu./Ac. or tons/Ac.

**Number of head, 1968

Fruit production includes apples, peaches, pears, and sweet and tart cherries, all highly susceptible to frost

and hail damage. No record of production for the current season is available. The above data have been extracted from the following sources:

1971 Colorado Marketing Manual - C. I. G. Gas Company

1970 Colorado Agriculture Statistics - Colorado Department of Agriculture

Several crop dollar values for 1968 are as follows:

County	Corn	Sugar Beets	Barley	Hay
Delta	727,360	545,290	297,600	2,019,480
Montrose	800,320	961,280	649,700	2,031,620
Mesa	1,384,960	1,084,270	130,350	2,422,710
Ouray	8,800	14,460	17,620	640,320
San Miguel	13,860	---	42,250	625,810
Gunnison	1,840	---	---	1,907,740
Hinsdale	---	---	---	161,180
Saguache	17,020	---	793,480	1,671,960

Fruit crop farm values in dollars (1968) is as follows:

Commercial apples - 4,366,000; peaches - 1,770,000; pears - 724,000; cherries, tart - 531,000; cherries sweet - 117,000

The above figures are the latest available from recent publications.

Land ownership by county is as follows:

	Ownership in Acres			
County	Private	Federal	State	County and Municipal
Delta	364,580	396,264	0	2,335
Montrose	512,679	1,241,684	70,345	157
Mesa	555,531	1,497,735	0	3,556
Ouray	208,183	160,390	1,920	49
San Miguel	384,539	476,240	16,479	0
Gunnison	426,501	1,624,900	13,388	200
Hinsdale	32,577	648,683	1,218	505
Saguache	590,693	1,329,876	95,195	180

COLORADO RIVER COMPACTS:

The Colorado River Compact of 1922 and the Upper Colorado River Basin Compact of 1948 are the definitive documents. The Upper Basin's share of Colorado River water is 7,500,000 acre feet per year, of which Colorado is allocated 51 3/4%. The Lower Basin can put a call on the Upper Basin in any series of water short years, based on the long term average flow at Lee Ferry.

Although there apparently exists a wealth of information concerning these compacts on the Colorado River by various state, federal, and other agencies, there is not available operational criteria in the event of a "call" on the Colorado River. The fact that a call on the river has not occurred to date does not preclude than an operational plan should exist. By memorandum from the director of the Colorado Water Conservation Board dated July 30, 1969, proposed operating criteria for Colorado river reservoirs were submitted to board members and the advisory committee. Undoubtedly the operational experience of numerous interstate compacts will prove valuable in establishing these criteria for the Colorado River.

An internal document concerned with a potential water shortage in the Upper Colorado River Basin during 1971-1972 is in preparation in the Division of Water Resources Surface Water Planning.

DAMS

Storage Reservoirs:

1. The Alta Lakes reservoirs in W. D. 60 have been a subject of much concern in recnet years. Since the failure of dam #2 on June 7, 1971, and subsequent overtopping of dam #3, no rehabilitation work has been done, nor is any further legal action pending.
2. Beaver reservoir, on the East Fork of Minnesota Creek in W. D. 40, has been watched closely since a major repair was completed last fall. Several areas of seepage have developed, but none are believed to be serious. The dam site is in a very porous sand-coal zone which has presented extensive seepage problems for many years.
3. Cedar Mesa reservoir (W. D. 40) repairs were completed last fall with emplacement and covering of a 10 ml. vinyl liner. Beaching of the liner and livestock in the area will undoubtedly cause the seepage problem to recur to some degree in the future.
4. Porter No. 1 reservoir, also in W. D. 40, has been repaired the last two seasons, yet serious problems persist. Evidently several sand lenses in the dam have created saturation problems and flow or slip conditions in the past. Most recent repairs were not made under direct supervision of the consulting engineer, and therefore may be faulty.
5. The Webster reservoirs near Hotchkiss were partially drained during the season upon concern in the matter of public safety of the community. Later in the year the dams were completely

drained upon orders of the state engineer. The question of safety, non-compliance with the law, and failure to submit construction plans were the basis for complete denial of water storage rights.

6. Full Moon reservoir in W. D. 68 was drained by the owner in September on orders of the state engineer. The reservoir had not been used in recent years and the owner apparently intends abandonment.
7. Elephant reservoir, also in W. D. 68, was rehabilitated by the owner this fall, culminating several years efforts which finally resulted in an order from the state engineer to drain the reservoir. Trees and brush were removed, the dam crest was raised and widened, and slopes were improved.

Reservoir stop storage orders are in effect as follows:

NAME	WATER DISTRICT	ORDER DATE	RESTRICTION
Dogfish	40	8-9-72	5' below spillway
Lone Cabin	40	"	5' below lowest enbankment
Waterbug	40	"	5' below spillway
Weir & Johnson	40	"	5' below spillway

Mr. F. W. Paddock, Chief of the Dam Section, and various members of his staff have been in the division this year on numerous inspection trips, which include all of the above reservoirs, as well as many others. Their annual report will more fully cover their areas of responsibility in Division No. 4. Mr. Blewitt of the Montrose staff has accompanied the above parties on many trips, both to familiarize himself with area reservoirs and their problems, and to utilize more fully Ron's extensive experience in the field of dam construction.

