

**1965**

# **Water Resources Data for Colorado**

## **Part 1. Surface Water Records**



**UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY**

**Prepared in cooperation with the State of Colorado  
and with other agencies**

United States Department of the Interior  
Geological Survey - Water Resources Division

Water Resources Data  
for  
Colorado  
1965

Part 1: Surface Water Records

Prepared in cooperation with

Colorado Water Conservation Board  
Office of the State Engineer  
Southeastern Colorado Water Conservancy District  
Arkansas River Compact Administration  
Colorado River Water Conservation District  
City and County of Denver, Board of Water Commissioners  
City of Colorado Springs, Department of Public Utilities  
Bureau of Reclamation, U.S. Department of the Interior  
Corps of Engineers, U.S. Department of the Army  
Soil Conservation Service, U.S. Department of Agriculture

Copies of this report may be obtained from  
District Engineer, Surface Water Branch  
U.S. Geological Survey  
Denver Federal Center  
Denver, Colorado 80225

Water resources records, 1965, for Colorado are  
in the following reports of the U.S. Geological Survey:

1. Water Resources Data for Colorado  
Part 1: Surface Water Records
2. Water Resources Data for Colorado  
Part 2: Water Quality Records

# CALENDAR FOR WATER YEAR 1965

## OCTOBER 1964

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

## NOVEMBER 1964

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
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29	30					

## DECEMBER 1964

S	M	T	W	T	F	S
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6	7	8	9	10	11	12
13	14	15	16	17	18	19
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## JANUARY 1965

S	M	T	W	T	F	S
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3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
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31						

## FEBRUARY 1965

S	M	T	W	T	F	S
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7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28						

## MARCH 1965

S	M	T	W	T	F	S
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7	8	9	10	11	12	13
14	15	16	17	18	19	20
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28	29	30	31			

## APRIL 1965

S	M	T	W	T	F	S
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4	5	6	7	8	9	10
11	12	13	14	15	16	17
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## MAY 1965

S	M	T	W	T	F	S
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9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

## JUNE 1965

S	M	T	W	T	F	S
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13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

## JULY 1965

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

## AUGUST 1965

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

## SEPTEMBER 1965

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		



# CONTENTS

---

	Page
Introduction.....	1
Cooperation.....	2
Definition of terms and abbreviations.....	2
Downstream order and station numbers.....	3
Explanation of data.....	4
Accuracy of field data and computed results.....	7
Supplemental data.....	8
Records of discharge collected by agencies other than the Geological Survey.....	9
Gaging-station records.....	10
<u>Missouri River basin</u>	
Missouri River:	
<u>Platte River basin</u>	
North Platte River (head of Platte River):	
Michigan River:	
North Fork Michigan River near Gould.....	10
North Platte River near Northgate.....	11
Laramie River near Glendevey.....	12
South Platte River above Elevenmile Canyon Reservoir, near Hartsel.....	13
South Platte River near Lake George.....	14
Goose Creek above Cheesman Lake.....	15
South Platte River below Cheesman Lake.....	16
North Fork South Platte River below Geneva Creek, at Grant.....	17
North Fork South Platte River at South Platte.....	18
South Platte River at South Platte.....	19
South Platte River at Waterton.....	20
Plum Creek near Louviers.....	21
South Platte River at Littleton.....	22
Bear Creek at Morrison.....	23
Bear Creek at mouth, at Sheridan.....	24
Cherry Creek near Franktown.....	25
Cherry Creek near Melvin.....	26
Cherry Creek below Cherry Creek Reservoir.....	27
Cherry Creek at Denver.....	28
South Platte River at Denver.....	29
Clear Creek near Lawson.....	30
Clear Creek near Golden.....	31
Clear Creek at mouth, near Derby.....	32
South Platte River at Henderson.....	33
North St. Vrain Creek (head of St. Vrain Creek):	
South St. Vrain Creek near Ward.....	34
St. Vrain Creek at Lyons.....	35

## Gaging-station records--Continued

## Missouri River--Continued

## Platte River basin--Continued

## North Platte River--Continued

## South Platte River--Continued

Page

St. Vrain Creek near Longmont.....	36
Middle Boulder Creek (head of Boulder Creek) at Nederland....	37
Boulder Creek near Orodell.....	38
South Boulder Creek near Eldorado Springs.....	39
Coal Creek near Plainview.....	40
St. Vrain Creek at mouth, near Platteville.....	41
Big Thompson River at Estes Park.....	42
Big Thompson River near Estes Park.....	43
Big Thompson River at mouth of canyon, near Drake.....	44
Reservoirs in South Platte River basin.....	45
Big Thompson River at mouth, near La Salle.....	47
Cache la Poudre River near Rustic.....	48
South Fork Cache la Poudre River:	
Fall Creek near Rustic.....	49
Little Beaver Creek near Idylwilde.....	50
Little Beaver Creek near Rustic.....	51
South Fork Cache la Poudre River near Rustic.....	52
Transbasin diversions from North Platte River basin to Cache la Poudre River basin.....	53
North Fork Cache la Poudre River near Livermore.....	54
Cache la Poudre River at mouth of canyon, near Fort Collins....	55
Cache la Poudre River near Greeley.....	56
South Platte River near Kersey.....	57
Kiowa Creek at K-79 Reservoir, near Eastonville.....	58
Kiowa Creek at Elbert.....	59
West Kiowa Creek at Elbert.....	60
Kiowa Creek at Kiowa.....	61
South Platte River near Weldona.....	62
South Platte River at Balzac.....	63
South Platte River at Julesburg.....	64

Kansas River basin

## Arikaree River (head of Kansas River):

## Republican River (continuation of Arikaree River):

South Fork Republican River near Idalia.....	65
Landsman Creek near Hale.....	66
Bonny Reservoir near Hale.....	67
South Fork Republican River near Hale.....	68

## Gaging-station records--Continued

Lower Mississippi River basinMississippi River:Arkansas River basinArkansas River:

	Page
Lake Fork above Sugar Loaf Reservoir.....	69
Halfmoon Creek near Malta.....	70
Arkansas River near Malta.....	71
Lake Creek above Twin Lakes Reservoir.....	72
Arkansas River at Granite.....	73
Clear Creek above Clear Creek Reservoir.....	74
Arkansas River at Buena Vista.....	75
Cottonwood Creek below Hot Springs, near Buena Vista.....	76
Arkansas River near Nathrop.....	77
Arkansas River at Salida.....	78
Arkansas River near Wellsville.....	79
Arkansas River at Parkdale.....	80
Grape Creek near Westcliffe.....	81
Arkansas River at Canon City.....	82
Arkansas River near Portland.....	83
Arkansas River near Pueblo.....	84
Fountain Creek near Colorado Springs.....	85
Monument Creek:	
West Monument Creek near Pikeview.....	86
Templeton Gap Floodway at Colorado Springs.....	87
Fountain Creek at Security.....	88
Fountain Creek at Pueblo.....	89
Arkansas River near Avondale.....	90
Huerfano River at Manzanares Crossing, near Redwing.....	91
Cucharas River at Boyd Ranch, near La Veta.....	92
Huerfano River below Huerfano Valley Dam, near Undercliffe.....	93
Arkansas River near Nepesta.....	94
Apishapa River near Fowler.....	95
Arkansas River at Catlin Dam, near Fowler.....	96
Arkansas River at La Junta.....	97
Arkansas River at Las Animas.....	98
Purgatoire River at Trinidad.....	99
Purgatoire River near Hoehne.....	100
Frijole Creek near Alfalfa.....	101
San Francisco Creek near Alfalfa.....	102
Purgatoire River near Alfalfa.....	103
Purgatoire River at Ninemile Dam, near Higbee.....	104
Purgatoire River near Las Animas.....	105
John Martin Reservoir at Caddoa.....	106
Arkansas River below John Martin Reservoir.....	107
Arkansas River at Lamar.....	108

## Gaging-station records--Continued

## Lower Mississippi River basin--Continued

## Mississippi River--Continued

## Arkansas River basin--Continued

Page

Frontier ditch near Coolidge, Kans..... 109

Arkansas River near Coolidge, Kans..... 110

## Western Gulf of Mexico:

Rio Grande basin

Rio Grande at Thirtymile Bridge, near Creede..... 111

North Clear Creek below Continental Reservoir..... 112

Willow Creek at Creede..... 113

Rio Grande at Wagonwheel Gap..... 114

Goose Creek at Wagonwheel Gap..... 115

South Fork Rio Grande at South Fork..... 116

Rio Grande near Del Norte..... 117

Pinos Creek near Del Norte..... 118

Rio Grande near Monte Vista..... 120

Rio Grande at Alamosa..... 121

## Closed basin in San Luis Valley:

Kerber Creek at Ashley Ranch, near Villa Grove..... 122

Saguache Creek near Saguache..... 123

North Crestone Creek near Crestone..... 124

Carnero Creek near La Garita..... 125

La Garita Creek near La Garita..... 126

Alamosa Creek above Terrace Reservoir..... 127

La Jara Creek at Gallegos Ranch, near Capulin..... 128

Rio Grande above mouth of Trinchera Creek, near La Sauses..... 129

Trinchera Creek above Turners Ranch, near Fort Garland..... 130

Sangre de Cristo Creek near Fort Garland..... 131

Ute Creek near Fort Garland..... 132

Trinchera Creek below Smith Reservoir, near Blanca..... 133

## Conejos River:

Platoro Reservoir at Platoro..... 134

Conejos River below Platoro Reservoir..... 135

Conejos River near Mogote..... 136

San Antonio River at Ortiz..... 137

Los Pinos River near Ortiz..... 138

San Antonio River at mouth, near Manassa..... 139

Conejos River near La Sauses..... 140

Culebra Creek at San Luis..... 141

Rio Grande near Lobatos..... 142

Rio Grande at Colorado-New Mexico State line..... 143

Colorado River basin

Colorado River below Baker Gulch, near Grand Lake..... 144

## Gaging-station records--Continued

Colorado River--Continued	Page
Colorado River near Grand Lake.....	145
<u>Grand Lake Outlet basin</u>	
North Inlet (head of Grand Lake Outlet):	
Grand Lake:	
Alva B. Adams tunnel at east portal, near Estes Park.....	146
Shadow Mountain Lake near Grand Lake.....	147
<u>Arapaho Creek basin</u>	
Arapaho Creek at Monarch Lake Outlet.....	148
Lake Granby near Granby.....	149
Colorado River below Lake Granby.....	150
Colorado River near Granby.....	151
<u>Willow Creek basin</u>	
Willow Creek Reservoir near Granby.....	152
Willow Creek below Willow Creek Reservoir.....	153
<u>Fraser River basin</u>	
Fraser River near Winter Park.....	154
Vasquez Creek near Winter Park.....	155
St. Louis Creek near Fraser.....	156
Ranch Creek near Fraser.....	157
Colorado River at Hot Sulphur Springs.....	158
<u>Little Muddy Creek basin</u>	
Little Muddy Creek near Parshall.....	159
<u>Williams Fork basin</u>	
Williams Fork near Leal.....	160
Skylark Creek near Parshall.....	161
Williams Fork near Parshall.....	162
Williams Fork Reservoir near Parshall.....	163
Williams Fork below Williams Fork Reservoir.....	164
<u>Troublesome Creek basin</u>	
Troublesome Creek near Pearmont.....	165
East Fork Troublesome Creek near Troublesome.....	166
<u>Muddy Creek basin</u>	
Muddy Creek near Kremmling.....	167
Antelope Creek near Kremmling.....	168
Red Dirt Creek near Kremmling.....	169
Pass Creek near Kremmling.....	170
<u>Blue River basin</u>	
Monte Cristo Creek (head of Blue River):	
Monte Cristo diversion near Hoosier Pass.....	171
Hoosier Creek:	
Bemrose-Hoosier diversion near Hoosier Pass.....	172
Blue River:	
McCullough Creek:	
McCullough-Spruce-Crystal diversion near Hoosier Pass.....	173

## Gaging-station records--Continued

## Colorado River--Continued

Blue River basin--Continued	Page
Blue River near Dillon.....	174
Snake River near Montezuma.....	175
Keystone Gulch near Dillon.....	176
Tenmile Creek below North Fork, at Frisco.....	177
Dillon Reservoir at Dillon.....	178
Blue River below Dillon.....	179
Blue River above Green Mountain Reservoir.....	180
Green Mountain Reservoir near Kremmling.....	181
Blue River below Green Mountain Reservoir.....	182
Colorado River near Kremmling.....	183
<u>Piney River basin</u>	
Piney River below Piney Lake, near Minturn.....	184
Dickson Creek near Minturn.....	185
Freeman Creek near Minturn.....	186
East Meadow Creek near Minturn.....	187
Piney River near State Bridge.....	188
<u>Rock Creek basin</u>	
Rock Creek near Toponas.....	189
<u>Big Alkali Creek basin</u>	
Big Alkali Creek near Burns.....	190
<u>Eagle River basin</u>	
Eagle River at Red Cliff.....	191
Turkey Creek:	
Wearyman Creek near Red Cliff.....	192
Turkey Creek near Red Cliff.....	193
Homestake Creek near Red Cliff.....	194
Gore Creek at upper station, near Minturn.....	195
Black Gore Creek near Minturn.....	196
Bighorn Creek near Minturn.....	197
Booth Creek near Minturn.....	198
Middle Creek near Minturn.....	199
Red Sandstone Creek near Minturn.....	200
Alkali Creek near Wolcott.....	201
Brush Creek near Eagle.....	202
Eagle River below Gypsum.....	203
Colorado River near Dotsero.....	204
Colorado River at Glenwood Springs.....	205
<u>Roaring Fork River basin</u>	
Roaring Fork River near Aspen.....	206
Hunter Creek above Midway Creek, near Aspen.....	207
Fryingpan River near Ivanhoe Lake.....	208
Fryingpan River near Norrie.....	209
Ivanhoe Creek near Norrie.....	210

## Gaging-station records--Continued

## Colorado River--Continued

## Roaring Fork River basin--Continued

## Fryingpan River--Continued

	Page
South Fork Fryingpan River at upper station, near Norrie.....	211
South Fork Fryingpan River near Norrie.....	212
Fryingpan River at Norrie.....	214
North Fork Fryingpan River above Cunningham Creek, near Norrie.	215
Cunningham Creek near Norrie.....	216
North Fork Fryingpan River below Cunningham Creek, near Norrie.	217
North Fork Fryingpan River near Norrie.....	218
Lime Creek near Troutville.....	219
Fryingpan River near Ruedi.....	220
Sopris Creek:	
West Sopris Creek near Basalt.....	221
Crystal River at Placita.....	222
Crystal River above Avalanche Creek, near Redstone.....	223
North Thompson Creek (head of Thompson Creek) near Carbondale..	224
Thompson Creek near Carbondale.....	225
Prince Creek near Carbondale.....	226
Cattle Creek near Carbondale.....	227
Fourmile Creek near Glenwood Springs.....	228
Roaring Fork River at Glenwood Springs.....	229
<u>Divide Creek basin</u>	
West Divide Creek (head of Divide Creek) below Willow Creek, near Raven.....	230
West Divide Creek near Raven.....	231
East Divide Creek near Silt.....	232
<u>Beaver Creek basin</u>	
Beaver Creek near Rifle.....	233
<u>Battlement Creek basin</u>	
Battlement Creek near Grand Valley.....	234
<u>Roan Creek basin</u>	
Roan Creek above Clear Creek, near De Beque.....	235
Roan Creek near De Beque.....	236
Colorado River near Cameo.....	237
<u>Plateau Creek basin</u>	
Plateau Creek:	
Vega Reservoir near Collbran.....	238
Plateau Creek near Collbran.....	239
Buzzard Creek below Owens Creek, near Heiberger.....	240
Buzzard Creek near Collbran.....	241
Brush Creek near Collbran.....	242
Plateau Creek near Cameo.....	243

## Gaging-station records--Continued

## Colorado River--Continued

Gunnison River basin

Taylor River (head of Gunnison River):	Page
Taylor Park Reservoir at Taylor Park.....	244
Taylor River below Taylor Park Reservoir.....	245
Taylor River at Almont.....	246
East River below Cement Creek, near Crested Butte.....	247
East River at Almont.....	248
Gunnison River:	
Ohio Creek at Baldwin.....	249
Ohio Creek near Baldwin.....	250
Gunnison River near Gunnison.....	251
Tomichi Creek at Sargents.....	252
Tomichi Creek at Parlin.....	253
Quartz Creek near Ohio City.....	254
Tomichi Creek at Gunnison.....	255
Soap Creek near Sapinero.....	256
Lake Fork at Gateview.....	257
Gunnison River below Blue Mesa Dam.....	258
Curecanti Creek near Sapinero.....	259
Cimarron Creek near Cimarron.....	260
Cimarron Creek at Cimarron.....	261
Crystal Creek near Maher.....	262
Gunnison River below Gunnison tunnel.....	263
Smith Fork near Crawford.....	264
East Muddy Creek (head of North Fork Gunnison River):	
West Muddy Creek near Ragged Mountain.....	265
West Muddy Creek near Somerset.....	266
North Fork Gunnison River near Somerset.....	267
Hubbard Creek near Paonia.....	268
Middle Hubbard Creek near Paonia.....	269
West Hubbard Creek near Paonia.....	270
Leroux Creek near Cedaredge.....	271
Cow Creek near Cedaredge.....	272
Gunnison River near Lazear.....	273
George Creek (head of Tongue Creek) near Grand Mesa.....	274
Ward Creek near Grand Mesa.....	275
Kiser Creek near Grand Mesa.....	276
Cottonwood Creek near Grand Mesa.....	277
Youngs Creek near Grand Mesa.....	278
Tongue Creek:	
Surface Creek near Cedaredge.....	279
Surface Creek at Cedaredge.....	280
Tongue Creek at Cory.....	281
Uncompahgre River near Ridgway.....	282