LIVESTOCK WATER TANKS - PERMITS ISSUED 1972

NAME	STREAM	HEIGHT	CAPACITY, A. F.	PERMIT NUMBER
Arthur Wilson	Smith Draw tr. to San Miguel River	10'	0.3	12729
M. D. Long	Maverick Draw tr. to San Miguel River	18'	0.5	12792
Willis H. Bettis	East Ck., tr. to Uncompahgre River	16'	1.0	12940
Willis H. Bettis	" "	16'	1.0	12941
J. A. & C. O. Morrell	East Roatcap Ck., tr. to N. Fk. of Gunnison River	15'	4.5	13006
L. W. & M. L. Burkey	McKenzie Ck., tr. to Uncompahgre River	14'	1.4	13031
Bill Pence	Cow Creek, tr. to Uncompahgre River	19'	1.0	13042
J. O. Evans	Billy Ck., tr. to Uncompahgre River	19'	1.0	13055
J. O. Evans	" "	19'	1.5	13056

Data for the above tanks is summarized as follows:

	RANGE	AVERAGE
Drainage area, acres	60-250	98
Storage, A. F.	0.3-4.5	1.23
Height of dam, ft.	10-19	16.1
Elevation, ft.	6100-9200	7533

EROSION CONTROL DAMS - PERMITS ISSUED 1972

NAME	STREAM	HEIGHT	CAPACITY, A. F.	PERMIT NUMBER
M. D. Long	Maverick Draw tr. to San Miguel River	10'	0.20	12791
M. D. Long	" "	11'	0.33	12793

No unusual problems were apparent in the above applications. In the Log Hill area southwest of Montrose there has been considerable concern with existing tanks in recent years, in the belief that the numerous tanks there definitely do interfere with the annual water supply in this water short area. To a degree this may be true, yet it may conversely be argued that the benefits to the locality and among neighbors outweigh the injuries, if such exist, and to date no legal action in this matter has been initiated.

WATER RIGHTS

A. Tabulation:

Work on the tabulation came to an abrupt temporary halt last spring with the demand for field work, which arrived earlier than usual due to regional drought conditions. Mr. Walt Knudsen has closely coordinated his work with Mr. Blewitt on various changes in instructions concerning the tabulation and errors which have been identified. Walt met here with our commissioners for a one-day consultation this summer, relative to the most recent changes and updated instructions. The job of correcting errors and making other revisions will progressively increase now that the field work season and annual reports are being completed and division personnel can devote more time to office work. To date we have received a large number of objections to the published tabulation, yet only several inquiries about the new tabulation. Presumably there will be an equally large number of oppositions to any revised tabulation.

The question of initiating abandonment procedure by the division engineer of unused portions of decrees (defined in the Water Rights Determination and Administration Act of 1969) appears to be little understood by the general public and probably will become of greatly increased public concern as the 1974 deadline date approaches.

B. Referee Findings and Decrees:

Type of Application	Number Received in 1972
Underground water right	360
Change of water right	65
Plan for augmentation	0
Water rights (surface)	447
Diligence (Cond. Decrees)	200
Water storage rights	40
Application received in Water Court	1,010
Number of referee consultations	1,010

Of state-wide interest are the so-called Oxley-Bunger claims for a major trans-mountain diversion, all of which were denied; also the still pending Central Colorado claims for a like purpose, and the U. S. federal government claims for reserved rights. These last two cases will undoubtedly continue through much or all of 1973.

Of particular significance to the Water Court and the Division 4 office in 1972 were the legal deadlines for submission of various types of water rights, i. e. - due diligence on conditional claims, wells, etc., and the publics general concern, primarily over domestic water rights. The general confusion and lack of knowledge inundated the office staff with paper work and questions - and much time and effort was expended assisting water users in completing various applications. Verbal and written consultation reports were submitted to the referee on all applications received during the year, and it is believed that this involvement alone was quite significant in that all applications were subjected to critical review. Hopefully, because of this screening process alone many future administrative problems have been avoided, and all applications are more realistic.

Irrigation Division No. 4

Water Conservation and Conservancy Districts

Upper Gunnison River Water Conservancy District, % Rial Lake, Chairman, Gunnison, Colorado 81230. (See Mrs. Patricia Williams at Courthouse - Clerk of the District Court).

Tri-County Water Conservancy District, % Dick Edmondson, Manager, 601 North Park Avenue, Montrose, Colorado 81401.

Crawford Water Conservancy District, % Krist Sortland, Manager, Crawford, Colorado 81415.

Southwest Colorado Water Conservancy District, % D. Lew Williams, Norwood, Colorado 81423.

Bostwick Park Water Conservancy District, % Dan King, Attorney, 209 North Townsend Avenue, Montrose, Colorado 81401.

Grand Mesa Water Conservancy District, % Beryl Morris, President, Cedaredge, Colorado 81413.

North Fork Water Conservancy District, % John Neill, Secretary, Hotchkiss, Colorado 81419.

Fruitland Mesa Water Conservancy District, % Carton Meek, President, Maher, Colorado 81421.

Colorado River Water Conservation District, % Roland C. Fisher, Secretary, Glenwood Springs, Colorado 81601.

Water Related Organizations

Gunnison River Water Users Association, % Jerry Goldsmith, Cedaredge, Colorado 81413.

Water Related Organizations Cont'd

Grand Mesa Water Users Association, % Barbara Hood, Secretary, Cedaredge, Colorado 81413.

Big Ditch Company, % Miss Barbara Hood, Secretary, Cedaredge, Colorado 81413.

W. D. 28:

Arch Ditch Co., % Deno Piloni, Gunnison, Colorado 81230.

Hot Springs Res. Co., % Taramarcaz Bros., Gunnison, Colorado 81230.

Vouga Reservoir Co., % George Steenbergen, Gunnison, Colorado 81230.

Needle Creek Res. Co., % Ty Watson, Gunnison, Colorado 81230.

W. D. 40:

Surface Creek Ditch & Res. Co., % R. M. Campbell, President, Cedaredge, Colorado 81413.

Leroux Creek Water Users Ass'n., % Raymond White, President, Hotchkiss, Colorado 81419.

Stewart Mesa Domestic Water Company, % Ernest Eubank, Paonia, Colorado 81428.

Bone Mesa Domestic Water Company, % Albert Barley, Paonia, Colo. 81428.

Sunshine Mesa Domestic Water Company, Kenneth Meredith, President, Rt. 1, Hotchkiss, Colorado 81419.

Alfalfa Ditch Company, % Sam Oaks, President, Eckert, Colorado 81418.

Orchard City Irrigation District, % Wesley England, Secretary, Austin, Colorado 81410.

Cedar Mesa Ditch & Res. Co., % Bob Phillips, Secretary, Cedaredge, Colorado 81413.

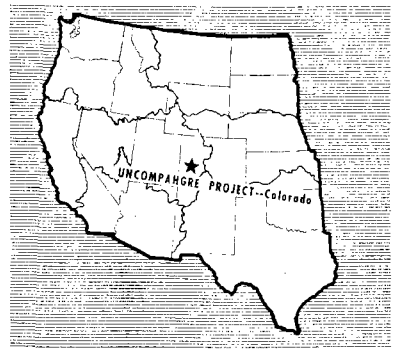
Palmer and Company, % Benson Palmer, President, Cedaredge, Colo. 81413.

Uncompahgre Project

COLORADO, Delta, Gunnison, and Montrose Counties

REGION 4, Bureau of Reclamation

PROJECT HEADQUARTERS, Montrose, Colo.



The project is on the western slope of the Rocky Mountains in west-central Colorado. Project lands surround the town of Montrose and extend along both sides of the Uncompahgre River to Delta, a distance of 34 miles. Project features include the Taylor Park Dam and Reservoir, Gunnison Tunnel, 7 diversion dams, 143 miles of main canals, 425 miles of laterals, and 215 miles of drains. The system diverts water from the Uncompahgre and Gunnison Rivers to irrigate over 76,000 acres of project land.

PLAN

The project plan provides for storage in Taylor Park Reservoir on the Taylor River, which is a part of the Gunnison River Basin, and diversion of water from the Gunnison River by the Gunnison Diversion Dam through the Gunnison Tunnel and the South Canal to the Uncompahgre River.

To distribute the waters of the Gunnison and Uncompahgre Rivers, the South and West Canals were constructed and the more important private canals, taking water directly from the Uncompahgre River were purchased, enlarged, and extended. Laterals were also constructed to take water from the South Canal.

Taylor Park Dam and Reservoir

Taylor Park Dam is on the Taylor River, a tributary of the Gunnison River. The dam is a zoned earthfill structure 206 feet high, with a crest length of 675 feet and a volume of 1,115,000 cubic yards. It creates a reservoir with a storage capacity of 106,200 acre-feet. The spillway is an overflow-type weir crest 180 feet long, with a capacity of 10,000 cubic feet per second. The outlet works is a horseshoe tunnel with a diameter of 10 feet and a capacity of 1,500 cubic feet per second.

Gunnison Diversion Dam, Tunnel, and Canal System

The Gunnison Diversion Dam on the Gunnison River about 12 miles east of Montrose is a timber-crib weir with concrete wings and a removable crest. The dam has a hydraulic height of 10 feet. It diverts releases from the Taylor Park Dam into the Gunnison Tunnel.

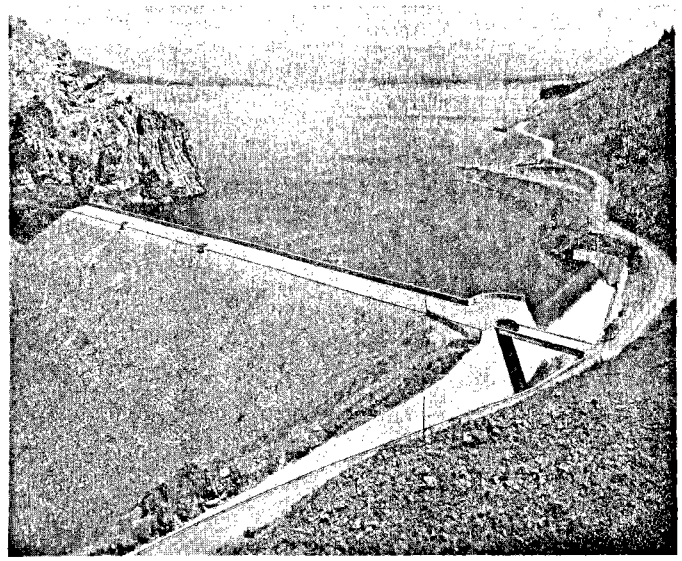
The Gunnison Tunnel has a rectangular section 11 feet wide and 12 feet high with an arch roof. It is 5.8 miles long and has a capacity of 1,000 cubic feet per second.

South Canal extends from the end of the Gunnison Tunnel generally southwest 11.4 miles to the Uncompahgre River. Part of the canal is concrete lined; the remainder is unlined. The canal has a diversion capacity of 1,010 cubic feet per second.

West Canal extends generally northwest about 21 miles from the Uncompahgre River at the confluence of the South Canal with the river. It has a diversion capacity of 172 cubic feet per second and is unlined.

Montrose and Delta Diversion Dam and Canal

The diversion dam is on the Uncompahgre River about 8 miles south of Montrose. The dam is a concrete gate structure with removable crest, and has a hydraulic height of 12 feet. The canal extends generally northwest about 40 miles from the diversion point and has a diversion capacity of 563 cubic feet per second. The canal is unlined. The dam and canal were privately constructed and later purchased by the Bureau.



Taylor Park Dam.