## Gaging-station records--Continued

## Colorado River--Continued

## Gunnison River basin--Continued

## Uncompahgre River--Continued

Page

West Fork Dallas Creek near Ridgway..... 283

East Fork Dallas Creek near Ridgway..... 284

Beaver Creek near Ridgway..... 285

## Dallas Creek:

Pleasant Valley Creek near Noel..... 286

Dallas Creek near Ridgway..... 287

Cow Creek near Ridgway..... 288

Uncompahgre River at Colona..... 289

Uncompahgre River at Delta..... 290

Kannah Creek near Whitewater..... 291

Gunnison River near Grand Junction..... 292

Colorado River near Colorado-Utah State line..... 293

Dolores River basin

Dolores River below Rico..... 294

Dolores River at Dolores..... 295

Disappointment Creek near Dove Creek..... 296

San Miguel River near Telluride..... 297

San Miguel River near Placerville..... 298

Beaver Creek near Norwood..... 299

San Miguel River at Naturita..... 300

Taylor Creek near Gateway..... 301

Green River basin

## Green River:

Yampa River near Toponas..... 303

Yampa River near Oak Creek..... 304

Yampa River at Steamboat Springs..... 305

Elk River at Clark..... 306

## Trout Creek:

Fish Creek near Milner..... 307

Grassy Creek near Mount Harris..... 308

Elkhead Creek near Clark..... 309

Elkhead Creek near Elkhead..... 310

North Fork Elkhead Creek near Elkhead..... 311

East Fork of Williams Fork above Willow Creek..... 312

East Fork of Williams Fork near Pagoda..... 313

Milk Creek near Thornburg..... 314

Yampa River near Maybell..... 315

Little Snake River near Slater..... 316

Slater Fork near Slater..... 317

Willow Creek near Dixon, Wyo..... 318

Little Snake River near Baggs, Wyo..... 319

Little Snake River near Lily..... 320

## Gaging-station records--Continued

## Colorado River--Continued

## Green River basin--Continued

Page

White River below Trapper's Lake.....	321
Lost Creek near Buford.....	322
White River near Buford.....	323
White River at Buford.....	324
South Fork White River at Buford.....	325
White River above Coal Creek, near Meeker.....	326
Coal Creek near Meeker.....	327
White River near Meeker.....	328
White River below Meeker.....	329
Piceance Creek below Ryan Gulch, near Buford.....	330
White River near Watson, Utah.....	331

San Juan River basin

East Fork San Juan River above Sand Creek, near Pagosa Springs.....	332
East Fork San Juan River near Pagosa Springs.....	333
San Juan River at Pagosa Springs.....	334
Rio Blanco near Pagosa Springs.....	335
Navajo River at Banded Peak Ranch, near Chromo.....	336
Navajo River above Chromo.....	337
Navajo River at Edith.....	338
San Juan River near Carracas.....	339
Piedra River near Piedra.....	340
Piedra River near Arboles.....	341
San Juan River at Rosa, N. Mex.....	342
Los Pinos River:	
Vallecito Creek near Bayfield.....	343
Vallecito Reservoir near Bayfield.....	344
Los Pinos River near Bayfield.....	345
Los Pinos River at La Boca.....	346
Spring Creek at La Boca.....	347
Animas River at Howardsville.....	348
Hermosa Creek near Hermosa.....	349
Falls Creek near Durango.....	350
Junction Creek near Durango.....	351
Animas River at Durango.....	352
Animas River near Cedar Hill, N. Mex.....	353
La Plata River at Hesperus.....	354
La Plata River at Colorado-New Mexico State line.....	355
Mancos River near Towaoc.....	356
McElmo Creek near Colorado-Utah State line.....	357

Transmountain diversions

Transmountain diversions from Colorado River basin in Colorado.....	358
Discharge at partial-record stations and miscellaneous sites.....	361
Low-flow partial-record stations.....	361
Crest-stage partial-record stations.....	362
Measurements at miscellaneous sites.....	363
Index.....	369

# Water Resources Data for Colorado, 1965

## Part 1: Surface Water Records

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### INTRODUCTION

The surface-water records for the 1965 water year for gaging stations, partial-record stations, and miscellaneous sites within the State of Colorado are given in this report. For convenience there are also included records for a few pertinent gaging stations in bordering states. The records were collected and computed by the Water Resources Division of the U.S. Geological Survey, under the direction of J. W. Odell, district engineer, Surface Water Branch.

Through September 30, 1960, the records of discharge and stage of streams and contents and stage of lakes and reservoirs were published in an annual series of U.S. Geological Survey water-supply papers entitled "Surface Water Supply of the United States." Since 1951 there have been 20 volumes in the series; each volume covered an area whose boundaries coincided with those of certain natural drainage areas. The records in Colorado were contained in Parts 6B, 7, 8, and 9 of that series.

Beginning with the 1961 water year, streamflow records and related data have been released by the Geological Survey in annual reports on a State-boundary basis. Distribution of these basic-data reports is limited and primarily for local needs. Records will be published in Geological Survey water-supply papers at 5-year intervals.

## COOPERATION

Cooperative agreements between the U.S. Geological Survey and organizations of the State of Colorado for the systematic collection of streamflow records began in 1895. Organizations that supplied data are acknowledged in station descriptions. Organizations that assisted in collecting data through cooperative agreements with the Survey are:

Colorado Water Conservation Board, F. L. Sparks, director.  
Office of the State Engineer, J. E. Whitten, succeeded by  
A. R. Owens.  
Southeastern Colorado Water Conservancy District,  
C. H. Boustead, executive secretary.  
Arkansas River Compact Administration, F. M. Bell, chairman.  
Colorado River Water Conservation District, P. P. Smith,  
secretary-engineer.  
City and County of Denver, Board of Water Commissioners,  
W. F. Nicholson, president.  
City of Colorado Springs, Department of Public Utilities,  
R. D. Nixon, director.

Financial assistance was also provided by Corps of Engineers, U.S. Department of the Army; Bureau of Reclamation, U.S. Department of the Interior; and Soil Conservation Service, U.S. Department of Agriculture.

The New Mexico district of the U.S. Geological Survey furnished records for six gaging stations published in this report.

## DEFINITION OF TERMS AND ABBREVIATIONS

The terms of streamflow and other hydrologic data, as used in this report, are defined as follows:

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of gage height or discharge are obtained. When used in connection with a discharge record, the term is applied only to those gage stations where a continuous record of discharge is obtained.

Partial-record station is a particular site where limited streamflow data are collected systematically over a period of years for use in hydrologic analyses.

Cubic foot per second (cfs) is the rate of discharge of a stream whose channel is 1 square foot in cross-sectional area and whose average velocity is 1 foot per second.

Acre-foot (ac-ft) is the quantity of water required to cover an acre to the depth of 1 foot and is equivalent to 43,560 cubic feet.

Cfs-day is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, 1.983471 acre-feet, or 646,317 gallons, and represents a runoff of 0.0372 inch from 1 square mile.

Stage-discharge relation is the relation between gage height and the amount of water flowing in a channel, expressed as volume per unit of time.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, a long reach of the channel, or an artificial structure.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

The drainage area of a stream at a specified location is that area, measured in a horizontal plane, which is so enclosed by a topographic divide that direct surface runoff from precipitation normally would drain by gravity into the river above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise noted.

WSP is used as an abbreviation for "Water-Supply Paper" in references to previously published reports.

#### DOWNSTREAM ORDER AND STATION NUMBERS

Stations are listed in the same downstream order used in the water-supply papers. Records are listed in a downstream direction along the main stem with all stations on a tributary entering above a main-stem station listed before that station. If a tributary enters between two main-stem stations, it is listed between them. A similar order is followed listing stations on first rank, second rank, and other ranks of tributaries. To indicate the rank of any tributary on which a gaging station is situated and the stream to which it is immediately tributary, each indention in the listing of gaging stations in the table of contents of this report represents one rank. This downstream order and system of indention shows which gaging stations are on tributaries between any two stations on a main stem and the rank of the tributary on which each gaging station is situated.

As an added means of identification, each gaging station has been assigned a station number. The numbers have been assigned in the same downstream order used in the annual series of water-supply papers. In assigning station numbers, no distinction is made between partial-record stations and continuous-record gaging stations, so that the station number for a partial-record station indicates downstream order position in a list made up of both types of stations. Gaps are left in the numbers to allow for new stations that may be established; hence the numbers are not consecutive.

The complete number for each station, such as 6-7520.00, includes the part number "6" and a six digit station number. In this report, the part number and only the essential digits of the station number are shown. For example, the complete number 6-7520.00 appears as 6-7520, just to the left of the station name. In this report, the records are listed in downstream order by parts. All records for a drainage basin encompassing more than one State could be arranged in downstream order by assembling pages from the various State reports by station number to include all records in the basin.

#### EXPLANATION OF DATA

The base data collected at gaging stations consist of records of stage and measurements of discharge. In addition, observations of factors affecting the stage-discharge relation, weather records, and other information are used to supplement base data in determining the daily flow. Records of stage are obtained from a water-stage recorder that gives a continuous chart of fluctuations (for digital recorders, a tape punched at 15-, 30-, or 60-minute intervals) or from direct readings on a nonrecording gage. Measurements of discharge are made with a current meter by the general methods adopted by the Geological Survey on the basis of experience in stream gaging since 1888. These methods are described in Water-Supply Paper 888 and are also outlined in standard textbooks on the measurement of stream discharge.

Rating tables giving the discharge for any stage are prepared from stage-discharge relation curves defined by discharge measurements. If extensions to the rating curves are necessary to define the extremes of discharge, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, or computation of flow over dams or weirs), velocity-area studies, and logarithmic plotting. The application of the daily mean gage height to those rating tables gives the daily mean discharge, from which the monthly and the yearly mean discharge are computed. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is deter-

mined by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is in effect the shifting-control method.

At some gaging stations the stage-discharge relation is affected by ice during the winter, and it becomes impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of the gage-height record and occasional winter discharge measurements, consideration being given to the available information on temperature and precipitation, notes by gage observers and engineers, and comparable records of discharge for other stations in the same or nearby basins.

For some gaging stations there are periods when no gage-height record is obtained or the recorded gage height is so faulty that it cannot be used to compute the daily discharge. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, float is frozen in the well, or for various other reasons. For such periods the daily discharges are estimated on the basis of recorded range in stage, adjoining good record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins.

The data in this report generally comprise a description of the station, a skeleton rating table, and a table showing the daily, monthly, and yearly discharge of the stream. Records are published for the water year which begins on October 1 and ends on September 30. A calendar for the 1965 water year is shown on page III to facilitate finding the day of the week for any date.

The description of the station gives the location, drainage area, records available, type and history of gages, average discharge, extremes of discharge, and general remarks. The location of the gaging station and the drainage area are obtained from the most accurate maps available. Under "Records available" are given periods for which there are published records for the present station or for stations generally equivalent to the present one. Under "Gage" are given the type of gage currently in use and the datum of the gage above mean sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of records available. The references to "datum of 1929" and adjustments of other years are to the datum and adjustments of the U.S. Coast and Geodetic Survey. Under "Average discharge" is given the average discharge for the number of years indicated. It is not

given for stations having fewer than five complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. Under "Extremes" are given the maximum discharge and gage height; the minimum discharge if there is little or no regulation; the minimum daily discharge if there is extensive regulation (also the minimum discharge if useful); and the minimum gage height if it is significant. In the first paragraph, the data given are for the complete current water year unless otherwise specified. In the second paragraph, the data given are for the periods of record within the calendar year dates in the heading (not necessarily those for the complete years indicated by the heading dates). Reliable information concerning major floods that have occurred outside the period of record are given in the third or last paragraph under "Extremes." Unless otherwise qualified, the maximum discharge corresponds to the crest stage obtained by use of a water-stage recorder, a crest-stage indicator, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur at the same time as the maximum discharge, it is given separately. Information pertaining to the accuracy of the records and to conditions which affect the natural flow at the gaging station is given under "Remarks."

Skeleton rating tables are published for all stations except those for which the daily discharge for the greater part of the open-water period was determined by the shifting-control method or other special methods involving an equivalent adjustment to the gage height of more than one-tenth foot. Skeleton rating tables generally are not published for canals or ditches.

The daily table gives the discharge corresponding to the daily mean gage height unless there are large or rapid changes in discharge during the day. For days having large or rapid changes, discharge for the day is computed by averaging the mean discharges for several parts of a day. For digital recorders, the daily mean discharge is always the average of the discharges at each punched reading. For stations equipped with nonrecording gages, the daily discharge corresponds to once-daily readings of the gage or to the mean of twice-daily readings; but for periods of rapidly changing stage the discharge is determined from a gage-height graph based on gage readings.

In the table of daily discharge, the figures for the maximum day and the minimum day for each month are underlined. If the figure is repeated, it is underlined only on the first day of its occurrence.

In the monthly summary below the daily table, the line headed "Total" gives the sum of the daily figures; it is the total cfs-days



for the month. The line headed "Mean" gives the average flow in cubic feet per second during the month. Discharge for the month is expressed in acre-feet (line headed "Ac-ft").

In the yearly summary below the monthly summary, the figures of maximum are the maximum daily discharges, not the momentary discharges when the water was at crest stage. Likewise, the minimums in this summary are the minimum daily discharges.

Peak discharges and the times of their occurrence and corresponding gage heights for most stations are listed below the table of daily and monthly discharge. All independent peaks above the selected base are given. The base discharge, which is given in parentheses, is selected so that an average of about three peaks a year can be presented. Peak discharges are not published for any stream for which the peaks are subject to substantial control by man. Time of day is expressed in 24-hour time, for example 12:30 a.m. is 0030, 1:30 p.m. is 1330.

Footnotes to the table of daily discharge indicate periods for which discharge was computed or estimated by unusual or special methods because of no gage-height record, ice effect, or other conditions that reduce the degree of accuracy of the records. The footnotes are either reference footnotes, with corresponding symbols used in the table of daily discharge to indicate the days included, or general footnotes, introduced by the word "Note," in which the days included are stated. The methods used in computing data for such footnoted periods have been explained in preceding paragraphs.

For most gaging stations on lakes and reservoirs the data presented comprise a description of the station, a monthly summary table of stage and contents. For some reservoirs a table showing daily contents or stage is given. A skeleton table of capacity at given stages is published each year for all reservoirs for which records are published on a daily basis, but it is not published for reservoirs for which only monthly data are given.

#### ACCURACY OF FIELD DATA AND COMPUTED RESULTS

The accuracy of streamflow data depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of observations of stage, measurements of discharge, and interpretation of records.

The station description states the degree of accuracy of the records. "Excellent" indicates that, in general, the error in the daily records is believed to be less than 5 percent; "good," less than 10 percent; "fair," less than 15 percent; and "poor," probably

more than 15 percent. The records of monthly and yearly mean discharge and runoff are, in general, more nearly accurate than the daily records.

Discharge at some stations, as indicated by the monthly mean, may vary widely from natural runoff, owing to diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For a few such stations, monthly and annual figures are adjusted for diversions or storage above station. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur when relatively large negative adjustments are made or when evaporation is large in comparison with the observed discharge.

#### SUPPLEMENTAL DATA

Data collected at partial-record stations and at miscellaneous sites are given at the end of this report. Data for partial-record stations are presented in a table of discharge measurements at low-flow partial-record stations. Discharge measurements at miscellaneous sites are given in a second table.

Information of a more detailed nature than that published for most of the gaging stations is on file in the district office, such as discharge measurements and recorder charts or nonrecording-gage readings. Some gaging-station records in the State through 1957 have been analyzed with an electronic computer to give: (1) the number of days in each year that the daily discharge was between selected limits (duration tables); (2) the lowest mean discharge for selected numbers of consecutive days in each year; and (3) the highest mean discharge for selected numbers of consecutive days in each year. At some gaging stations water samples are collected from the stream for the purpose of making chemical analyses, measuring water temperatures, or computing dissolved solids, suspended sediment loads, and particle-size distribution. For most of these samples, the results are published in Part 2 of this report. A reference is made herein, under the "Remarks" paragraph of the gaging station description, to water quality records collected on a regular basis. Information on the availability of electronic computer analyses, unpublished data, or quality of water records may generally be obtained from the district office.

RECORDS OF DISCHARGE COLLECTED BY AGENCIES OTHER THAN THE  
GEOLOGICAL SURVEY

9

The table below contains a list of gaging stations at which records of discharge were collected during the water year October 1964 to September 1965 by the Colorado Springs Water Department. The records of these stations are not contained in publications of the Geological Survey.

Stream	Location	Period
Bear Creek.....	Near Colorado Springs, Colo.....	1918-65*
Boehmer Creek.....	Near Pikes Peak, Colo.....	1909-65*
Cabin Creek.....	Near Halfway, Colo.....	1906-65*
Crystal Creek.....	Below reservoir near Green Mountain Falls, Colo.	1935-65
Do.....	Near Green Mountain Falls, Colo.	1935-65
French Creek.....	Near Cascade, Colo.....	1935-65
Lion Creek.....	Near Halfway, Colo.....	1908-65*†
Little Beaver Creek..	Near Pikes Peak, Colo.....	1909-65*†
North Cascade Creek..	At Cascade, Colo.....	1935-65
North Catamount Creek	Near Green Mountain Falls, Colo.	1935-65†
Sackett Creek.....	Near Pikes Peak, Colo.....	1909-65*†
Sheep Creek.....	Near Halfway, Colo.....	1908-65*†
South Cascade Creek..	At Cascade, Colo.....	1935-65†
South Catamount Creek	Below reservoir near Green Mountain Falls, Colo.	1935-65
Do.....	Near Green Mountain Falls, Colo.	1935-65
South Ruxton Creek...	At Halfway, Colo.....	1906-65*
Sutherland Creek.....	Near Manitou, Colo.....	1918-65*

\* Records prior to 1931 are contained in water-supply papers published by the Geological Survey.

† Records prior to 1951 published in WSP 1311.

## PLATTE RIVER BASIN

6-6160. North Fork Michigan River near Gould, Colo.

Location.--Lat 40°32'58", long 106°01'14", in SE¼ sec. 27, T.7 N., R.77 W., on left bank 25 ft upstream from county road bridge, 0.7 mile downstream from dam on recreation lake, 1.6 miles north of Gould, 2.8 miles upstream from mouth, and 19 miles southeast of Walden. Prior to Oct. 6, 1964, at site 0.6 mile upstream and Oct. 6, 1964, to Aug. 10, 1965, at site a quarter of a mile upstream.

Drainage area.--21.2 sq mi.

Records available.--October 1950 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 8,793 ft above mean sea level, unadjusted. Prior to Oct. 6, 1964, at site 0.6 mile upstream at datum 55.00 ft higher. Oct. 6, 1964, to Aug. 10, 1965, at site a quarter of a mile upstream at different datum.

Average discharge.--15 years, 17.2 cfs (12,450 acre-ft per year).

Extremes.--Maximum discharge during year, 204 cfs May 23 (gage height, 4.39 ft, site and datum then in use), from rating curve extended above 140 cfs; minimum daily, 2.2 cfs Feb. 11, 12.  
1950-65: Maximum discharge, 290 cfs May 25, 1961 (gage height, 3.15 ft, site and datum then in use), from rating curve extended above 160 cfs; maximum gage height recorded, 3.96 ft Apr. 17, 1962 (backwater from ice), site and datum then in use; no flow Dec. 11, 1963, to Apr. 30, 1964, caused by filling recreation lake upstream.

Remarks.--Records good except those for period of no gage-height record, which are poor. One small diversion above station to Canadian River drainage. Slight natural regulation by recreation lake (capacity, 1,250 acre-ft) since Dec. 11, 1963.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1-5, Apr. 26)

Oct. 6 to Aug. 10

Aug. 11 to Sept. 30

2.4	8.0	2.3	6.2
3.0	38	2.7	22
3.3	62		
3.7	109		
4.2	176		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.4	3.0	2.8	2.6	2.4	2.8	3.2	4.5	101	34	18	9.8
2	4.2	3.4	2.8	2.6	2.6	2.8	3.4	71	*99	34	16	9.1
3	4.4	3.2	*2.8	2.8	2.8	2.6	3.4	84	99	32	18	9.1
4	4.4	3.0	2.8	3.0	*3.0	2.6	3.4	*79	97	30	18	9.1
5	4.2	2.8	2.8	3.0	3.0	2.6	3.4	68	89	29	16	9.8
6	4.3	3.0	2.6	3.0	3.0	2.6	3.4	43	85	28	*14	14
7	4.2	3.0	2.8	3.0	2.8	2.6	*3.6	36	110	26	12	11
8	4.2	*2.8	3.0	*2.8	2.6	2.8	3.6	33	*117	26	12	9.8
9	4.2	2.8	3.0	2.8	2.4	2.8	3.8	32	125	25	11	9.1
10	4.4	2.6	3.0	2.8	2.4	*2.8	3.8	31	139	24	11	*8.4
11	4.2	2.6	3.0	2.8	2.2	2.8	3.8	30	149	20	11	8.7
12	4.6	2.8	3.0	2.8	2.2	3.2	3.6	32	130	24	*11	11
13	4.6	2.6	3.0	2.8	2.4	3.2	3.6	37	152	24	11	9.1
14	3.8	2.6	3.0	2.8	2.4	3.0	3.6	38	131	22	11	7.6
15	3.8	2.4	3.2	2.8	2.6	2.8	3.8	32	126	*20	13	6.2
16	3.6	2.6	3.2	2.6	2.8	3.0	4.4	36	135	18	14	7.3
17	3.6	3.0	3.2	2.6	2.8	3.0	4.4	71	*135	18	13	7.6
18	3.6	2.8	3.4	2.6	2.8	2.6	4.2	84	117	21	17	11
19	3.4	3.0	3.4	2.6	2.8	2.8	5.0	*82	100	20	15	14
20	3.2	3.2	3.4	2.6	2.6	3.0	15	109	88	22	15	15
21	3.2	2.8	3.4	2.8	2.6	3.2	20	134	79	19	13	13
22	3.2	3.0	3.4	2.8	2.6	3.2	34	155	72	20	13	11
23	3.2	3.0	3.2	2.8	2.6	3.2	44	169	65	28	13	13
24	3.2	3.0	3.0	2.6	2.6	2.8	36	152	57	34	14	13
25	3.2	3.0	3.0	2.6	2.8	3.0	22	108	52	34	12	15
26	3.2	3.0	2.8	2.8	3.0	3.0	*19	85	48	26	10	16
27	3.0	3.0	2.8	2.8	3.0	3.0	18	72	44	22	9.1	16
28	3.0	3.0	2.8	2.8	2.8	2.8	18	60	40	19	8.7	15
29	3.0	2.8	2.8	2.8	-	2.8	19	62	*37	17	9.8	20
30	3.2	2.8	2.6	2.8	-----	2.8	28	82	36	16	13	19
31	3.2	-----	2.6	2.4	-----	2.8	-----	100	-----	18	11	-----
Total	115.9	86.6	92.6	85.4	74.6	89.0	344.4	2,252	2,854	750	403.6	348.4
Mean	3.74	2.89	2.99	2.75	2.66	2.87	11.5	72.6	95.1	24.2	13.0	11.6
Ac-ft	230	172	184	169	148	177	683	4,470	5,660	1,490	801	691

Calendar year 1964: Max 194

Min 0

Mean 14.5

Ac-ft 10,520

Water year 1964-65: Max 169

Min 2.2

Mean 20.5

Ac-ft 14,880

Peak discharge (base, 100 cfs).--May 23 (2350) 204 cfs (4.39 ft); June 13 (0700) 166 cfs (4.13 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 6 to Apr. 26 (stage-discharge relation affected by ice during most of period), July 14, 15, Aug. 10, 11.

6-6200. North Platte River near Northgate, Colo.

Location.--Lat 40°56'10", long 106°20'21", in SW¼SE¼ sec.11, T.11 N., R.80 W., on right bank 350 ft downstream from bridge on State Highway 125, 0.8 mile upstream from Camp Creek, 4.2 miles northwest of Northgate, and 4.4 miles south of Colorado-Wyoming State line.

Drainage area.--1,431 sq mi.

Records available.--May to November 1904 (published as "near Pinkhampton"), May 1915 to September 1965. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 7,810.39 ft above mean sea level, adjustment of 1912. May 11 to Nov. 9, 1904, staff gage 0.8 mile downstream at different datum. Apr. 30, 1915, to May 12, 1916, staff gage, May 13, 1916, to Sept. 17, 1917, chain gage, Sept. 18, 1917, to Apr. 7, 1918, staff gage, and Apr. 8, 1918, to Aug. 21, 1961, water-stage recorder, at site 0.8 mile downstream at datum 3.36 ft lower.

Average discharge.--50 years, 436 cfs (315,700 acre-ft per year).

Extremes.--Maximum discharge during year, 3,820 cfs June 15 (gage height, 6.15 ft); maximum gage height, 7.49 ft Apr. 17 (backwater from ice); minimum daily discharge, 48 cfs Oct. 3-5.

1904, 1915-65: Maximum discharge, 6,720 cfs June 11, 1923 (gage height, 6.24 ft, site and datum then in use); maximum gage height recorded, 8.84 ft Apr. 9, 1962; minimum daily discharge, 19 cfs July 17-19, 1934.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 130,000 acres of hay meadows above station. Transbasin diversions above station to Cache la Poudre River basin (see elsewhere in this report).

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 28 to July 4)

1.8	42	4.0	1,200
1.9	57	5.0	2,310
2.2	112	6.0	3,650
2.7	260	6.9	5,100
3.2	510		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	54	66	120	86	70	68	150	1,430	777	1,280	912	284
2	50	66	120	86	68	64	146	1,660	*975	1,230	768	256
3	48	66	*116	90	*70	62	130	1,820	957	1,340	687	239
4	48	66	112	95	76	60	120	*1,850	993	1,320	795	242
5	48	68	108	105	80	60	122	1,840	1,230	1,300	723	242
6	50	69	105	105	80	60	*134	1,720	1,460	1,260	*580	327
7	52	68	100	105	76	60	150	1,460	1,240	1,200	498	385
8	*52	*68	100	*96	72	60	190	1,210	1,510	1,130	450	355
9	54	63	100	92	70	62	300	1,100	1,750	1,130	417	309
10	57	70	98	90	70	*66	450	939	1,970	1,210	390	*284
11	57	76	94	94	70	68	450	867	2,350	1,160	370	260
12	58	74	90	96	72	72	450	840	3,080	1,190	360	250
13	58	74	88	100	76	74	440	939	3,570	1,200	380	256
14	58	74	92	100	72	76	400	1,100	3,610	*1,120	390	239
15	56	74	96	100	70	74	410	1,280	3,720	1,070	480	215
16	58	78	92	94	70	70	500	1,110	3,310	1,050	510	205
17	57	84	88	90	70	66	700	1,110	*3,090	1,060	492	246
18	52	74	86	90	70	64	1,190	1,320	3,020	1,130	559	272
19	62	70	90	90	72	66	1,160	*1,500	3,100	1,240	628	309
20	57	64	94	89	76	72	1,150	1,590	3,050	1,260	759	365
21	54	66	100	92	80	76	1,610	1,530	2,780	1,200	678	390
22	57	80	100	96	76	76	*2,270	1,630	2,510	1,100	524	400
23	57	98	120	90	70	74	2,290	1,740	2,320	1,060	517	439
24	57	100	120	86	70	74	2,260	1,830	2,190	1,200	480	474
25	60	115	100	84	76	74	1,840	1,800	2,180	1,220	428	428
26	58	120	100	88	80	76	1,480	1,780	2,150	1,220	365	385
27	57	115	100	92	78	80	1,200	1,610	1,930	1,140	314	375
28	60	112	100	100	74	98	1,030	1,350	1,530	984	288	375
29	60	120	94	100	-	110	1,020	939	*1,280	867	268	428
30	62	120	90	90	-----	110	1,180	669	1,230	777	276	524
31	62	-----	86	78	-----	140	-----	628	-----	777	292	-----
Total	1,730	2,455	3,099	2,889	2,054	2,312	24,922	42,191	64,862	35,425	15,578	9,758
Mean	55.8	81.8	100	93.2	73.4	74.6	831	1,361	2,162	1,143	503	325
Ac-ft	3,430	4,870	6,150	5,730	4,070	4,590	49,430	83,680	128,700	70,260	30,900	19,350

Calendar year 1964: Max 1,190 Min 32 Mean 242 Ac-ft 175,700  
 Water year 1964-65: Max 3,720 Min 48 Mean 368 Ac-ft 411,200

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4-8, Nov. 13 to Apr. 19 (no gage-height record Mar. 18 to Apr. 7).

## PLATTE RIVER BASIN

6-6575. Laramie River near Glendevy, Colo.

Location.--Lat 40°48'00", long 105°52'40", in NW¼ sec.25, T.10 N., R.76 W., on left bank just upstream from Stub Creek, 180 ft downstream from bridge on county road, 250 ft downstream from Nunn Creek, and 1½ miles north of Glendevy Post Office.

Drainage area.--101 sq mi.

Records available.--June 1904 to October 1905, August 1910 to September 1965. Monthly discharge only for some periods, published in WSP 1310. Published as "at Glendevy" 1905, 1910-18.

Gage.--Water-stage recorder. Altitude of gage is 8,230 ft (from topographic map). Prior to Nov. 7, 1910, staff gage. Prior to Sept. 21, 1922, at datum 1.22 ft higher, Sept. 21, 1922, to Sept. 26, 1923, at datum 1.94 ft higher, July 9, 1929, to July 22, 1931, at datum 2.73 ft higher, and July 23, 1931, to Sept. 19, 1935, at datum 2.09 ft higher; all at site 180 ft upstream. Sept. 27, 1923, to July 8, 1929, at site 140 ft upstream at datum 1.35 ft higher.

Average discharge.--56 years, 73.5 cfs (53,210 acre-ft per year).

Extremes.--Maximum discharge during year, 860 cfs June 16 (gage height, 4.00 ft); minimum daily, 12 cfs Feb. 11-14. 1904-5, 1910-65: Maximum discharge, 2,240 cfs June 9, 1923 (gage height, 4.55 ft, site and datum then in use, from floodmarks), from rating curve extended above 1,400 cfs; minimum daily recorded, 5 cfs Feb. 14, 15, 1911, but may have been less during winter periods of no gage-height record.

Remarks.--Records good except those for periods of ice effect, which are fair. Diversions for irrigation of about 700 acres of hay meadows above station. Transbasin diversions above station to Cache la Poudre River and tributaries (see elsewhere in this report).

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.6	11	2.0	190
.8	20	3.0	440
1.0	38	4.0	860
1.5	100		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	20	17	15	13	14	18	76	270	236	52	58
2	24	22	17	14	14	13	18	94	*260	250	42	56
3	24	21	*16	15	*16	13	18	109	288	246	41	57
4	24	18	16	16	16	13	18	*110	272	285	42	59
5	24	20	15	16	16	13	18	115	250	280	*37	64
6	26	20	14	16	16	13	17	98	260	270	34	90
7	24	*20	14	16	15	13	*18	85	340	210	31	70
8	*23	19	15	*15	13	14	19	80	377	190	29	66
9	23	19	15	15	13	*15	20	73	446	192	31	72
10	25	18	15	15	13	13	20	70	570	152	78	62
11	24	17	15	15	12	15	20	65	750	134	97	*58
12	26	20	15	15	12	16	18	67	700	115	110	66
13	26	18	16	15	12	15	19	81	760	103	98	58
14	22	22	16	15	12	15	18	94	735	*75	97	51
15	23	17	17	15	13	15	19	102	735	70	96	49
16	22	18	18	14	14	16	22	104	835	64	71	56
17	22	21	20	14	15	13	22	118	815	60	57	57
18	21	19	21	14	15	13	20	152	*790	73	50	75
19	20	22	21	14	14	14	23	*162	745	81	37	80
20	20	22	21	14	14	16	40	166	685	67	37	77
21	20	20	21	14	14	17	52	190	685	66	30	67
22	20	17	20	14	14	16	66	236	680	80	36	66
23	20	18	19	13	13	15	77	330	635	86	30	73
24	20	18	16	13	14	15	70	335	574	73	31	75
25	20	18	15	14	15	17	53	260	594	134	66	88
26	20	18	15	14	15	15	48	204	549	91	67	94
27	19	17	15	14	15	15	41	174	452	68	64	89
28	20	17	15	14	15	15	46	146	413	58	61	94
29	19	18	14	14	-	15	54	160	*305	54	61	110
30	21	18	14	15	-	16	62	212	252	47	75	91
31	21	-----	14	14	-----	15	-----	260	-----	58	62	-----
Total	689	572	512	451	393	453	974	4,528	16,022	3,968	1,750	2,128
Mean	22.2	19.1	16.5	14.5	14.0	14.6	32.5	146	534	128	56.5	70.9
Ac-ft	1,370	1,130	1,020	895	780	899	1,930	8,980	31,780	7,870	3,470	4,220

Calendar year 1964: Max 345 Min 13 Mean 58.1 Ac-ft 42,200  
 Water year 1964-65: Max 835 Min 12 Mean 88.9 Ac-ft 64,340

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 15-18, 21, 22, 24, 27, 28, Dec. 3-8, 25, 26, 29-31, Jan. 2, 17, 18, 20, 23, Feb. 1, 2, Feb. 7 to Mar. 29.

6-6950. South Platte River above Elevenmile Canyon Reservoir, near Hartsel, Colo.

Location.--Lat 38°58'03", long 105°34'51", in NE¼ sec.32, T.12 S., R.73 W., on left bank 200 ft downstream from highway bridge, 2.5 miles upstream from water line of Elevenmile Canyon Reservoir at elevation 8,561 ft, and 13 miles southeast of Hartsel.

Drainage area.--880 sq mi.

Records available.--June 1933 to September 1965 (no winter records prior to 1940). Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 8,612.83 ft above mean sea level (datum of Denver Board of Water Commissioners). Prior to May 27, 1939, water-stage recorder near present site at different datum. May 27, 1939, to Nov. 4, 1961, at datum 0.46 ft lower.

Average discharge.--26 years (1939-65), 81.7 cfs (59,150 acre-ft per year).

Extremes.--Maximum discharge during year, 818 cfs Aug. 2 (gage height, 3.77 ft); minimum not determined.

1933-65: Maximum discharge recorded, 1,290 cfs June 19, 1949; maximum gage height, 4.76 ft (present datum) July 22, 1957; minimum daily discharge recorded, 0.9 cfs Apr. 22, 1940.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Flow regulated by Antero Reservoir (capacity, 22,300 acre-ft). Many small diversions above station for irrigation of about 24,000 acres..

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.3	14	1.6	218
.5	32	2.0	310
.8	69	3.0	576
1.2	136	3.8	828

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	19							42	378	756	222
2	23	20							65	409	794	170
3	23	21							72	417	672	152
4	20	19							102	417	*573	150
5	20	17						105	251	391	531	147
6	20	18		(*)					281	376	464	156
7	20	20							222	355	428	164
8	20	20	(*)				65		200	357	404	178
9	*19	20						50	196	363	383	172
10	20	24						50	222	404	378	158
11	23	19						60	286	461	368	150
12	27	14						52	467	472	352	150
13	26	*14						*75	329	514	312	145
14	24	15						122	240	*548	264	*134
15	26	15					(*)	120	227	481	236	120
16	25	14	9	16	15	30						
17	24	13					b70	102	*236	467	222	89
18	23	12					b115	98	342	472	428	79
19	23	13		(*)			b180	114	475	464	489	75
20	21	14					b350	166	514	523	565	90
							520	164	475	554	*639	109
21	20	14					556	185	443	554	663	129
22	20	15					*486	214	417	542	600	131
23	20	14	(*)				460	236	378	559	492	149
24	22	18					360	211	391	612	412	174
25	22	16			(*)	(*)	310	147	412	642	370	203
26	21	16						150	404	573	339	200
27	22	15						132	355	500	324	192
28	23	15						109	312	559	315	185
29	23	15						72	296	565	324	187
30	*22	15						51	327	537	344	185
31	21	-----			-----		-----	50	-----	630	291	-----
Total	689	494	279	496	420	930	5,532	3,570	8,979	15,096	13,732	4,545
Mean	22.2	16.5	9	16	15	30	184	115	299	487	443	152
Ac-ft	1,370	980	553	984	833	1,840	10,970	7,080	17,810	29,940	27,240	9,010

Calendar year 1964: Max 354 Min - Mean 40.4 Ac-ft 29,360  
 Water year 1964-65: Max 794 Min - Mean 150 Ac-ft 108,600

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 13 to Apr. 15 (stage-discharge relation affected by ice during most of period), Apr. 22 to May 8.