TABLE B1-1

MEAN, STANDARD DEVIATION, AND COEFFICIENT OF VARIATION OF ANNUAL PRECIPITATION OF CERTAIN STATIONS OF THE WESTERN MOUNTAIN REGION

Station	Mean (inches)	S.D.[a] (inches)	C.V.[b] (per cent)
Steamboat Springs	24.03	4.46	19
Fraser	18.94	4.15	22
Meeker	16.28	3.54	22
Crested Butte	23.40	7.25	31
Glenwood Springs	17.50	4.10	23
Rifle	11.25	2.60	23
Colbran	15.41	3.26	21
Paonia	15.87	3.82	24
Gunnison	10.54	2.21	21
Montrose	9.57	2.64	28
Delta	8.05	2.29	28
Grand Junction	8.59	2.15	25
Dillon	18.12	3.71	20

[a]Standard deviation.

[b]Coefficient of variation.

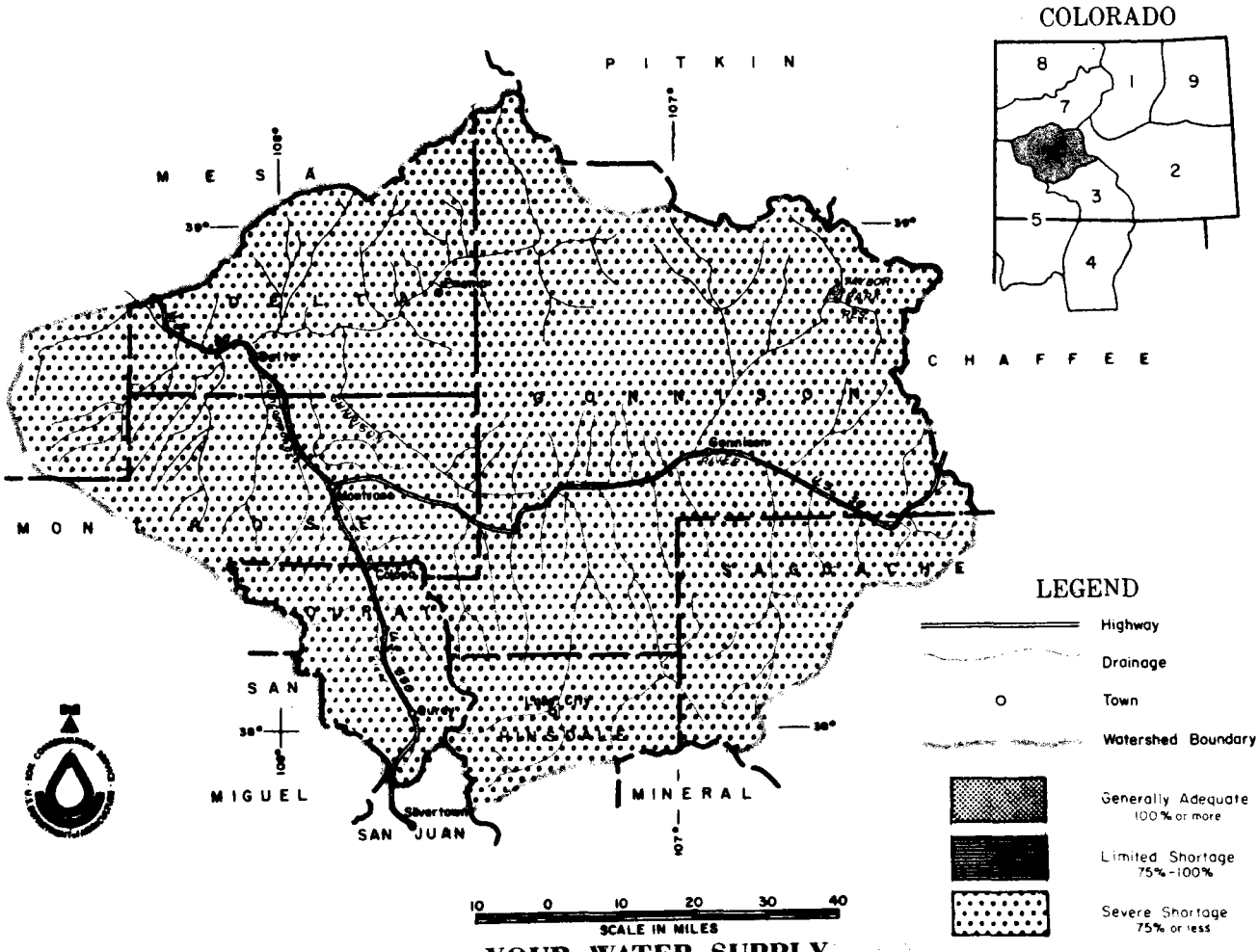
Source: R. A. Scheusener and L. W. Crow, Analysis of Precipitation Data in the Upper Colorado River Basin. Colorado State University, Fort Collins, Colorado, 1961, p. 7.

WATER SUPPLY OUTLOOK
FOR THE SOIL CONSERVATION DISTRICTS IN THE
GUNNISON RIVER WATERSHED IN COLORADO

as of

May 1, 1972

U. S. DEPARTMENT OF AGRICULTURE · SOIL CONSERVATION SERVICE
COLORADO EXPERIMENT STATION, STATE ENGINEERS OF COLORADO AND NEW MEXICO



YOUR WATER SUPPLY

SNOWPACK HAS CONTINUED TO DIMINISH IN THIS BASIN BECAUSE OF WARM TEMPERATURES AND BELOW AVERAGE PRECIPITATION. STREAMFLOW FORECASTS ARE SLIGHTLY LOWER THAN LAST MONTH AND ARE NOW 62% ON THE GUNNISON AND UNCOMPAHGRE RIVERS. RESERVOIR STORAGE IN TAYLOR PARK IS 77,000 A.F., OR 131% OF AVERAGE. BLUE MESA IS 319,000 A.F. COMPARED TO LAST YEAR'S 374,000 A.F. ABOVE AVERAGE PRECIPITATION IS NEEDED TO PROVIDE AN ADEQUATE WATER SUPPLY THIS SUMMER.