## PLATTE RIVER BASIN

6-6960. South Platte River near Lake George, Colo.

Location.--Lat 38°54'19", long 105°28'22", in SW¼ sec.20, T.13 S., R.72 W., on left bank 700 ft downstream from Elevenmile Canyon Reservoir and 8.2 miles southwest of town of Lake George.

Drainage area.--963 sq mi.

Records available.--October 1929 to September 1965. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 8,458 ft (from topographic map). Prior to Oct. 26, 1940, at site 1 mile downstream at datum 8,423.95 ft above mean sea level, adjustment of 1912.

Average discharge.--36 years, 71.0 cfs (51,400 acre-ft per year).

Extremes.--Maximum discharge during year, 453 cfs July 22 (gage height, 3.62 ft); minimum daily, 6.8 cfs Aug. 13. 1929-65: Maximum discharge, 990 cfs Aug. 15, 1930, from rating curve extended above 600 cfs; maximum gage height, 5.85 ft June 20, 1949; no flow at times in January 1930, February 1931, November 1935.

Remarks.--Records good. Natural flow of stream affected by transmountain diversions through East and West Hoosier ditches at Hoosier Pass prior to 1941, storage in Elevenmile Canyon Reservoir (see elsewhere in this report) and Antero Reservoir (capacity, 22,300 acre-ft), diversions for irrigation, and return flow from irrigated areas.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.2	4.0	1.5	115
.3	8.0	2.0	182
.5	19	3.0	337
1.0	60	4.0	531

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	20	20	19	26	13	36	217	105	27	53	157
2	20	20	20	19	26	13	52	148	46	26	53	157
3	20	20	20	19	26	17	85	90	43	26	54	110
4	21	20	20	19	26	19	117	73	40	26	*55	85
5	21	20	20	*19	36	19	126	64	70	26	53	79
6	21	20	20	19	48	19	81	53	136	25	52	78
7	21	20	20	19	48	19	59	40	185	25	53	78
8	21	20	*20	19	48	20	46	40	200	25	53	52
9	*21	20	20	19	48	20	40	40	200	120	53	52
10	20	20	20	19	48	22	54	40	200	332	53	52
11	20	20	20	19	48	24	88	36	200	377	53	51
12	20	20	20	19	33	24	102	29	*271	394	38	51
13	20	*20	20	19	13	24	102	*28	300	409	6.8	98
14	20	20	20	20	13	24	102	30	253	445	16	*119
15	20	20	20	20	13	24	84	30	200	445	15	92
16	20	20	20	20	13	24	74	31	*168	445	24	60
17	20	20	20	20	13	27	74	56	150	445	52	18
18	20	20	20	20	13	28	76	76	183	445	53	10
19	20	20	20	*20	13	28	146	76	327	366	53	10
20	20	20	20	24	13	28	289	104	398	297	52	10
21	20	20	19	26	13	29	377	127	400	449	53	10
22	20	20	*19	26	13	29	394	141	252	449	53	9.5
23	20	20	19	26	13	29	392	151	26	148	53	9.5
24	20	20	19	26	*13	29	392	181	26	53	53	9.5
25	20	21	19	26	13	*29	392	235	26	54	53	9.5
26	20	21	19	26	13	29	390	179	26	53	53	9.5
27	20	21	19	26	13	29	390	128	26	53	53	9.5
28	20	20	19	26	13	29	388	128	28	55	99	9.5
29	20	20	19	26	-	29	363	130	27	52	155	9.5
30	*20	20	19	26	-----	29	271	130	27	52	157	10
31	20	-----	19	26	-----	28	-----	130	-----	55	157	-----
Total	626	603	609	677	669	754	5,582	2,961	4,539	6,199	1,833.8	1,515.0
Mean	20.2	20.1	19.6	21.8	23.9	24.3	186	95.5	151	200	59.2	50.5
Ac-ft	1,240	1,200	1,210	1,340	1,330	1,500	11,070	5,870	9,000	12,300	3,640	3,000

Calendar year 1964: Max 423 Min 4.0 Mean 83.6 Ac-ft 60,660  
 Water year 1964-65: Max 449 Min 6.8 Mean 72.8 Ac-ft 52,700

\* Discharge measurement made on this day.



## PLATTE RIVER BASIN

15

6-7005. Goose Creek above Cheesman Lake, Colo.  
(Known also as Lost Park Creek)

Location.--Lat 39°12'32", long 105°18'11", in sec.2, T.10 S., R.71 W., on right bank 1 mile upstream from water line of Cheesman Lake at elevation 6,842 ft and 1.7 miles west of Cheesman Dam.

Drainage area.--86.6 sq mi.

Records available.--August to December 1899, October 1924 to September 1965 (no winter records in some years). Monthly discharge only for some periods, published in WSP 1310. Published as "at Lake Cheesman" 1899.

Gage.--Water-stage recorder and compound rectangular weir. Altitude of gage is 6,910 ft (from topographic map). Aug. 1 to Dec. 31, 1899, staff gage at site about 2 miles downstream at different datum.

Average discharge.--28 years (1924-30, 1935-36, 1939-41, 1943-47, 1950-65), 27.3 cfs (19,760 acre-ft per year).

Extremes.--Maximum discharge during year, 280 cfs June 12 (gage height, 2.90 ft); minimum not determined.

1924-65: Maximum discharge, 487 cfs June 9, 1957, from rating curve extended above 170 cfs; maximum gage height, 4.57 ft May 30, 1942; minimum discharge not determined.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Small diversions above station for irrigation of about 100 acres.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

0.4	6.0	1.7	82
.5	9.0	2.3	158
.8	22	2.9	280
1.3	49		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.8							80	109	80	249	68
2	8.7							94	103	79	174	65
3	8.4							112	102	72	171	62
4	8.4							118	106	66	*155	59
5	8.4			(*)				108	132	61	139	60
6	8.4							94	158	58	132	71
7	8.7							87	187	54	124	61
8	*8.4							89	138	58	117	80
9	8.4							68	134	51	112	62
10	8.4	(*)						67	145	48	110	53
11	9.4						12	58	*183	47	100	48
12	10							72	257	50	92	45
13	9.4							*85	230	55	89	42
14	9.0						(*)	96	205	*50	86	*39
15	8.1							74	*196	43	139	37
16	8.1	8	6	6	5.5	4.5		70	196	39	106	37
17	8.4							105	197	39	120	37
18	8.7			(*)				121	183	62	139	37
19	7.8							116	174	67	*128	70
20	7.5							123	153	87	145	72
21	7.8							38	120	139	47	99
22	7.5		(*)					*40	127	131	52	100
23	7.2							44	148	124	115	96
24	7.8				(*)			56	178	120	120	91
25	8.6					(*)		58	138	114	83	87
26	8.2							58	132	106	91	83
27	7.8							42	141	97	84	80
28	7.7							41	123	91	106	77
29	7.7							118	85	82	77	45
30	*7.8							114	81	71	84	50
31	8.2							111		145	75	
Total	258.7	240	186	186	154.0	139.5	731	3,287	4,376	2,162	3,576	1,701
Mean	8.35	8	6	6	5.5	4.5	24.4	106	146	69.7	115	56.7
Ac-ft	513	476	369	369	305	277	1,450	6,520	8,680	4,290	7,090	3,370

Calendar year 1964: Max 121 Min - Mean 19.8 Ac-ft 14,360  
Water year 1964-65: Max 257 Min - Mean 46.6 Ac-ft 33,710

Peak discharge (base, 110 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-4	0730	2.16	136	6-12	1500	2.90	280	7-23	1600	2.32	161	8-15	1730	2.36	168
5-24	1200	2.49	190	7-20	1300	2.18	139	8-1	1400	2.88	275	8-18	1900	2.41	168
6-7	1130	2.63	216												

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 25 to Apr. 22 (stage-discharge relation affected by ice during most of period).

## PLATTE RIVER BASIN

6-7015. South Platte River below Cheesman Lake, Colo.

Location.--Lat 39°12'33", long 105°16'02", in SE¼NW¼ sec.6, T.10 S., R.70 W., on left bank 1,400 ft downstream from toe of Cheesman Dam and 4 miles southwest of Deckers.

Drainage area.--1,752 sq mi.

Records available.--October 1924 to September 1965. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 6,609.29 ft above mean sea level, datum of 1929. Prior to May 14, 1956, at site 370 ft upstream at datum 0.50 ft higher.

Average discharge.--41 years, 154 cfs (111,500 acre-ft per year).

Extremes.--Maximum discharge during year, 867 cfs Apr. 25-27 (gage height, 3.57 ft); minimum daily, 8.3 cfs Oct. 31.  
1924-65: Maximum discharge, 3,020 cfs Apr. 23, 1942 (gage height, 8.46 ft, site and datum then in use), from rating curve extended above 1,800 cfs; minimum daily determined, 1.6 cfs Apr. 8-14, 1957.

Remarks.--Records excellent. Natural flow of stream affected by minor transmountain diversion from Colorado River basin through Boreas Pass ditch (see elsewhere in this report), Elevenmile Canyon Reservoir and Cheesman Lake (see elsewhere in this report), diversions for irrigation of about 40,000 acres, and return flow from irrigated areas.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.2	5.1	1.5	216
.3	13	2.0	343
.4	23	3.0	656
.6	50	4.0	1,040
1.0	113		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	9.0	9.0	11	13	11	11	343	233	21	49	354
2	13	9.0	9.0	11	13	11	11	329	203	21	49	335
3	14	9.0	9.0	11	13	12	11	272	203	23	50	321
4	14	9.0	9.0	11	13	11	11	221	205	23	*44	269
5	15	9.0	9.0	*11	13	11	12	160	115	23	35	247
6	15	9.8	9.0	11	13	11	12	117	73	23	35	254
7	15	11	9.0	11	12	11	12	87	96	61	35	245
8	*18	11	9.0	11	12	11	12	70	97	158	35	259
9	11	11	*9.0	12	12	11	48	72	81	190	35	235
10	9.0	*11	9.0	12	12	11	86	62	28	388	92	212
11	11	12	9.0	12	12	11	65	50	14	475	174	196
12	12	12	9.0	12	12	11	57	40	21	365	201	187
13	13	13	9.0	12	12	11	44	*164	21	446	216	176
14	13	13	9.0	13	11	11	*91	282	21	667	207	*194
15	13	13	9.0	13	11	12	98	269	21	764	203	214
16	13	13	9.0	13	11	12	73	250	21	836	274	194
17	13	13	9.8	12	11	12	61	269	21	779	316	168
18	13	12	9.8	*12	11	12	56	303	21	710	335	147
19	13	12	11	12	11	12	78	319	21	735	157	158
20	14	12	11	12	11	12	168	354	21	663	40	203
21	13	9.8	9.8	12	9.8	12	281	377	21	519	49	196
22	13	9.8	*9.8	12	9.8	12	503	377	21	441	121	194
23	13	9.8	9.0	13	11	12	688	420	23	49	189	198
24	13	9.8	9.8	13	*11	12	739	459	22	50	205	210
25	13	*9.8	9.8	13	11	*11	817	399	23	50	252	207
26	13	9.8	9.8	14	11	11	867	437	22	50	269	192
27	13	9.8	9.8	14	11	12	688	397	23	51	282	172
28	13	9.8	9.8	13	11	12	611	360	22	50	274	156
29	*13	9.8	11	13	-	11	558	327	21	50	313	147
30	9.0	9.0	11	13	-----	11	429	308	20	86	365	146
31	8.3	-----	11	13	-----	11	-----	292	-----	67	365	-----
Total	401.3	321.0	296.2	378	324.6	354	7,198	8,186	1,755	8,834	5,266	6,386
Mean	12.9	10.7	9.55	12.2	11.6	11.4	240	264	58.5	285	170	213
Ac-ft	796	637	588	750	644	702	14,280	16,240	3,480	17,520	10,440	12,670

Calendar year 1964: Max 639 Min 3.9 Mean 122 Ac-ft 88,340  
Water year 1964-65: Max 867 Min 8.3 Mean 109 Ac-ft 78,750

\* Discharge measurement made on this day.

6-7060. North Fork South Platte River below Geneva Creek, at Grant, Colo.

Location.--Lat 39°27'28", long 105°39'28", in NW¼ sec.10, T.7 S., R.74 W., on left bank at Grant, 1,600 ft downstream from Geneva Creek and 1.3 miles downstream from east portal of Harold D. Roberts tunnel.

Drainage area.--127 sq mi.

Records available.--July 1908 to November 1913 (published as "at Cassells"), June 1942 to September 1965. Monthly discharge only for some periods, published in WSP 1310. December 1913 to March 1918 equivalent records may be obtained by summation of flow of North Fork South Platte River at Grant (above Geneva Creek) and Geneva Creek at Grant.

Gage.--Water-stage recorder. Datum of gage is 8,558.60 ft above mean sea level (Bureau of Reclamation bench mark). July 4 to Dec. 13, 1908, and May 23 to Nov. 30, 1913, staff gages at site 185 ft downstream from bridge at Santa Maria (formerly Cassells) about 2 miles downstream at various datums. Dec. 14, 1908, to May 22, 1913, chain gage on bridge at Santa Maria about 2 miles downstream at different datum. June 19, 1942, to Mar. 15, 1948, staff gage at site 1,200 ft upstream from present site at datum 13.07 ft higher. Mar. 16 to July 22, 1948, staff gage at site 400 ft upstream from present site at datum 6.35 ft higher than present datum.

Average discharge.--28 years, 73.8 cfs (53,430 acre-ft per year), adjusted for inflow from Harold D. Roberts tunnel since 1964.

Extremes.--Maximum discharge during year, 723 cfs June 16 (gage height, 4.42 ft), from rating curve extended above 320 cfs; minimum daily, 15 cfs Mar. 9-16, 18.

1908-13, 1942-65: Maximum discharge observed, 990 cfs June 7, 8, 1912 (gage height, 3.30 ft, site and datum then in use), from rating curve extended above 530 cfs by logarithmic plotting; maximum gage height, 4.72 ft, present site, Feb. 11, 1952 (backwater from ice); minimum daily discharge, 6.5 cfs Nov. 27, 1958.

Remarks.--Records good. Small diversions above station for irrigation of about 200 acres. Transmountain diversions from Colorado River basin to North Fork South Platte River above station through Harold D. Roberts tunnel (see elsewhere in this report).

Rating table (gage height, in feet, and discharge,  
in cubic feet per second)

(Shifting-control method used Mar. 5-22, Sept. 2-12)

2.4	13	3.3	160
2.6	27	3.7	295
2.8	52	4.4	675
3.0	85		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	187	75	68	70	19	21	91	*208	390	406	181
2	*31	190	75	66	68	18	23	111	194	396	374	197
3	32	190	76	66	51	18	22	113	200	401	346	204
4	34	190	*75	66	37	18	21	113	204	374	323	204
5	35	190	73	66	*37	17	21	106	204	357	*315	200
6	35	190	73	*66	38	17	22	96	190	346	307	200
7	36	194	71	66	37	17	22	87	*190	335	284	204
8	37	190	*73	68	36	16	23	80	208	331	253	208
9	*39	194	73	70	36	15	25	73	260	311	246	190
10	39	145	73	70	27	*15	37	73	*315	303	225	*181
11	41	70	73	70	21	15	63	71	362	307	200	181
12	38	123	73	71	25	15	87	134	327	327	187	175
13	39	*128	73	73	21	15	*113	181	357	303	178	197
14	41	125	71	73	21	15	123	*178	406	*284	184	197
15	70	123	71	75	21	15	125	166	472	267	184	*194
16	32	125	71	75	21	15	125	166	573	250	184	178
17	29	125	70	76	21	16	128	181	633	256	211	116
18	61	125	68	76	21	15	125	181	573	274	256	78
19	178	123	66	*76	21	16	130	184	567	278	307	91
20	184	123	66	76	21	16	136	200	555	292	*274	96
21	187	125	66	76	21	16	151	218	544	267	250	85
22	184	125	66	76	21	17	154	253	522	384	242	85
23	190	125	*66	73	21	18	166	256	516	374	222	96
24	190	125	66	71	21	18	148	225	484	412	204	91
25	190	93	66	71	*21	18	139	184	456	500	194	85
26	187	76	66	71	21	*18	128	166	423	379	194	80
27	187	75	66	71	21	18	96	148	390	346	204	75
28	187	75	68	71	21	18	48	145	384	327	200	73
29	187	75	70	71	-	19	55	151	390	295	204	76
30	*190	75	68	71	-----	19	71	169	401	307	200	71
31	190	-----	70	71	-----	20	-----	200	-----	484	194	-----
Total	3,134	4,019	2,177	2,206	819	522	2,548	4,700	11,508	10,457	7,552	4,289
Mean	101	134	70.2	71.2	29.2	16.8	84.9	152	384	337	244	143
Ac-ft	6,220	7,970	4,320	4,380	1,620	1,040	5,050	9,320	22,830	20,740	14,980	8,510

Calendar year 1964: Max 270 Min 13 Mean 96.4 Ac-ft 69,980

Water year 1964-65: Max 633 Min 15 Mean 148 Ac-ft 107,000

\* Discharge measurement made on this day.

## PLATTE RIVER BASIN

6-7070. North Fork South Platte River at South Platte, Colo.

Location.--Lat 39°24'30", long 105°10'30", in SW¼ sec.25, T.7 S., R.70 W., on left bank 0.2 mile west of South Platte and 0.3 mile upstream from mouth.

Drainage area.--479 sq mi.

Records available.--June 1909 to September 1910, April 1913 to September 1965. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 6,090.55 ft above mean sea level, adjustment of 1912. Prior to May 13, 1925, staff gage at same site and datum.

Average discharge.--53 years, 155 cfs (112,200 acre-ft per year), adjusted for inflow from Harold D. Roberts tunnel since 1964.

Extremes.--Maximum discharge during year, 1,260 cfs June 18; maximum gage height, 4.54 ft Aug. 1; minimum discharge not determined. 1909-10, 1913-65: Maximum discharge, 2,050 cfs June 13, 1949 (gage height, 6.30 ft); minimum observed, 4.0 cfs Dec. 8, 1932 (discharge measurement).

Remarks.--Records good except those for July 19 to Sept. 9, which are fair and those for periods of no gage-height record, which are poor. Small diversions above station for irrigation of about 2,000 acres. Transmountain diversions from Colorado River basin to North Fork South Platte River above station through Harold D. Roberts tunnel (see elsewhere in this report). Records of suspended sediment loads for the water year 1965 are published in Part 2 of this report.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 15, June 25 to Aug. 1, Sept. 10-15)

1.8	40	3.0	385
2.0	61	4.0	920
2.3	122	4.5	1,290
2.6	220		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 46	201					58	197	332	575	1,070	362
2	55	201					64	244	316	570	913	358
3	56	205					69	268	328	565	906	367
4	56	193					72	268	336	540	820	362
5	57	193		(*)			59	264	439	535	748	349
6	59	201					56	228	385	502	697	354
7	60	201					60	205	398	493	642	332
8	*59	201					60	190	394	488	600	362
9	57	201					67	166	* 457	466	565	316
10	56	*212	(*)		(*)	(*)	66	166	540	452	565	292
11	61	100					79	154	742	434	511	280
12	*63	94					105	157	766	457	480	272
13	59	131					145	*268	719	*462	448	272
14	60	145					* 160	284	796	430	444	*308
15	59	136					163	268	*906	398	466	300
16	81	139	100	90	42	30	170	256	997	372	452	296
17	51	145					176	276	1,050	358	493	272
18	48	145		(*)			179	304	1,140	403	585	186
19	131	142					170	292	1,110	426	658	212
20	193	139					179	316	1,050	484	670	248
21	197	98					193	336	983	426	550	228
22	201	77	(*)				205	372	934	585	575	224
23	209	100					* 218	425	864	610	502	236
24	209	148			(*)		222	408	790	631	475	228
25	209	*136				(*)	210	332	766	784	439	220
26	205	92					200	308	766	686	412	197
27	205	88					190	284	636	610	421	186
28	205	94					160	252	605	644	412	176
29	*205	98					145	244	595	585	408	186
30	205	105					154	264	600	530	408	182
31	205	-----			-----		-----	308	-----	206	385	-----
Total	3,622	4,361	3,100	2,790	1,176	930	4,054	8,304	20,740	16,407	17,720	8,163
Mean	117	145	100	90	42	30	135	268	691	529	572	272
Ac-ft	7,180	8,650	6,150	5,530	2,330	1,840	8,040	16,470	41,140	32,540	35,150	16,190

Calendar year 1964: Max 362 Min - Mean 130 Ac-ft 94,400  
Water year 1964-65: Max 1,140 Min - Mean 250 Ac-ft 181,200

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 28 to Apr. 2 (stage-discharge relation affected by ice during most of period), Apr. 12-14, 24-29.

6-7075. South Platte River at South Platte, Colo.

Location.--Lat 39°24'30", long 105°10'10", in SE¼ sec.25, T.7 S., R.70 W., on left bank at South Platte, 200 ft downstream from bridge on State Highway 75 and 400 ft downstream from North Fork.

Drainage area.--2,579 sq mi.

Records available.--July 1887 to September 1891, May to October 1892, October 1895 to September 1897, October 1898 to June 1900, October 1900 to September 1965. Monthly discharge only for some periods, published in WSP 1310. Published as "at" or "near Deansbury," "at Deansbury and Platte Canyon," "at" or "near Platte Canyon," prior to 1901, and as "below North Fork, at South Platte" 1914.

Gage.--Water-stage recorder. Datum of gage is 6,078.43 ft above mean sea level, adjustment of 1912. Prior to Mar. 28, 1902, staff gages or water-stage recorder at several sites less than 9 miles downstream at various datums. Mar. 28, 1902, to May 6, 1905, staff gage at bridge 200 ft upstream at different datum. May 7, 1905, to Mar. 13, 1910, staff gage at present site and datum.

Extremes.--Maximum discharge during year, 1,400 cfs July 20 (gage height, 4.55 ft); minimum not determined.

1887-92, 1895-97, 1898-1965: Maximum discharge, 6,320 cfs June 8, 1921 (gage height, 8.95 ft), from rating curve extended above 3,500 cfs; minimum daily determined, 10 cfs Dec. 5, 1899.

Remarks.--Records good except those for period of ice effect or no gage-height record, which are fair. Natural flow of stream affected by transmountain diversions through Boreas Pass ditch and Harold D. Roberts tunnel (see elsewhere in this report), Elevenmile Canyon Reservoir and Cheesman Lake (see elsewhere in this report), diversions above station for irrigation of about 45,000 acres, and return flow from irrigated areas. Records of suspended sediment loads for the water year 1965 are published in Part 2 of this report.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.3	64	3.0	510
1.5	88	4.0	1,040
2.0	184	4.5	1,360
2.5	315		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 87	230					130	605	650	665	1,260	732
2	91	232					142	620	560	675	1,080	700
3	85	238					136	620	565	660	1,030	705
4	83	230					124	550	580	635	968	660
5	83	228		(*)			113	492	732	615	853	620
6	82	232					108	389	540	585	804	620
7	80	232					115	357	590	570	726	600
8	* 80	232					115	297	580	650	675	640
9	82	232	(*)			(*)	126	273	* 630	665	625	575
10	79	* 238			(*)		197	267	675	770	625	530
11	78	134					197	242	864	996	665	492
12	* 83	128					211	240	897	892	690	470
13	80	166					223	* 340	842	* 897	670	457
14	82	188					* 252	575	908	1,110	670	* 492
15	79	182					322	600	* 980	1,150	660	520
16	102	186	112	110	72	55	273	535	1,070	1,230	695	501
17	74	186					273	570	1,140	1,210	798	453
18	72	193		(*)			264	630	1,230	1,150	941	368
19	157	182					258	650	1,170	1,170	952	385
20	223	180					332	690	1,080	1,260	776	461
21	230	188					457	760	1,040	1,010	645	461
22	232	b 170	(*)				645	798	996	1,120	680	449
23	235	b 165					* 952	864	941	919	732	453
24	238	b 170			(*)		1,020	946	870	798	695	449
25	235	* 171				(*)	1,030	798	848	952	700	441
26	232	134					1,140	792	792	864	705	413
27	235	126					1,040	782	716	738	721	382
28	238	124					809	665	690	792	700	354
29	* 238	124					776	645	675	695	710	357
30	238	134					695	620	690	645	787	350
31	235							670		1,060	776	
Total	4,448	5,555	3,472	3,410	2,016	1,705	12,475	17,882	24,541	27,148	24,014	15,090
Mean	143	185	112	110	72	55	416	577	818	876	775	503
Ac-ft	8,820	11,020	6,890	6,760	4,000	3,380	24,740	35,470	48,680	53,850	47,630	29,930

Calendar year 1964: Max 963 Min 37 Mean 275 Ac-ft 199,800  
 Water year 1964-65: Max 1,260 Min - Mean 388 Ac-ft 281,200

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 1-9 (stage-discharge relation affected by ice during most of period).

## PLATTE RIVER BASIN

6-7080. South Platte River at Waterton, Colo.

Location.--Lat 39°29'18", long 105°05'32", in NE¼ sec.34, T.6 S., R.69 W., on left bank 168 ft downstream from bridge on State Highway 221, half a mile east of Waterton, 5 miles west of Louviers, and 6 miles upstream from Plum Creek.

Drainage area.--2,621 sq mi.

Records available.--May 1926 to September 1965. Monthly discharge only prior to 1934, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 5,484.43 ft above mean sea level, adjustment of 1912.

Average discharge.--39 years, 173 cfs (125,200 acre-ft per year).

Extremes.--Maximum discharge during year, 1,320 cfs June 18; maximum gage height, 2.97 ft Aug. 1; minimum daily discharge, 2.2 cfs Feb. 8.

1926-65: Maximum discharge, 5,700 cfs Apr. 23, 1942 (gage height, 5.68 ft); minimum daily, 0.1 cfs Mar. 6, 7, 1933, Feb. 28 to Mar. 2, Mar. 20, 1938.

Remarks.--Records good. Discharge measurements generally made twice a month. Natural flow of stream affected by transmountain diversions (see elsewhere in this report), Elevenmile Canyon Reservoir and Cheesman Lake (see elsewhere in this report), diversions for irrigation of about 55,000 acres and municipal use, and return flow from irrigated areas.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 22-27, July 3-19, July 31 to Sept. 30)

0.5	1.0	1.3	169
.6	3.0	1.6	315
.7	10	1.9	505
.8	24	2.3	800
.9	44	3.0	1,510
1.1	98		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	42	32	7.9	3.7	5.1	7.2	5.8	315	339	564	1,170	538
2	42	36	7.2	20	5.1	3.0	5.8	315	250	401	943	498
3	40	34	6.5	5.2	4.4	3.0	4.4	315	236	321	907	479
4	36	30	5.8	40	5.8	3.0	5.1	250	246	363	872	420
5	34	30	5.1	18	2.6	3.0	5.1	236	518	327	736	369
6	28	28	5.8	10	2.4	3.0	5.1	255	357	217	598	369
7	28	24	5.1	26	2.4	3.0	5.1	298	414	282	505	375
8	28	23	8.6	20	2.2	3.0	5.1	241	394	518	440	505
9	32	23	14	11	2.4	2.8	13	203	427	472	453	466
10	30	28	13	6.5	3.7	3.0	95	190	453	440	440	401
11	34	26	9.3	11	6.5	2.8	105	146	626	664	351	351
12	52	10	13	9.3	4.4	3.0	108	150	736	518	351	321
13	38	9.3	21	6.5	4.4	2.8	124	150	564	453	315	250
14	34	30	7.9	5.1	3.7	3.0	146	276	584	688	315	222
15	32	34	5.8	6.5	4.4	3.0	116	315	736	752	298	222
16	32	20	4.4	5.8	5.1	3.7	32	266	943	856	333	195
17	34	23	5.1	4.4	4.4	4.4	30	298	1,140	872	453	190
18	34	23	9.3	3.7	3.0	4.4	28	363	1,200	816	633	158
19	32	14	7.2	3.7	3.0	4.4	28	414	1,170	840	898	241
20	28	10	6.5	3.7	3.0	3.7	52	453	1,070	961	704	382
21	24	9.3	7.9	3.7	3.0	3.0	154	524	916	792	550	434
22	26	9.3	7.9	3.0	3.0	3.7	181	557	816	916	612	401
23	28	10	17	3.7	5.1	3.0	612	648	752	800	633	394
24	26	10	17	4.4	5.1	3.7	736	784	768	656	598	382
25	26	11	14	4.4	4.4	3.7	736	557	704	848	570	351
26	26	7.9	11	3.0	4.4	3.0	872	505	564	792	557	310
27	28	7.2	6.5	3.0	4.4	3.7	800	492	414	605	524	266
28	30	7.9	7.2	3.0	5.1	4.4	524	382	414	720	518	212
29	28	7.9	7.2	3.7	-	3.7	479	345	401	598	524	226
30	30	8.6	3.7	4.4	-----	3.7	401	315	440	564	591	250
31	36	-----	2.8	4.4	-----	4.4	-----	351	-----	970	570	-----
Total	998	576.4	270.7	307.6	112.5	109.2	6,413.5	10,909	18,592	19,586	17,962	10,178
Mean	32.2	19.2	8.73	9.92	4.02	3.52	214	352	620	632	579	339
Ac-ft	1,980	1,140	537	610	223	217	12,720	21,640	36,880	38,850	35,630	20,190

Calendar year 1964: Max 736 Min 2.2 Mean 93.8 Ac-ft 68,060  
Water year 1964-65: Max 1,200 Min 2.2 Mean 236 Ac-ft 170,600

6-7095. Plum Creek near Louviers, Colo.

Location.--Lat 39°29'04", long 105°00'07", in SE¼ sec.33, T.6 S., R.68 W., on right bank at downstream side of bridge on county road from U. S. Highway 85 to Louviers, three-quarters of a mile northeast of Louviers, 1¼ miles downstream from Indian Creek, and 7½ miles upstream from mouth.

Drainage area.--302 sq mi.

Records available.--October 1947 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 5,585 ft (from topographic map). Prior to Feb. 12, 1957, at site 2½ miles downstream; prior to Oct. 1, 1954, at datum 5,518.71 ft above mean sea level, datum of 1929, and Oct. 1, 1954, to Feb. 11, 1957, at datum 5,517.19 ft above mean sea level, datum of 1929.

Average discharge.--18 years, 23.4 cfs (16,940 acre-ft per year).

Extremes.--Maximum discharge during year, 154,000 cfs June 16 (gage height, about 21 ft), by slope-area measurement of peak flow; minimum daily, 0.1 cfs Oct. 1-4, 6-23.

1947-65: Maximum discharge, that of June 16, 1965; no flow at times in 1951-52, 1956-60, 1963-64.

Remarks.--Records poor. Discharge measurements made two or more times a month. Diversions above station for irrigation.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	0.2	5.8	2.7	3.0	5.5	5.7	32	6.9	105	110	36
2	.1	.2	4.4	b 3.5	3.0	4.8	29	37	6.0	85	74	33
3	.1	.2	4.6	b 4.2	3.3	3.9	20	37	5.6	60	82	30
4	.1	.2	4.1	4.8	5.5	6.9	20	38	15	60	80	28
5	.2	.2	2.8	4.8	5.8	6.9	19	36	150	55	72	26
6	.1	.2	3.1	5.1	5.5	6.2	15	31	120	35	64	25
7	.1	.2	2.7	5.5	5.8	6.2	12	28	100	45	40	27
8	.1	.2	3.6	4.2	4.2	7.2	10	24	95	55	35	35
9	.1	.3	4.1	2.4	4.5	6.6	10	20	125	50	33	30
10	.1	.3	4.6	3.0	4.8	7.6	10	18	130	45	31	27
11	.1	.3	4.7	3.3	b 6.0	8.3	11	17	170	60	30	25
12	.1	.3	4.6	3.9	7.6	8.7	11	16	190	40	32	24
13	.1	.5	4.4	3.9	b 7.2	8.0	8.7	14	150	30	37	23
14	.1	.4	5.8	4.5	6.9	8.3	8.7	12	130	25	36	22
15	.1	1.2	5.4	4.8	8.3	8.0	8.7	13	145	20	35	22
16	.1	.8	4.8	3.9	b 6.4	9.1	8.7	12	11,600	25	33	20
17	.1	.8	4.6	3.6	8.3	8.3	8.7	10	1,940	25	30	19
18	.1	4.0	5.0	3.3	7.6	5.8	9.1	10	460	25	85	18
19	.1	6.4	5.4	3.9	8.3	b 3.8	9.6	11	320	25	120	30
20	.1	5.4	5.4	3.6	b 8.7	b 8.0	8.3	9.6	266	30	96	55
21	.1	5.6	4.5	3.9	9.1	b 6.0	7.6	7.6	232	27	110	50
22	.1	4.8	3.7	3.9	8.7	b 10	6.9	6.9	205	25	78	47
23	.1	5.0	4.0	2.4	5.1	b 9	6.6	9.6	140	35	56	45
24	.2	4.8	4.5	b 3.8	3.9	6.6	7.2	20	145	210	48	43
25	.2	6.2	3.9	2.7	5.5	7.2	8.0	13	135	255	38	38
26	.2	7.0	2.4	1.6	9.1	1.6	18	22	95	185	35	32
27	.2	5.0	3.9	2.4	8.3	2.3	33	19	90	105	33	29
28	.2	4.9	4.2	2.7	7.6	1.9	25	16	90	95	30	26
29	.2	3.6	2.1	3.0	-	20	22	13	85	80	35	32
30	.2	4.8	1.6	2.4	-----	18	26	10	90	60	45	30
31	.2	-----	2.4	3.6	-----	4.3	-----	8.3	-----	100	40	-----
Total	4.0	74.0	127.1	111.3	178.0	315.9	454.8	571.0	17,431.5	2,077	1,703	92.7
Mean	0.13	2.47	4.10	3.59	6.36	10.2	15.2	18.4	581	67.0	54.9	30.9
Ac-ft	7.9	147	252	221	353	627	902	1,130	334,570	4,120	3,380	1,840

Calendar year 1964: Max 83 Min 0 Mean 10.6 Ac-ft 7,660

Water year 1964-65: Max 11,600 Min 0.1 Mean 65.7 Ac-ft 47,550

Peak discharge (base, 220 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-16	1830	†21	154,000	8-21	unknown	unknown	unknown
7-24	unknown	unknown	†2,000				

† About

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 14 to Dec. 23, June 1 to Sept. 30.

## PLATTE RIVER BASIN

6-7100. South Platte River at Littleton, Colo.

Location.--Lat 39°37'10", long 105°01'10", in NE¼ sec.17, T.5 S., R.68 W., on left bank 200 ft downstream from Crestline Avenue (formerly Hazard Street) Bridge at Littleton and 3.1 miles upstream from Bear Creek.

Drainage area.--3,069 sq mi.

Records available.--July 1941 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 5,304.36 ft above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to Nov. 23, 1948, wire-weight gage on bridge 200 ft upstream at datum 1.00 ft higher. Nov. 23, 1948, to Sept. 30, 1951, water-stage recorder at present site at datum 1.00 ft higher.