This report prepared by
JACK N. WASHICHEK and RONALD E. MORELAND
SNOW SURVEY UNIT, SOIL CONSERVATION SERVICE
DENVER, COLORADO

Issued by
H. D. BURDICK---STATE CONSERVATIONIST R. L. PORTER---AREA CONSERVATIONIST
U. S. DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE
DENVER, COLORADO GLENWOOD SPRINGS, COLORADO

The Conservation of Water begins with the Snow Survey

STREAMFLOW FORECASTS (1000 Ac. Ft.) Apr-Sept

FORECAST POINT	FORE-CAST	% of Average	Average †
Gunnison Rv. Inflow to Blue Mesa	500	65	767
Gunnison nr Grand Junction (1)	700	62	1137
Surface Creek nr Cedaridge	13	81	16
Uncompahgre at Colona	80	62	129

(1) Observed flow plus change in storage in Taylor, Blue Mesa and Morrow Point Reservoirs.

WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply.

STREAM or AREA	Flow Period	
	Spring Season	Late Season
North Fork of Gunnison	Fair	Poor
Taylor	Fair	Poor

SUMMARY of SNOW MEASUREMENTS

(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average †
Gunnison	12	67	59
Surface Creek	3	68	64
Uncompahgre	3	85	75

SOIL MOISTURE

RIVER BASIN	Number of Stations	THIS YEAR'S MOISTURE as PERCENT OF:	
		Last Year	Average †
Gunnison	1	100	100
Surface Creek	1	97	122
Uncompahgre	1	97	122

RESERVOIR STORAGE (Thousand Ac. Ft.) END OF MONTH

RESERVOIR	Usable Capacity	Usable Storage		
		This Year	Last Year	Average †
Blue Mesa	941	319	374	- -
Morrow Point	121	116	115	- -
Taylor	106	77	84	59

RESERVOIR STORAGE (Thousand Ac. Ft.) END OF MONTH

RESERVOIR	Usable Capacity	Usable Storage		
		This Year	Last Year	Average †

† 1953-1967 period.

CO-6b

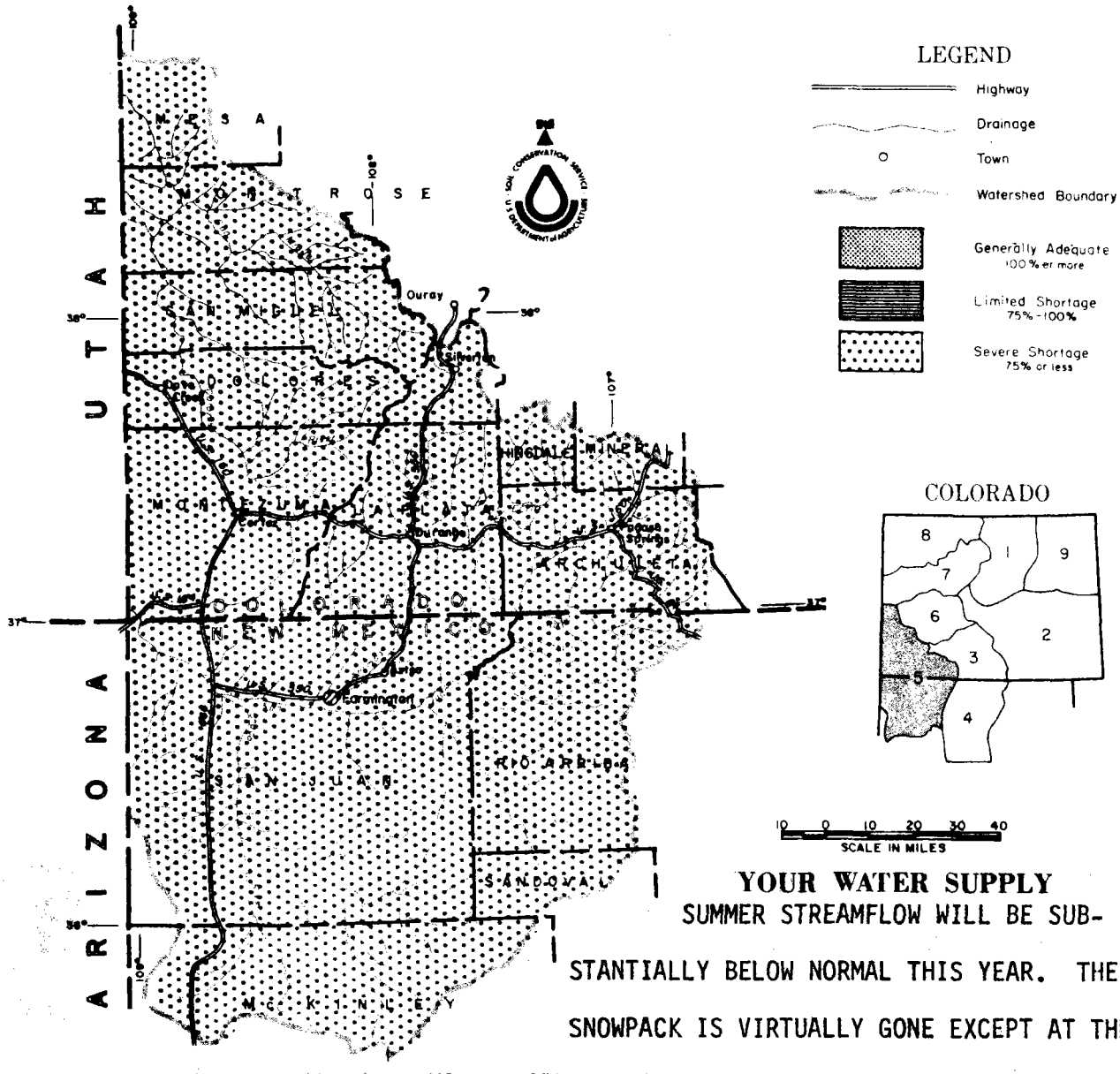
"The Conservation of Water begins with the Snow Survey"