Average discharge.--24 years, 225 cfs (162,900 acre-ft per year).

Extremes.--Maximum discharge during year, about 110,000 cfs June 16 (gage height, 15.45 ft, from floodmark), estimated from contracted-opening and flow-over-road measurement of peak flow at point 1.6 miles downstream and slope-area measurement of peak flow on Plum Creek at point 12.7 miles upstream; minimum daily, 14 cfs Jan. 25, 28.

1941-65: Maximum discharge, that of June 16, 1965; minimum daily, 7.2 cfs Oct. 2, 1956.  
Maximum stage known since at least 1894, that of June 16, 1965.

Remarks.--Records good except those for June 16-30 and those for periods of ice effect or no gage-height record, which are fair.

Discharge measurements made two or more times a month. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions for irrigation and municipal use, and return flow from irrigated areas.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 27 to June 4, June 6-22, July 24 to Sept. 30)

2.5	12	4.4	430
2.6	20	5.0	740
2.9	57	6.0	1,540
3.3	125	7.0	2,800
3.8	232		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	29	37	35	21	16	34	82	378	314	610	1,330	600
2	37	43	30	23	16	28	70	362	249	506	1,080	550
3	30	49	31	30	19	23	56	354	230	394	985	530
4	27	49	30	32	18	29	54	284	263	422	985	484
5	23	44	26	35	21	36	53	235	768	422	845	430
6	21	47	27	39	20	36	41	269	585	302	662	439
7	20	43	27	51	17	33	39	293	580	308	555	418
8	20	42	24	57	16	36	36	275	560	535	488	560
9	18	37	30	37	18	35	38	243	600	511	475	530
10	20	42	31	31	19	33	92	218	626	462	466	439
11	20	47	27	32	25	36	135	201	831	686	457	378
12	41	39	26	35	18	39	135	182	1,060	545	466	344
13	38	33	30	28	20	38	135	182	775	475	516	293
14	27	37	39	20	18	33	141	254	722	626	511	272
15	22	51	23	24	20	37	147	a290	803	740	488	263
16	26	43	19	23	24	41	58	a250	a10,200	810	511	246
17	24	49	22	20	26	39	42	a280	a7,770	845	439	246
18	26	53	25	19	28	31	43	a300	2,280	761	698	232
19	24	41	23	19	28	31	44	a320	1,740	817	1,090	305
20	23	32	20	19	32	31	58	350	a1,550	929	761	444
21	26	35	21	17	31	31	133	444	1,420	768	815	511
22	23	30	22	16	31	43	272	498	1,230	761	1,020	430
23	24	30	28	18	29	51	535	605	908	761	831	414
24	23	32	42	17	29	30	722	824	943	814	761	398
25	21	39	37	14	32	31	722	575	824	1,280	692	366
26	18	37	30	18	42	38	908	488	520	1,220	650	341
27	21	32	30	19	46	57	992	493	506	650	580	302
28	22	28	32	14	39	68	610	350	502	754	550	263
29	23	30	24	15	-	57	545	308	475	632	560	293
30	26	31	21	18	-----	50	502	281	493	484	656	317
31	36	-----	19	18	-----	56	-----	317	-----	943	638	-----
Total	779	1,182	851	779	698	1,191	7,440	10,703	40,327	20,773	21,561	11,638
Mean	25.1	39.4	27.5	25.1	24.9	38.4	248	345	1,344	670	696	388
Ac-ft	1,550	2,340	1,690	1,550	1,380	2,360	14,760	21,230	79,990	41,200	42,770	23,080

Calendar year 1964: Max 740 Min 15 - Mean 95.9 Ac-ft 69,620  
Water year 1964-65: Max 10,200 Min 14 Mean 323 Ac-ft 233,900

a No gage-height record.

Note.--Stage-discharge relation affected by ice Dec. 17-20, Dec. 31, Jan. 3-5, Feb. 11-17, Mar. 24, 25.



6-7105. Bear Creek at Morrison, Colo.

Location.--Lat 39°39'11", long 105°11'43", in SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.35, T.4 S., R.70 W., on left bank at Morrison, 180 ft upstream from bridge on U. S. Highway 285 and a quarter of a mile upstream from Mount Vernon Creek.

Drainage area.--164 sq mi.

Records available.--September 1887 to September 1891, May 1895 to December 1901, February 1902 (gage heights only), October 1919 to September 1965. No winter records for water years 1888-90, 1896, 1898, 1900. Monthly discharge only for some periods, published in WSP 1310. Published as "near Morrison" 1900-1902, as "at Starbuck" 1919-28, and as "at Idledale" 1929-34.

Gage.--Water-stage recorder. Datum of gage is 5,780.43 ft above mean sea level, datum of 1929. Prior to Apr. 1, 1899, staff gage at site a quarter of a mile downstream at different datum. Apr. 1, 1899, to Feb. 28, 1902, staff gage at site a quarter of a mile upstream at different datum. Oct. 1, 1919, to Feb. 28, 1921, staff gage and Mar. 1, 1921, to Sept. 30, 1934, water-stage recorder, at Idledale 4 miles upstream at different datum. Oct. 1, 1934, to Oct. 10, 1961, water-stage recorder at site 80 ft downstream at same datum.

Average discharge.--50 years (1890-91, 1896-97, 1898-99, 1900-1901, 1919-65), 53.7 cfs (38,880 acre-ft per year).

Extremes.--Maximum discharge during year, 1,030 cfs July 25 (gage height, 6.45 ft), from rating curve extended above 410 cfs; minimum daily, 4.7 cfs Nov. 13.

1887-91, 1895-1901, 1919-65: Maximum discharge, 8,600 cfs (estimated) July 24, 1896; minimum daily, 0.8 cfs Nov. 26, 1939, result of freezeup.

Remarks.--Records good except those for periods of ice effect, which are fair. Discharge measurements generally made twice a month. Small diversions for irrigation of about 1,000 acres above station.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 29, June 4-11, July 18 to July 25)

Oct. 1 to June 30

July 1 to Sept. 30

3.1	3.5	4.3	65	3.7	51
3.2	5.5	4.7	120	4.0	90
3.4	12	5.0	200	4.5	200
3.7	25	5.6	445	5.0	355
4.0	42			6.0	790

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	12	13	11	11		34	91	69	140	549	93
2	14	13	13	11	8.5		40	104	66	133	477	90
3	14	14	11	10	6.5		31	113	63	126	433	87
4	13	12	12	10	7.0		25	111	168	118	383	83
5	14	8.8	9.2	11	7.2		21	101	409	110	344	80
6	14	12	10	11	7.4		18	83	228	104	305	80
7	14	13	10	11	6.9		22	74	193	101	272	83
8	14	13	12	10	6.7	8	24	73	180	103	242	87
9	14	14	14	10	7.5		26	62	173	100	215	79
10	14	15	14	11	7.0		26	59	263	95	227	73
11	15	13	13	10	6.7		22	54	274	90	195	71
12	15	8.5	13	10	7.0		20	52	342	96	178	67
13	14	4.7	14	10	7.5		18	51	319	98	165	63
14	14	6.2	13	11	8.0		17	54	310	96	158	59
15	14	7.0	12	11	8.0		18	47	286	84	158	57
16	14	7.4	9.0	12	7.4		20	44	282	79	158	58
17	13	7.4	7.6	12	7.4		22	49	278	75	168	59
18	14	7.8	8.2	12	8.3	10	25	55	294	76	190	61
19	13	9.2	8.5	12	10		24	58	278	86	209	67
20	13	11	9.5	12	12		25	61	260	131	198	75
21	14	12	10	12	11		30	62	252	140	190	71
22	13	12	12	11	11		35	67	232	221	192	71
23	14	14	14	11	13	11	38	86	214	281	165	71
24	14	14	12	11	14		44	83	193	357	155	66
25	14	14	10	11	16		39	72	183	434	143	66
26	12	14	7.0	11	15	13	43	76	163	411	128	61
27	13	13	6.6	11	17	15	41	73	140	327	120	59
28	14	13	7.6	12	14	17	41	61	138	330	114	56
29	14	12	8.0	12	-	18	60	60	145	296	112	66
30	14	15	8.2	12	-	22	72	62	148	266	110	62
31	13	-	9.5	14	-	29	-	69	-	493	101	-
Total	429	342.0	330.9	346	269.0	339	921	2,167	6,543	5,597	6,754	2,121
Mean	13.8	11.4	10.7	11.2	9.61	10.9	30.7	69.9	218	181	218	70.7
Ac-ft	851	678	656	686	534	672	1,830	4,300	12,980	11,100	13,400	4,210

Calendar year 1964: Max 98 Min 4.7 Mean 24.7 Ac-ft 17,920  
Water year 1964-65: Max 549 Min 4.7 Mean 71.7 Ac-ft 51,900

Peak discharge (base, 250 cfs)

Note.--Stage-discharge relation affected by ice Nov. 14-20, Dec. 6-8, 13, Dec. 16 to Jan. 27, Feb. 1-24, Mar. 1-27.

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-5	0830	5.55	476	7-25	1645	6.45	1,030
6-11	2100	5.33	368	8-1	0030	5.64	616
7-24	2130	6.16	823	8-21	2030	4.75	278

## PLATTE RIVER BASIN

6-7115. Bear Creek at mouth, at Sheridan, Colo.

Location.--Lat 39°39'08", long 105°01'57", in NW¼NW¼ sec.5, T.5 S., R.68 W., on left bank just downstream from bridge on road to Fort Logan Mental Health Center, at Highway Department maintenance building at northwest city limits of Sheridan, 1.3 miles upstream from mouth and 2.1 miles west of city hall in Englewood.

Drainage area.--260 sq mi.

Records available.--April to November 1914, March 1927 to September 1965. Monthly discharge only prior to October 1933, published in WSP 1310. Published as "at Sheridan Junction" 1934-41.

Gage.--Water-stage recorder. Altitude of gage is 5,295 ft (from topographic map). Apr. 1 to Nov. 30, 1914, staff gage and Feb. 23, 1927, to June 18, 1931, water-stage recorder, at site 1 mile downstream at different datums. June 19, 1931, to Oct. 8, 1953, water-stage recorder at site 0.8 mile downstream at datum 5,282.72 ft above mean sea level, datum of 1929, prior to June 6, 1949, and at datum 5,280.72 ft thereafter.

Average discharge.--38 years (1927-65), 34.0 cfs (24,610 acre-ft per year).

Extremes.--Maximum discharge during year, 2,900 cfs July 25 (gage height, 8.46 ft), from rating curve extended above 370 cfs on basis of float-area measurement of peak flow; minimum daily, 3.3 cfs Oct. 4.

1914, 1927-65: Maximum discharge, 3,000 cfs July 7, 1933 (gage height, 6.95 ft, site and datum then in use), from rating curve extended above 1,100 cfs on basis of slope-area measurement of peak flow; no flow July 13, 1954.

Remarks.--Records good except those for Apr. 16-26, which are poor. Discharge measurements generally made twice a month. Storage and diversions above station for irrigation of about 12,000 acres.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.8	13	14	12	12	14	19	45	42	74	636	84
2	3.6	13	14	14	12	13	16	68	40	72	530	75
3	3.6	13	14	14	10	13	15	79	31	69	485	75
4	3.3	12	14	14	10	14	14	75	109	63	429	75
5	3.5	12	13	15	10	14	13	74	590	59	367	70
6	3.8	13	13	13	10	14	11	59	353	59	320	64
7	4.0	15	13	12	11	12	10	46	273	52	281	70
8	3.8	15	14	11	9.7	12	10	41	226	45	258	79
9	4.0	14	15	10	9.7	12	10	39	213	45	223	66
10	4.6	14	15	10	9.1	12	10	33	273	36	196	52
11	4.0	14	14	11	8.8	11	9.7	31	302	29	164	50
12	3.6	14	12	11	10	12	9.7	26	353	28	139	46
13	3.6	15	11	9.7	11	10	9.1	23	332	26	125	44
14	3.6	16	12	10	11	9.1	9.1	20	310	24	125	37
15	3.6	16	14	10	11	9.4	9.1	16	270	15	121	32
16	3.6	16	14	10	12	9.1	9.5	14	263	12	114	30
17	3.8	15	13	9.7	12	9.4	9.5	14	256	11	118	31
18	4.0	15	13	9.7	13	9.1	9.8	12	256	11	148	36
19	4.3	15	14	11	13	10	9.5	10	226	15	194	43
20	4.0	14	15	10	13	10	9.5	11	194	51	199	86
21	4.3	14	15	9.4	12	10	9.8	10	169	63	182	75
22	3.8	14	13	11	12	11	9.5	11	151	144	211	66
23	4.9	14	12	11	12	12	9.8	18	180	239	188	71
24	5.5	14	12	11	12	10	9.8	25	175	429	164	68
25	5.5	14	11	11	12	10	10	23	164	839	146	66
26	5.5	13	10	9.4	14	15	14	39	149	565	136	64
27	5.5	13	11	11	15	15	26	40	127	416	125	56
28	5.8	13	12	10	15	16	20	38	82	406	114	50
29	6.1	13	10	12	-	16	19	34	74	354	107	68
30	7.3	14	9.7	12	-	16	28	32	74	309	105	70
31	12	-----	10	12	-----	18	-----	38	-----	515	24	-----
Total	142.3	420	396.7	346.9	322.3	378.1	378.4	1,044	6,257	5,075	6,744	1,799
Mean	4.59	14.0	12.8	11.2	11.5	12.2	12.6	33.7	209	164	218	60.0
Ac-ft	282	833	787	688	639	750	751	2,070	12,410	10,070	13,380	3,570

Calendar year 1964: Max 50 Min 0.2 Mean 10.7 Ac-ft 7,770  
 Water year 1964-65: Max 839 Min 3.3 Mean 63.8 Ac-ft 46,230

6-7120. Cherry Creek near Franktown, Colo.

**Location.**--Lat 39°21'30", long 104°45'50", in NE¼ sec.15, T.8 S., R.66 W., on right bank 1½ miles upstream from Russellville Gulch and 2½ miles south of Franktown.

**Drainage area.**--169 sq mi.

**Records available.**--November 1939 to September 1965.

**Gage.**--Water-stage recorder. Altitude of gage is 6,150 ft (from topographic map). Prior to Oct. 1, 1953, at site 1,000 ft downstream, at datum 6,149.53 ft above mean sea level (unadjusted) prior to Apr. 13, 1942, and at datum 6,147.53 ft above mean sea level Apr. 13, 1942, to Sept. 30, 1953.

**Average discharge.**--25 years (1940-65), 9.36 cfs (6,780 acre-ft per year).

**Extremes.**--Maximum discharge during year, 1,730 cfs Aug. 21 (gage height, 7.34 ft), from rating curve extended above 200 cfs on basis of slope-area measurement of peak flow; minimum daily, 1.1 cfs Oct. 1-9.

1939-65: Maximum discharge, 9,170 cfs Aug. 5, 1945 (gage height, 4.91 ft, site and datum then in use), by float measurement; minimum daily, 0.2 cfs July 13, 1946, Sept. 30, Oct. 1, 1950.

Highest flood known occurred Aug. 3, 1933, when Castlewood Dam failed.

**Remarks.**--Records good. Discharge measurements generally made twice a month. Many small diversions above station for irrigation of about 800 acres.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

(Shifting-control method used Nov. 25 to Jan. 19, Feb. 11-21,

May 26 to June 3, June 20 to July 28)

(Stage-discharge relation affected by ice Feb. 12, 24)

1.7	1.1	3.2	33
2.1	3.1	3.4	60
2.4	5.3	3.8	122
2.6	7.6	4.2	200
2.8	12	4.6	298
3.0	19	5.0	415
3.1	24	5.5	600

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.1	1.5	4.1	2.5	2.4	3.9	2.4	3.7	1.8	2.5	9.9	3.0
2	1.1	1.9	3.8	2.2	2.9	5.6	1.8	3.2	1.8	2.4	5.9	3.0
3	1.1	2.6	4.1	2.4	3.4	4.8	1.4	3.1	1.7	2.5	4.3	2.9
4	1.1	1.8	3.7	2.5	4.2	4.9	1.3	2.7	2.4	2.4	3.7	3.0
5	1.1	1.6	2.6	2.7	4.6	4.9	1.3	2.6	7.1	2.4	3.2	3.0
6	1.1	1.7	2.6	3.1	5.1	4.2	1.2	2.4	2.8	2.4	2.8	2.7
7	1.1	1.8	2.2	4.4	4.4	3.6	1.1	2.4	1.2	2.7	2.3	2.6
8	1.1	1.7	2.6	4.0	3.2	3.9	7.8	2.4	8.1	2.7	2.2	2.6
9	1.1	1.6	2.9	2.7	3.5	3.7	6.7	2.4	1.6	2.7	2.2	2.5
10	1.2	1.6	2.9	2.9	4.2	4.5	5.4	2.4	8.7	2.7	2.1	2.3
11	1.2	1.7	2.7	2.8	2.2	4.6	5.8	2.2	8.1	2.7	2.1	3.3
12	1.3	1.6	2.4	2.6	2.2	5.3	5.6	2.2	7.2	2.7	2.1	4.3
13	1.2	1.6	2.1	2.9	3.5	4.5	5.1	2.2	5.8	2.6	2.0	2.5
14	1.2	1.6	2.6	3.4	3.4	3.8	4.4	2.4	5.6	2.6	2.0	2.0
15	1.2	1.8	2.4	4.4	3.0	5.5	3.8	2.9	6.0	2.6	2.0	1.9
16	1.3	1.8	2.0	3.7	3.7	7.1	3.5	2.4	105	2.6	1.9	2.0
17	1.3	1.7	2.0	3.4	4.0	4.2	3.4	2.2	175	2.6	8.8	2.2
18	1.2	1.6	2.2	3.8	4.4	3.8	3.2	2.0	63	2.6	10	2.7
19	1.2	1.6	2.2	4.5	5.1	6.7	3.0	2.2	26	2.6	8.0	5.5
20	1.2	2.1	2.1	4.3	5.8	6.8	2.9	2.0	13	2.6	11	9.9
21	1.3	1.9	2.3	4.1	7.3	5.2	2.8	2.0	8.9	2.7	46.9	6.6
22	1.3	1.9	2.4	4.7	7.1	25	2.7	2.3	7.1	2.7	6.9	5.1
23	1.3	2.2	4.7	2.5	3.3	14	2.6	2.0	5.9	2.8	14	4.8
24	1.3	2.2	5.1	4.0	3.3	5.8	2.8	2.0	5.6	7.3	8.1	4.7
25	1.3	3.0	3.9	3.0	5.9	5.4	2.6	2.0	5.1	20	6.1	4.3
26	1.4	3.2	2.9	2.1	8.1	5.1	7.0	6.1	4.2	11	5.0	3.8
27	1.3	2.9	3.9	3.0	12	34	15	5.1	3.0	9.3	4.4	3.5
28	1.4	3.0	4.3	3.1	11	45	11	2.9	2.7	40	3.9	3.4
29	1.4	2.7	2.2	3.1	-	28	6.4	1.9	2.6	9.3	3.9	5.8
30	1.4	3.4	2.3	2.7	-	24	4.6	2.0	2.7	5.1	3.6	5.5
31	1.5	-	3.0	3.8	-	33	-	1.8	-	22	3.2	-
Total	38.3	61.3	91.2	101.3	133.2	320.8	223.1	80.1	635.6	183.8	678.7	111.4
Mean	1.24	2.04	2.94	3.27	4.76	10.3	7.44	2.58	21.2	5.93	21.9	3.71
Ac-ft	76	122	181	201	264	636	443	159	1,260	365	1,350	221

Calendar year 1964: Max 217 Min 0.7 Mean 6.35 Ac-ft 4,620

Water year 1964-65: Max 469 Min 1.1 Mean 7.28 Ac-ft 5,280

Peak discharge (base, 200 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-16	1945	6.40	1,000	8-21	1800	7.34	1,730
7-28	1955	5.42	620				

## PLATTE RIVER BASIN

6-7125. Cherry Creek near Melvin, Colo.