WATER SUPPLY OUTLOOK
FOR THE SOIL CONSERVATION DISTRICTS IN THE
SAN MIGUEL, DOLORES, ANIMAS, SAN JUAN WATERSHEDS
IN COLORADO AND NEW MEXICO

as of

May 1, 1972

U. S. DEPARTMENT OF AGRICULTURE · SOIL CONSERVATION SERVICE
COLORADO EXPERIMENT STATION, STATE ENGINEERS OF COLORADO AND NEW MEXICO



YOUR WATER SUPPLY

SUMMER STREAMFLOW WILL BE SUBSTANTIALLY BELOW NORMAL THIS YEAR. THE SNOWPACK IS VIRTUALLY GONE EXCEPT AT THE HIGH ELEVATIONS. FORECASTS HAVE DROPPED EACH MONTH SINCE FEBRUARY. CARRY-OVER STORAGE IS SIMILAR TO LAST YEAR AND SLIGHTLY ABOVE NORMAL. SOIL MOISTURE CONDITIONS AROUND DURANGO ARE POOR, HOWEVER, CORTEZ REPORTS GOOD MOISTURE.

This report prepared by
JACK N. WASHICHEK and RONALD E. MORELAND
SNOW SURVEY UNIT, SOIL CONSERVATION SERVICE
DENVER, COLORADO

Issued by
H. D. BURDICK—STATE CONSERVATIONIST, DENVER, COLORADO
KENNETH L. WILLIAMS—STATE CONSERVATIONIST, ALBUQUERQUE, NEW MEXICO
U. S. DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE
KENNETH A. PITNEY—AREA CONSERVATIONIST, DURANGO, COLORADO
JOHN WERNER—AREA CONSERVATIONIST, SANTA FE, NEW MEXICO

The Conservation of Water begins with the Snow Survey

STREAMFLOW FORECASTS (1000 Ac. Ft.) Apr-Sept

FORECAST POINT	FORE-CAST	% of Average	Average +
Animas at Durango	250	61	409
Dolores at Dolores	150	65	231
La Plata at Hesperus	14	58	24
Los Pinos at Bayfield (1)	125	64	194
Piedra Cr. at Piedra	100	61	163
San Juan at Carracas	250	66	379
Inflow to Navajo Res. (1) (Apr-Jul)	360	58	619

(1) Observed reservoir plus change in storage in Vallecito Reservoir.

WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply.

STREAM or AREA	Flow Period	
	Spring Season	Late Season
Florida	Fair	Poor
Mancos	Fair	Poor
San Miguel	Fair	Poor

SUMMARY of SNOW MEASUREMENTS

(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average +
Animas	6	82	60
Dolores	4	29	15
San Juan	3	102	52

SOIL MOISTURE

RIVER BASIN	Number of Stations	THIS YEAR'S MOISTURE as PERCENT OF:	
		Last Year	Average +
Animas	3	97	82
Dolores	3	77	61
San Juan	1	93	71

RESERVOIR STORAGE (Thousand Ac. Ft.) END OF MONTH

RESERVOIR	Usable Capacity	Usable Storage		
		This Year	Last Year	Average +
Groundhog	22	12	19	9
Lemon	40	26	31	19
Navajo	1696	847	869	326
Vallecito	126	79	95	59

RESERVOIR STORAGE (Thousand Ac. Ft.) END OF MONTH

RESERVOIR	Usable Capacity	Usable Storage		
		This Year	Last Year	Average +

+ 1953–1967 period.

Return if not delivered
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SOIL CONSERVATION SERVICE
SNOW SURVEY UNIT
P.O. BOX 17107
DENVER, COLORADO 80217

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CO-5b

"The Conservation of Water begins with the Snow Survey"

GUNNISON RIVER NEAR GRAND JUNCTION*

WATER YEAR	TOTAL (CFS)	MEAN	MAXIMUM	MINIMUM	TOTAL (A. F.)
1961	512,600	1,403	7,390	356	1,015,000
1962	1,108,000	3,031	16,500	580	2,194,000
1963	461,500	1,262	4,730	390	913,800
1964	680,300	1,856	13,000	500	1,347,000
1965	1,318,700	3,606	15,300	650	2,611,000
1966	528,300	1,444	5,360	540	1,046,000
1967	446,961	1,125	4,520	500	886,500
1968	727,993	1,989	7,450	522	1,444,000
1969	945,294	2,590	9,460	561	1,875,000
1970	1,136,067	3,113	11,100	857	2,253,000
1971	1,121,461	3,072	6,260	923	2,224,000

* Surface Water Records of Colorado - U.S.G.S. - Annual Publication in cooperation with the State of Colorado, et. al.

GUNNISON RIVER NEAR GUNNISON *

WATER YEAR	TOTAL (CFS)	MEAN	MAXIMUM	MINIMUM	TOTAL (A. F.)
1961	160,380	439	1,850	100	318,100
1962	365,990	1,003	5,000	140	725,900
1963	163,660	448	1,390	80	324,600
1964	177,270	484	2,430	100	351,600
1965	395,130	1,082	4,600	120	783,700
1966	210,550	577	2,150	180	417,600
1967	215,455	590	2,640	135	427,300
1968	274,164	749	3,900	200	543,800
1969	278,605	763	2,730	180	552,600
1970	336,730	923	4,060	160	667,900
1971	293,090	927	4,060	104	671,100

* Surface Water Records of Colorado - U.S.G.S. - Annual Publication in cooperation with the State of Colorado, et. al.

Water Commissioners Summary, 1972 Water Year

Water District:	28*	40	41	42	59	60	61	62	63	73	74	68
Direct flow diversions in Ac. Ft.	175,000	348,974	581,616	510,372	379,360	201,917	8,829	415,276	12,464	1,677	420	92,603
Reservoir storage in Ac. Ft.	2,396	66,667	79,737	2,490	77,576	11,434	739	31,191	0	0	0	1,052
Acres Irrigated	29,062	161,013	91,264	9,958	35,596	25,600	3,347	23,015	1,426	844	102	24,883
Number of ditches reported	125	602	73	25	207	181	23	160	49	7	5	149
Number of reservoirs reported	5	165	3	18	1	7	1	5	0	0	0	6
Average demand in Ac. Ft./acre	7.5	3.1	6.4	3.2	10.0	4.5	1.8	6.5	8.3	2.9	2.3	7.5
Power diversions in Ac. Ft.	0	0	15,400	475,293	0	23,432	0	1,704,650	0	0	0	8,257

* % of 1971 Figures Used, Employee on Sick Leave During Report Compilation Period; Addendum Report to be Submitted in 1973.

Trans-mountain/trans-basin diversions (Name and amount, Ac. Ft.)

28	40	41	42	59	60	61	62	68
Larkspur-327 (1971 W.Y.) Tarbell - 453 (1971 W.Y.)	Divide Creek - 1300 Leon Lake-1426 Head & Ferrier-200 Mesa Ck. - 75 Meek Tunnel - 100 est.	Gunnison Tunnel-371,580 Red Mtn.-67		Lake Brennand - no record	No. Fk. of Paxton ditch - 13	State line ditch 3011-from Utah	Tabor-514 (1971 W.Y.)	Red Mtn.-133 Carbon Lake-248 St. John-0 Mineral Pt.-no record Leopard Creek-1233 (1971 W.Y.) Cimarron-(Garnet)-2785

TABLE A

DIVISION SUMMARY - DIVISION NO. 4
Direct Flow Diversions
1972

Water District	Total Ditches Reported			Irrigation Diversions Ac.Ft.	No. of Acres Irrigated	Ac.Ft. Per Acre	Industrial Use Diversions Ac.Ft.	Municipal Use Diversions Ac.Ft.	Recreation Use Diversions Ac.Ft.	Trans Mtn. Diversions Ac.Ft.	Total Diversions Ac. Ft.	No. of Daily Ditch Rpts.	Delivered to Compact Cmtmt Ac.Ft.
	Active	Inactive* NA	Inactive* NU										
28	125	10	10	175,000	29,062	7.5	0	0	0	780** (from Div. 4)	175,780	275	0
40	484	39	60	348,974	161,013	3.1	0	5,674	1,440	1426 (to Div. 4) 1300 (fm Div. 4)	358,814	518	0
41	73	5	31	581,616	91,264	6.4	15,400	1,929	0	67	599,012	255	0
42	58	14	26	35,079	9,958	3.2	481,519	6,046	0	0	522,644	559	0
59	185	1	21	378,645	35,596	10.0	0	50	0	0	379,695	225	0
60	181	25	56	141,025	10,240	4.5	60,892	2,031	3,767	0	207,715	325	0
61	23	0	9	8,829	3,347	1.8	0	12	0	3011*** (to Div. 4)	11,852	225	0
62	160	2	30	415,276	23,015	6.5	0	1,583	0	514** (from Div.4)	417,373	194	0
63	76	0	7	12,464	1,426	8.3	0	0	0	0	12,464	323	0
73	22	9	3	1,677	844	2.9	0	0	0	0	1,677	210	0
74	13	7	0	420	102	2.3	0	0	0	0	420	90	0
68	136	0	21	92,603	24,883	7.5	8,257	1,052	97	381 (to Div. 4)	102,390	353	0
TOTALS	1536	112	274	2,191,608	390,750	--	566,068	18,377	5,304	7479	2,789,836	3552	0

Colorado River Compact deliveries in 1972 - None

NA = No Water Available NU = Non Use
* Estimated data based on 1971 report;
** 1971 Figures; Record Published 1 - Year in arrears by U.S.G.S.
*** Imported water from La Sal Mtns., Utah

TABLE B

DIVISION SUMMARY - DIVISION NO. 4
Storage Report - Acre Feet
1972

Water District	Amount in Storage Acre Feet			Actual Am't of Diverted to Storage During Season	Delivered from Storage to Irrigation	Storage to Industrial/ Power Use	Storage for Municipal Use	Storage for Recreation Use	Storage to Projects
	11-1-71	5-1-72	10-31-72						
28	1,200	2,000	900	1,500	2,396	0	0	1,000	0
40	14,742	17,500	6,000	57,925	66,667	0	972	15,000	31,306
41	1,400	2,550	1,720	537	79,737	0	1,929	500	79,200
42	0	4,489	1,100	4,489	2,490	0	2,418	2,000	0
59	45,000	106,200	33,650	65,000	77,576	0	0	10,000	77,576
60	11,075	21,060	9,626	9,985	11,434	8,832	1,208	7,699	9,393
61	152	850	87	1,635	739	0	0	1,000	0
62	635,620	440,940	653,000	500,000	31,191	1,704,650	1,383	2,000	31,191
63	0	650	0	0	0	0	0	0	0
73	0	45	0	0	0	0	45	0	0
74	0	0	0	0	0	0	0	0	0
68	750	1,250	600	1,452	1,052	0	1,002	0	0
TOTALS	709,939	597,534	706,683	642,523	273,282	1,713,482	8,957	39,199	228,666

November 1, 1972

TABLE OF ORGANIZATION - PERSONNEL

IRRIGATION DIVISION NO. 4

* * * * * * * * * * * *

Division Engineer - Ralph V. Kelling, Jr.