Location.--Lat 39°35'42", long 104°48'44", in SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.19, T.5 S., R.66 W., near right bank on downstream side of Arapahoe Road bridge, 0.9 mile upstream from Piney (South Cherry) Creek, 2.3 miles southeast of former site of Melvin,  $\frac{5}{8}$  miles upstream from Cherry Creek Dam, and 6.0 miles northwest of Parker.

Drainage area.--336 sq mi.

Records available.--October 1939 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 5,625.81 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1960, at site 1 mile downstream at datum 17.60 ft lower.

Average discharge.--26 years, 13.2 cfs (9,560 acre-ft per year).

Extremes.--Maximum discharge during year, 39,900 cfs June 16 (gage height, 13 ft, from floodmarks), by contracted-opening and flow-over-road measurement of peak flow; no flow for many days.

1939-65: Maximum discharge, that of June 16, 1965; no flow at times in most years.

Maximum stage known, that of June 16, 1965. Flood of Aug. 3, 1933, reached a stage of 9.72 ft, former site and datum, from floodmarks (discharge, 34,000 cfs, by slope-area measurement of peak flow at Kenwood damsite 6 miles downstream), caused by failure of Castlewood Dam.

Remarks.--Records poor. Discharge measurements, observations of no flow, or field estimates made two or more times a month. Diversions above station for irrigation of about 1,800 acres.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1					0	0	34	0	0	1.0	2.0	0.1
2					0	0	7	0	0	.2	2.0	.1
3					0	0	1.5	0	0	0	2.0	.1
4					0	0	.5	0	20	0	1.5	.1
5					0	0	0	0	91	0	1.3	.1
6					0	0	0	0	20	0	1.2	.1
7					0	0	0	0	.5	0	1.0	.1
8					0	0	0	0	.2	0	.5	.1
9					0	0	0	0	0	0	.1	.1
10					0	0	0	0	0	0	0	0
11					0	0	0	0	0	0	0	0
12					0	0	0	0	0	0	0	0
13					0	0	0	0	0	0	0	0
14					0	0	0	0	0	0	0	0
15					0	0	0	0	0	0	0	0
16					0	0	0	0	4,000	0	10	0
17					0	0	0	0	850	0	35	0
18					0	0	0	0	350	0	262	.1
19					0	0	0	0	120	0	21	.5
20					0	0	0	0	70	0	10	4.0
21					0	0	0	0	45	0	1,130	4.0
22					0	0	0	0	30	0	380	4.0
23					0	0	0	2	23	0	68	3.0
24					0	0	0	3	18	.5	21	1.5
25					1	0	0	3	14	70	5.0	1.5
26					2	0	0	5	10	97	4.5	1.5
27					1	0	0	3	7	319	3.0	1.5
28					0	5	.1	1	5	30	2.0	1.5
29					-	13	0	0	3	26	2.0	3.5
30					-----	30	0	0	1.5	5.0	1.0	3.5
31					-----	36	-----	0	-----	3.0	.5	-----
Total	0	0	0	0	4	84	43.1	17	5,678.2	551.7	1,966.6	31.0
Mean	0	0	0	0	0.14	2.71	1.44	0.55	189	17.8	63.4	1.03
Ac-ft	0	0	0	0	7.9	167	85	34	11,260	1,090	3,900	61

Calendar year 1964: Max 171 Min 0 Mean 2.15 Ac-ft 1,570  
 Water year 1964-65: Max 4,000 Min 0 Mean 22.9 Ac-ft 16,600

Peak discharge (base, 1,400 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-16	1830	13.	39,900	8-18	1900	2.40	3,360
7-27	1700	2.24	3,140	8-21	1745	4.55	8,950

Note.--No gage-height record Feb. 25-27, Mar. 28, 29, Apr. 1-4, 28, May 23-28, June 7, 8, June 16 to July 2, July 24, 28, Aug. 2-17, 20, Aug. 30 to Sept. 9.

6-7130. Cherry Creek below Cherry Creek Reservoir, Colo.

Location.--Lat 39°39'10", long 104°51'40", in SW¼SW¼ sec.35, T.4 S., R.67 W., on right bank 2,000 ft downstream from Cherry Creek Dam, 2 miles southeast of Sullivan, 9 miles southeast of Civic Center in Denver, and 11 miles upstream from mouth.

Drainage area.--385 sq mi.

Records available.--June 1950 to September 1965.

Gage.--Water-stage recorder and concrete control. Datum of gage is 5,490.51 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark).

Average discharge.--15 years, 4.42 cfs (3,200 acre-ft per year), unadjusted.

Extremes.--Maximum discharge during year, 574 cfs Aug. 6 (gage height, 4.97 ft); no flow for most of time.

1950-65: Maximum discharge, 1,440 cfs July 31, 1956 (gage height, 6.07 ft); no flow for many days in 1957-65.

Maximum flood known, 34,000 cfs Aug. 3, 1933, by slope-area measurement near present site (Castlewood Dam failure).

Remarks.--Records excellent. Discharge measurements or observations of no flow generally made one or more times a month. Flow regulated by Cherry Creek Reservoir (capacity, 95,960 acre-ft). Reservoir was completed in June 1950. Permanent storage started May 15, 1957. Contents Sept. 30, 1965, 15,620 acre-ft. Change in contents during water year 1965, -5,240 acre-ft. Diversions above station for irrigation of about 1,800 acres.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Aug. 6.....	397	Aug. 13.....	546	Sept. 7.....	211
7.....	560	14.....	546	8.....	310
8.....	560	15.....	532	9.....	305
9.....	556	16.....	525	10.....	305
10.....	546	17.....	518	11.....	295
11.....	546	18.....	372	12.....	200
12.....	546				

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
August.....	6,750	560	0	218	13,390
September.....	1,626	310	0	54.2	3,230
Calendar year 1964.....	-	124	0	2.33	1,690
Water year 1964-65.....	-	560	0	22.9	16,620

Note.--Flow occurred only on days listed above.

## PLATTE RIVER BASIN

6-7135. Cherry Creek at Denver, Colo.

Location.--Lat 39°44'58", long 105°00'08", in NE¼ sec.33, T.3 S., R.68 W., on right bank on downstream side of Wazee Street Bridge in Denver, 0.5 mile upstream from mouth.

Drainage area.--409 sq mi.

Records available.--August 1942 to September 1965.

Gage.--Water-stage recorder (digital). Datum of gage is 5,176.34 ft above mean sea level, datum of 1929. Prior to Jan. 23, 1945, wire-weight gage at Broadway Bridge 1.8 miles upstream at datum 57.29 ft higher. Jan. 23 to Feb. 26, 1945, wire-weight gage at Downing Street Bridge 2.8 miles upstream from present site at different datum. Feb. 27, 1945, to Sept. 30, 1947, wire-weight gages at Washington Street Bridge 2.4 miles upstream from present site at datum 72.31 ft higher and Oct. 1, 1947, to Sept. 30, 1949, at datum 71.31 ft higher than present datum. Oct. 1, 1949, to July 15, 1951, wire-weight gage at Market Street Bridge 0.1 mile upstream from present site at datum 8.49 ft higher.

Average discharge.--23 years, 16.8 cfs (12,160 acre-ft per year).

Extremes.--Maximum discharge during year, 984 cfs Aug. 19 (gage height, 5.54 ft); maximum gage height, 11.91 ft June 17 (backwater from South Platte River); minimum daily discharge, 3.8 cfs Mar. 19.

1942-65: Maximum discharge observed, 3,120 cfs Aug. 5, 1945 (gage height, 5.25 ft, site and datum then in use); maximum gage height, that of June 17, 1965; minimum daily discharge, 0.4 cfs June 16-18, 1948.

Flood of July 26, 1885, reached a discharge of 20,000 cfs, by float measurement. Flood of May 19, 20, 1864, reached a somewhat higher stage. Flood of Aug. 3, 1933, reached a discharge of about 15,000 cfs, as determined by rise of South Platte River at Denver.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Discharge measurements generally made twice a month. Several diversions above station for irrigation of about 1,900 acres. Flood flow regulated by Cherry Creek Reservoir 11 miles upstream (capacity, 95,960 acre-ft).

Rating tables (gage height, in feet, and discharge,  
in cubic feet per second)  
(Shifting-control method used Sept. 25-30)

Oct. 1 to Sept. 7				Sept. 7-30			
3.2	3.3	3.8	67	3.3	8.3	4.0	111
3.3	8.3	4.1	137	3.5	25	4.3	200
3.4	16	4.6	320	3.7	50	4.6	320
3.6	36	5.1	620				

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	10	5.9	6.2	5.7	13	8.6	9.3	5.6	11	6.4	11	15
2	10	16	6.3	5.1	8.0	5.9	9.9	11	7.3	5.9	11	13
3	10	11	6.2	4.9	7.5	4.6	8.2	8.5	8.5	6.1	19	21
4	10	5.4	9.4	5.2	9.0	9.0	19	9.7	193	5.4	16	19
5	10	5.4	6.1	5.3	9.6	6.0	7.0	12	109	5.9	17	20
6	10	4.7	5.9	5.0	7.1	5.2	5.5	11	7.8	6.7	228	21
7	10	4.7	6.0	5.3	7.3	5.8	5.0	6.2	5.6	7.0	520	130
8	10	4.5	6.1	5.3	10	5.5	6.0	12	6.9	7.9	536	274
9	12	7.0	6.1	4.8	7.0	5.1	16	14	22	8.0	540	281
10	18	6.6	6.6	4.3	5.5	7.2	16	12	15	7.7	543	279
11	14	8.6	8.2	5.5	5.4	5.0	16	5.0	29	7.4	546	271
12	10	4.7	6.3	5.8	5.9	8.7	4.9	8.0	5.5	9.9	546	236
13	10	4.7	5.2	4.8	8.8	12	4.6	9.7	5.1	10	554	40
14	10	5.6	5.8	4.7	6.8	7.3	4.3	22	5.7	9.5	557	35
15	15	11	5.3	5.0	6.5	5.2	8.2	5.6	9.4	9.2	554	32
16	8.5	9.4	5.2	5.1	5.7	4.4	11	4.8	18	12	551	30
17	9.7	5.8	5.2	5.1	10	8.2	4.6	12	c 25	12	543	22
18	13	5.6	5.7	5.5	16	4.6	8.9	6.4	17	16	503	13
19	11	6.6	6.1	5.3	11	3.8	7.6	6.4	15	13	69	16
20	11	5.5	5.4	5.8	8.9	8.1	5.2	8.0	14	40	23	20
21	11	5.3	5.0	5.0	5.7	13	5.5	7.1	14	14	24	17
22	9.4	5.0	5.2	6.5	5.5	13	7.3	8.7	7.0	56	17	14
23	9.8	5.4	5.5	5.2	5.3	4.3	7.3	15	6.9	47	16	13
24	11	5.6	6.5	5.1	6.2	4.2	5.3	7.0	6.7	59	15	13
25	10	5.8	7.2	5.3	5.8	7.7	4.6	33	6.6	108	13	12
26	10	5.3	6.7	6.4	5.7	12	27	42	6.4	66	13	12
27	5.6	5.3	5.6	5.1	5.0	5.0	23	7.8	6.1	16	15	12
28	7.4	6.0	11	6.5	4.8	4.1	3.9	4.0	6.8	61	16	13
29	7.8	5.6	5.0	6.4	-----	4.6	5.9	5.9	7.0	15	17	38
30	9.3	5.9	4.7	19	-----	4.5	5.2	12	18	17	16	14
31	6.8	-----	5.2	12	-----	6.2	-----	13	-----	43	17	-----
TOTAL	320.3	193.9	190.9	186.0	213.0	208.8	272.2	345.4	615.3	708.0	7,066	1,946
MEAN	10.3	6.46	6.16	6.00	7.61	6.74	9.07	11.1	20.5	22.8	228	64.9
AC-FT	635	385	379	369	422	414	540	685	1,220	1,400	14,020	3,860

CALENDAR YEAR 1964 MAX 119 MIN 3.5 MEAN 10.2 AC-FT 7,380  
WATER YEAR 1964-65 MAX 557 MIN 3.8 MEAN 33.6 AC-FT 24,330

c Backwater from South Platte River.

Note.--No gage-height record Oct. 1-15, Sept. 13-28, 30.

6-7140. South Platte River at Denver, Colo.

Location.--Lat 39°45'35", long 105°00'10", in NW¼SE¼ sec.28, T.3 S., R.68 W., on right bank 20 ft upstream from Nineteenth Street Bridge in Denver and 0.4 mile downstream from Cherry Creek.

Drainage area.--3,804 sq mi.

Records available.--May to October 1889, June to October 1890, July 1895 to September 1965. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 5,162.12 ft above mean sea level, datum of 1929. Prior to Aug. 12, 1909, staff gages and Aug. 12, 1909, to Aug. 28, 1931, water-stage recorder, at several sites within half a mile of present site at approximately present datum.

Average discharge.--70 years, 339 cfs (245,400 acre-ft per year).

Extremes.--Maximum discharge during year, 40,300 cfs June 17 (gage height, 15.00 ft, from floodmarks), from rating curve extended above 2,700 cfs on basis of slope-area measurement of peak flow; minimum daily, 29 cfs Jan. 27.  
1889-90, 1895-1965: Maximum discharge, that of June 17, 1965; minimum daily, 8.8 cfs Mar. 25, 1951.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Discharge measurements generally made twice a month. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals, and diversions for irrigation of about 79,000 acres and municipal use, and return flow from irrigated areas.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used June 4-24)

Oct. 1 to June 17				June 18 to Sept. 30			
0.2	26	1.0	231	2.6	340	4.0	1,630
.3	33	1.4	560	3.0	590	5.0	3,200
.5	60	1.8	990	3.5	1,030		
.7	101						

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	55	58	62	50	58	79	108	436	400	732	2,040	632
2	57	71	66	50	44	60	112	436	334	716	1,680	604
3	52	94	62	60	42	55	90	463	290	548	1,520	604
4	47	79	70	86	46	73	136	400	1,360	555	1,490	562
5	42	71	55	86	55	70	112	342	2,120	555	1,290	508
6	46	73	54	75	47	68	77	342	942	460	1,260	502
7	43	73	50	71	43	60	73	358	771	412	1,410	597
8	44	64	50	81	49	62	57	358	804	527	1,320	830
9	47	71	66	66	43	62	47	311	870	597	1,250	821
10	62	70	62	49	44	75	66	276	1,030	548	1,220	749
11	47	77	62	52	34	70	141	221	1,190	660	1,140	708
12	57	75	52	62	35	86	150	195	1,460	676	1,110	639
13	71	58	37	49	49	81	179	195	1,290	646	1,060	418
14	54	62	50	49	43	68	171	276	1,260	740	1,050	352
15	49	92	52	46	42	75	200	342	1,250	821	1,040	376
16	43	88	49	49	42	73	119	270	2,840	910	1,020	352
17	47	77	36	41	62	79	60	244	a 12,000	990	1,120	352
18	54	77	44	40	88	58	58	270	a 4,200	910	1,390	364
19	55	79	49	42	83	a 56	73	304	a 2,200	940	1,720	466
20	57	66	50	44	71	a 54	60	334	a 1,650	1,120	1,120	880
21	52	64	55	43	60	52	97	382	a 1,500	1,010	1,030	668
22	44	60	54	38	55	60	231	427	a 1,350	1,110	1,210	555
23	55	60	55	38	60	68	463	521	a 1,050	1,350	950	555
24	50	60	68	35	55	50	650	660	a 1,100	1,500	890	534
25	46	66	73	34	62	64	680	630	a 920	2,700	794	508
26	42	73	64	33	71	86	870	730	a 850	2,340	749	484
27	42	66	60	29	75	77	942	580	a 760	1,280	684	448
28	46	54	83	31	66	86	650	454	a 700	1,390	653	388
29	46	62	58	31	-	88	580	409	a 640	1,110	639	604
30	47	62	46	71	-----	81	521	358	676	920	684	502
31	57	-----	44	57	-----	83	-----	365	-----	1,450	676	-----
Total	1,556	2,102	1,738	1,588	1,524	2,159	7,773	11,889	47,807	30,223	35,209	16,562
Mean	50.2	70.1	56.1	51.2	54.4	69.6	259	384	1,594	975	1,136	552
Ac-ft	3,090	4,170	3,450	3,150	3,020	4,280	15,420	23,580	94,820	59,950	69,840	32,850

Calendar year 1964: Max 1,230 Min 34 Mean 126 Ac-ft 91,600  
Water year 1964-65: Max 12,000 Min 29 Mean 439 Ac-ft 317,600

a No gage-height record.