Assistant Division Engineer - Ronald I. Blewitt

Intermediate Clerk-Typist - Melita Maten

Water District 28
Water Commissioner I
William E. Rhodes

Water District 40
Water Commissioner III
Richard L. Drexel*
Water Commissioner I
Elton J. Watson*

Deputy Water Commissioners
Gordon Aldridge
Richard Belden
Russell Bertram
James E. Carr
Lloyd E. Connell
Harold Cyphers
Silas A. Freshour
Mack Gorrod
Jack McHugh
Robert Pearce
Frank Peterson
Stephen Tuck
Charley Woolley

Water District 41
Water Commissioner I
Ralph Glendening*

Water District 42
Water Commissioner III
W. W. Saunders*

Deputy Water Comm.
Buck L. Catt
Doug Gilbreath**

Water District 59
Water Commissioner I
Edwin S. Hofmann*

Deputy Water Comm.
Bill Glendening

Water District 60
Water Commissioner I
Howard Noble*

Deputy Water Comm.
Dwayne C. Mansker

Water District 61
Water Commissioner I
Chalmer Garber

Water District 62
Water Commissioner I
Edwin S. Hofmann*

Water District 63
Water Commissioner III
W. W. Saunders*

Water District 68
Water Commissioner I
Howard Noble*

Water District 73
Water Commissioner III
W. W. Saunders*

Deputy Water Comm.
Doug Gilbreath**

Water District 74
Water Commissioner III
W. W. Saunders*

* Annual
** Seasonal w/Div. 5

AREAS OF RESPONSIBILITY OF WATER COMMISSIONERS AND DEPUTIES

IRRIGATION DIVISION NO. 4

Water District - 28

William E. Rhodes - Tomichi and Cochetopa Creeks

Water District - 40

Richard L. Drexel - Crystal Creek; the Gunnison River from Mesa County line to Montrose County line and its tributaries except the Uncompahgre River

Elton J. Watson - North Fork of the Gunnison River and Smith Fork

Deputies:

Gordon Aldridge - Upper Surface Creek

Richard Belden - Park Basin

Russell Bertram - Granby and Battlement Reservoirs

James E. Carr - Leroux Creek

Lloyd Connell - Minnesota Creek and Stewart Mesa

Harold Cyphers - Gunnison River and Escalante Creek

Silas A. Freshour - Beaver Creek

Mack Gorrod - Ward, Kiser and Youngs Creek Reservoirs

Jack McHugh - Youngs, Kiser, Ward Creeks

Robert Pearce - Muddy, Anthracite, Hubbard Creeks

Frank Peterson - Dry Creek and Alfalfa Run

Stephen Tuck - Forked Tongue

Charley Woolley - Lower Surface Creek

Water District - 41

Ralph Glendening - Uncompahgre River from Colona to Delta

Water District - 42

W. W. Saunders - Gunnison River below Mesa County line and its tributaries

Deputy: Buck L. Catt - (same area)

Water District - 59

E. S. Hofmann - Gunnison River above Gunnison and tributaries on north side of the Gunnison River from Gunnison to Mesa Creek

Deputy: William Glendening - (same area)

Water District - 60

Howard Noble - San Miguel River

Deputy: Dwayne C. Mansker - (same area)

Water District - 61

Chalmer Garber - Dolores River below San Miguel County line to confluence with San Miguel River (Paradox Valley)

Water District - 62

E. S. Hofmann - Cimarron River, Lake Fork of the Gunnison, and Cebolla Creek

Water District - 63

W. W. Saunders - Dolores River below confluence of San Miguel River

Water District - 68

Howard Noble - Uncompahgre River above Colona

Water District - 73

W. W. Saunders - Little Dolores River

Water District - 74

W. W. Saunders - Coates Creek

HYDROMETEOROLOGICAL DATA - BLUE MESA RESERVOIR (From U. S. Bureau of Reclamation monthly reports)

	January	February	March	April	May	June	July	August	September	October	November	December
1970												
Precip. (In.)	.53	.07	.55	.23	.40	.46	1.58	2.69	2.28	1.50	.85	.44
Avg. Temp. (Max.)	27.80	39.00	42.10	46.90	62.30	70.60	82.90	82.40	(not avail.)	54.70	45.00	31.20
Avg. Temp. (Min.)	1.00	6.30	16.20	20.10	30.60	40.10	47.70	48.40	"	26.50	21.70	5.50
Total Ann. Precip.	11.58 In.											
Total Ann. Dischg.	1,237,220 A.F.											
			6 months precipitation sub total				2.24					
1971												
Precip. (In.)	.13	.39	.16	.56	.80	.00	2.00	1.97	0.92	0.89	.11	1.56
Avg. Temp. (Max.)	34.10	37.70	47.10	57.70	65.80	80.10	83.30	81.90	70.60	61.50	48.50	25.90
Avg. Temp. (Min.)	6.20	12.90	14.10	14.10	23.00	38.60	46.50	48.50	35.30	28.80	15.70	1.30
Total Ann. Precip.	9.49 In.											
Total Ann. Dischg.	1,281,300 A. F.											
			6 months precipitation sub total				2.04					
1972												
Precip. (In.)	1.14	.00	.09	.43	.05	.36	.36	.81	1.77	2.34		
Avg. Max. Temp.	23.70	36.00	56.00	61.10	69.20	77.50	84.50	80.40	71.90	60.10		
Avg. Min. Temp.	-8.20	1.20	18.00	26.40	29.00	42.70	46.10	45.80	39.90	35.90		
Total Ann. Precip.												
Total Ann. Dischg.												
			6 months precipitation sub total				2.07					