## PLATTE RIVER BASIN

6-7165. Clear Creek near Lawson, Colo.

Location.--Lat 39°45'40", long 105°39'06", in SE¼NE¼ sec.27, T.3 S., R.74 W., on right bank 500 ft south of U. S. Highway 6 and 40, 0.4 mile downstream from West Fork Clear Creek, and 1 mile west of Lawson.

Drainage area.--145 sq mi.

Records available.--March 1946 to September 1965. Records prior to 1959 include inflow from August P. Gumlick Tunnel (formerly Jones Pass Tunnel).

Gage.--Water-stage recorder. Datum of gage is 8,193.72 ft above mean sea level (State Highway Department bench mark).

Average discharge.--19 years, 139 cfs (100,600 acre-ft per year), adjusted for inflow from August P. Gumlick Tunnel prior to 1959.

Extremes.--Maximum discharge during year, 2,240 cfs June 17 (gage height, 6.14 ft), from rating curve extended above 1,000 cfs; minimum daily, 19 cfs Mar. 20.

1946-65: Maximum discharge, 6,130 cfs June 4, 1956 (gage height, 7.41 ft), from rating curve extended above 1,600 cfs on basis of computation of peak flow over dam, caused by failure of Georgetown Dam on White Reservoir about 3 miles upstream; minimum daily, 13 cfs Feb. 20, 1955.

Remarks.--Records good except those for periods of ice effect, which are poor. Natural flow affected by minor transmountain diversion from Colorado River basin through Berthoud Pass ditch (see elsewhere in this report). No diversion above station.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 9 to May 5, May 24 to June 5, June 28 to July 1)

Oct. 1 to Mar. 18

Mar. 18 to June 17

June 18 to Sept. 30

2.3	24	2.3	20	4.0	215	3.1	78	5.0	795
2.5	42	2.6	38	4.5	350	3.4	151	5.5	1,300
2.7	65	3.0	75	5.0	655	4.0	325	6.0	2,030
		3.5	133	6.0	2,030	4.5	500		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	43	31	30	30	30	28	24	74	261	851	742	217
2	42	34	30	31	30	27	24	100	256	931	*692	208
3	39	36	32	30	30	26	24	113	280	*899	650	200
4	38	27	31	30	30	30	21	*119	*297	827	608	194
5	37	32	29	29	*30	30	21	120	281	827	555	192
6	37	34	28	30	30	30	22	*107	261	827	516	181
7	36	32	26	31	30	30	23	98	272	758	*482	175
8	36	30	25	29	30	29	*23	92	294	706	444	170
9	37	30	25	27	33	30	24	80	*350	678	423	159
10	37	32	*25	27	32	26	25	76	505	685	395	*164
11	37	*29	27	*27	30	*26	24	74	583	671	370	146
12	37	27	27	28	27	26	24	*82	463	*713	356	146
13	38	31	26	28	29	28	26	96	540	638	339	135
14	*38	30	25	29	30	27	25	105	*727	596	328	124
15	38	31	26	28	28	26	26	96	1,010	565	328	117
16	40	33	27	28	28	26	27	94	1,230	540	313	114
17	39	33	28	28	30	26	29	*115	1,660	555	319	112
18	37	32	28	30	30	25	29	142	1,520	570	350	114
19	33	26	28	30	31	20	29	150	1,460	650	416	129
20	35	28	28	30	29	19	35	182	1,420	602	412	138
21	35	28	30	30	28	20	44	*205	1,360	620	350	122
22	35	33	30	30	30	20	49	263	*1,260	819	336	122
23	36	32	31	30	30	20	*54	315	1,110	811	319	124
24	36	32	28	30	29	20	63	280	1,090	883	304	127
25	33	30	28	30	30	20	58	251	1,020	891	286	124
26	32	30	29	28	29	20	51	223	955	827	274	114
27	33	30	30	27	29	20	48	205	835	765	265	107
28	34	30	30	27	29	20	43	*191	*835	713	256	98
29	34	31	28	30	-	20	46	191	875	614	250	110
30	36	30	27	30	-----	22	54	213	891	575	241	98
31	36	-----	27	30	-----	23	-----	242	-----	811	229	-----
Total	1,134	924	869	902	831	760	1,015	4,694	23,901	22,418	12,148	4,281
Mean	36.6	30.8	28.0	29.1	29.7	24.5	33.8	151	797	723	392	143
Ac-ft	2,250	1,830	1,720	1,790	1,650	1,510	2,010	9,310	47,410	44,470	24,100	8,490

Calendar year 1964: Max 472 Min 20 Mean 96.4 Ac-ft 69,940  
Water year 1964-65: Max 1,660 Min 19 Mean 202 Ac-ft 146,500

Peak discharge (base, 600 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-17	2100	6.14	2,240	7-23	2200	5.65	1,500
7-2	2130	5.32	1,170	7-31	1530	5.17	931

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 20, 21, Dec. 5, 6, 8-11, 13-22, 26, 29-31, Jan. 9-11, 13, 22-30, Feb. 1, 2, 8, 11-18, 21, 24-26, Mar. 1-6, 18-22, 24, 25.



6-7195. Clear Creek near Golden, Colo.

Location.--Lat 39°45'02", long 105°14'54", in NE¼ sec.32, T.3 S., R.70 W., on left bank 0.2 mile upstream from headgate of Church ditch, 0.7 mile downstream from headgate of Welch ditch, 1.0 mile west of Golden, and 1½ miles downstream from North Clear Creek.

Drainage area.--399 sq mi.

Records available.--October 1908 to December 1909, June 1911 to September 1965. Monthly discharge only for some periods, published in WSP 1310. Records for 1940-58 include inflow from August P. Gumlick Tunnel (formerly Jones Pass tunnel).

Gage.--Water-stage recorder. Datum of gage is 5,735.27 ft above mean sea level (State Highway Department bench mark). Prior to May 15, 1919, at site half a mile upstream at different datum. May 15, 1919, to Mar. 16, 1934, at present site at datum 3.13 ft higher. Mar. 17, 1934, to Aug. 29, 1941, at present site at datum 4.00 ft higher. Aug. 30, 1941, to Apr. 16, 1942, at present site at datum 2.00 ft higher. Apr. 17, 1942, to Jan. 20, 1943, at site 600 ft downstream at datum 7.50 ft lower.

Average discharge.--55 years, 230 cfs (166,500 acre-ft per year), adjusted for inflow from August P. Gumlick Tunnel and Berthoud Pass ditch 1940-58.

Extremes.--Maximum discharge during year, 3,510 cfs July 24 (gage height, 6.55 ft), from rating curve extended above 1,700 cfs; minimum daily, 25 cfs Jan. 25-27, Feb. 1.

1908-9, 1911-65: Maximum discharge, 5,890 cfs Sept. 9, 1933 (gage height, 11.57 ft, present datum, from floodmarks), from rating curve extended above 2,200 cfs on basis of slope-area measurement of peak flow; minimum daily recorded, 11 cfs Mar. 13, 1954. Maximum discharge known, 8,700 cfs Aug. 1, 1888, from reports of State engineer of Colorado for station 5½ miles upstream.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements generally made twice a month. Natural flow of stream affected by minor transmountain diversion from Colorado River basin through Berthoud Pass ditch (see elsewhere in this report) and several small reservoirs above station. Diversion 0.7 mile above station by Welch ditch for irrigation of about 1,000 acres below station.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used July 8-24)

Oct. 1 to July 24

July 24 to Sept. 30

2.2	22	4.0	470	3.7	150	5.0	880
2.4	37	4.5	840	4.0	240	5.5	1,520
2.7	70	5.0	1,400	4.5	470	6.0	2,340
3.0	126	5.5	2,180				
3.5	265						

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	60	41	52	28	25	36	55	150	412	1,040	1,370	284
2	54	42	52	28	27	35	58	189	392	1,160	1,320	272
3	53	42	42	27	34	35	54	221	425	1,150	1,240	268
4	50	39	46	26	38	36	50	234	482	1,100	1,130	260
5	50	35	44	26	40	37	45	234	524	1,050	1,010	252
6	48	42	40	26	42	38	43	212	470	1,030	916	248
7	48	42	37	26	40	42	47	200	482	990	830	240
8	46	39	33	27	38	43	46	189	512	990	753	244
9	47	38	34	28	36	42	49	167	600	910	699	219
10	48	40	36	29	33	42	49	148	750	880	658	225
11	49	37	34	29	32	43	46	133	1,010	870	603	213
12	48	35	32	27	32	43	46	146	920	910	568	207
13	48	38	31	27	32	44	45	167	960	870	526	198
14	48	36	32	29	32	41	44	194	1,040	786	505	177
15	48	33	33	31	32	40	45	175	1,200	750	512	171
16	46	30	30	31	35	40	49	162	1,470	702	505	171
17	46	31	28	29	37	38	53	186	1,760	726	498	168
18	46	31	30	27	38	36	55	240	2,020	759	540	168
19	43	32	32	26	40	36	55	248	1,860	900	634	180
20	42	33	35	26	40	40	60	304	1,710	950	596	207
21	44	34	36	27	36	43	78	344	1,620	910	512	189
22	44	36	37	26	37	45	92	412	1,570	1,470	470	183
23	46	40	38	26	35	43	104	518	1,530	1,270	450	183
24	45	43	35	26	38	40	124	506	1,440	1,650	425	180
25	45	45	32	25	39	42	116	445	1,350	1,620	400	186
26	44	44	29	25	41	50	124	408	1,260	1,410	380	174
27	43	42	30	25	41	52	126	368	1,110	1,170	360	162
28	42	42	32	26	38	54	122	332	1,080	1,120	345	150
29	44	44	31	26	-	52	114	320	1,100	976	340	174
30	44	48	31	26	-----	50	122	340	1,110	904	330	159
31	43	---	30	26	-----	55	---	380	---	1,330	304	---
Total	1,452	1,154	1,094	837	1,008	1,313	2,116	8,272	32,169	32,353	19,729	6,112
Mean	46.8	38.5	35.3	27.0	36.0	42.4	70.5	267	1,072	1,044	636	204
Ac-ft	2,880	2,290	2,170	1,660	2,000	2,600	4,200	16,410	63,810	64,170	39,130	12,120

Calendar year 1964: Max 663 Min 28 Mean 141 Ac-ft 102,100  
Water year 1964-65: Max 2,020 Min 25 Mean 295 Ac-ft 213,400

Peak discharge (base, 1,100 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-18	0130	5.51	2,290	7-31	2130	5.50	1,550
7-24	1900	6.55	3,510				

Note.--Stage-discharge relation affected by ice Nov. 14-30, Dec. 5-8. No gage-height record Dec. 9 to Mar. 29 (stage-discharge relation affected by ice during most of period).

## PLATTE RIVER BASIN

6-7200. Clear Creek at mouth, near Derby, Colo.

Location.--Lat 39°49'42", long 104°57'30", in SW¼SW¼ sec.36, T.2 S., R.68 W., on right bank 210 ft downstream from York Streek bridge, 0.6 mile upstream from mouth, and 2½ miles west of Derby. Prior to Sept. 21, 1965, at site 50 ft upstream.

Drainage area.--575 sq mi.

Records available.--April to November 1914, March 1927 to September 1965. Prior to October 1933 monthly discharge only, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 5,110 ft (from topographic map). Apr. 1 to Nov. 30, 1914, chain gage at bridge 210 ft upstream at different datum. Feb. 25, 1927, to June 7, 1942, water-stage recorder at several sites within 1,000 ft of present site at various datums. June 8, 1942, to May 30, 1948, water-stage recorder at site 210 ft upstream at datum 5.56 ft higher, May 31, 1948, to Aug. 27, 1956, at datum 3.56 ft higher, and Aug. 28, 1956, to Nov. 14, 1957, at datum 2.56 ft higher. Nov. 15, 1957, to July 15, 1958, water-stage recorder at site 50 ft upstream at datum 2.56 ft higher. July 16, 1958, to Sept. 20, 1965, water-stage recorder at site 50 ft upstream at datum 1.56 ft higher.

Average discharge.--38 years (1927-65), 91.7 cfs (66,390 acre-ft per year).

Extremes.--Maximum discharge during year, 5,070 cfs July 24 (gage height, 7.41 ft, site and datum then in use), from rating curve extended above 2,100 cfs; minimum daily, 5.7 cfs Oct. 8, 10, 25.  
1914, 1927-65: Maximum discharge, that of July 24, 1965; minimum daily, 0.4 cfs Mar. 11, 1943.

Remarks.--Records good below 200 cfs and fair above. Natural flow of stream affected by transmountain diversions (see elsewhere in this report), storage reservoirs, diversions for irrigation of about 75,000 acres above station, and return flow from irrigated areas.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.2	6.8	*42	24	29	30	27	132	106	494	1,530	48
2	*7.2	8.0	42	22	28	29	30	136	108	*490	1,320	50
3	6.4	8.8	41	22	25	27	28	154	90	560	1,250	54
4	6.8	8.8	43	30	*25	29	30	165	478	740	1,190	56
5	7.2	8.4	36	27	27	*30	48	159	1,940	768	1,030	53
6	7.2	8.4	31	*27	28	31	*31	157	817	650	887	62
7	6.4	8.8	25	26	28	29	31	132	520	502	747	*63
8	5.7	8.0	20	25	27	29	30	134	428	482	656	71
9	6.0	8.0	15	24	27	29	32	121	478	456	590	60
10	5.7	7.6	15	22	27	33	27	98	859	400	525	a75
11	8.4	7.6	16	23	24	31	25	*94	1,340	382	*478	a75
12	6.8	8.4	17	22	26	32	18	87	1,540	466	382	a72
13	6.4	8.4	20	23	27	30	15	81	1,460	644	260	a72
14	6.4	8.4	24	25	26	26	15	108	1,780	535	215	a70
15	7.2	8.4	21	*27	25	28	15	32	2,230	502	164	a70
16	6.8	25	*26	29	25	28	14	18	2,390	*379	179	a68
17	6.0	38	22	31	27	31	12	16	2,620	280	192	a66
18	6.8	40	24	31	*36	28	16	40	2,360	278	197	a68
19	7.6	41	25	27	37	26	16	68	2,450	382	226	a70
20	7.6	40	24	25	36	28	14	85	2,480	668	231	a140
21	7.2	41	25	25	32	28	*14	80	2,270	1,090	143	*192
22	*6.4	36	28	24	32	31	13	96	2,050	1,680	136	92
23	6.0	41	40	23	32	30	15	134	1,860	1,820	128	65
24	6.0	42	46	23	29	28	28	144	1,620	2,060	111	65
25	5.7	42	29	24	30	26	33	68	1,580	*2,060	93	65
26	6.8	38	27	23	33	29	73	125	1,280	1,770	77	65
27	6.0	37	27	24	34	33	224	*76	1,010	1,500	*43	65
28	6.0	44	31	23	*29	30	196	35	638	1,320	42	68
29	6.4	44	28	24	-	28	159	31	555	1,070	43	107
30	6.0	43	26	30	-----	26	144	34	578	929	47	123
31	6.8	-----	25	29	-----	27	-----	58	-----	1,390	65	-----
Total	207.1	714.8	861	784	811	900	1,373	2,898	39,915	26,747	13,177	2,270
Mean	6.68	23.8	27.8	25.3	29.0	29.0	45.8	93.5	1,330	863	425	75.7
Ac-ft	411	1,420	1,710	1,560	1,610	1,790	2,720	5,750	79,170	53,050	26,140	4,500

Calendar year 1964: Max 356 Min 1.8 Mean 43.7 Ac-ft 31,760  
Water year 1964-65: Max 2,620 Min 5.7 Mean 248 Ac-ft 179,800

\* Discharge measurement made on this day.  
a No gage-height record.

6-7205. South Platte River at Henderson, Colo.

Location.--Lat 39°55'12", long 104°52'18", in NW¼SE¼ sec.34, T.1 S., R.67 W., on left bank 1,200 ft upstream from bridge on State Highway 22 and 0.3 mile west of Henderson.

Drainage area.--4,713 sq mi.

Records available.--May 1926 to September 1965. Prior to October 1933 monthly discharge only, published in WSP 1310.

Gage.--Water-stage recorder. Datum of gage is 5,005.12 ft above mean sea level, datum of 1929. Prior to Apr. 17, 1956, at site 1,240 ft downstream. May 1, 1926, to Apr. 19, 1942, at datum 3.00 ft higher, Apr. 20, 1942, to Sept. 30, 1953, at datum 1.00 ft higher, and Oct. 1, 1953, to Apr. 16, 1956, at present datum. Apr. 17, 1956, to May 31, 1960, at site 840 ft downstream at present datum.

Average discharge.--39 years, 326 cfs (236,000 acre-ft per year).

Extremes.--Maximum discharge during year, 29,600 cfs June 17 (gage height, 12.93 ft), from rating curve extended above 9,000 cfs; minimum daily, 13 cfs Apr. 19.

1926-65: Maximum discharge, that of June 17, 1965; minimum daily, 4.4 cfs Apr. 1, 1950.

Remarks.--Records good below 1,000 cfs and poor above. Natural flow of stream affected by transmountain diversions, storage reservoirs, ground-water withdrawals, diversions for irrigation of about 253,000 acres, and return flow from irrigated areas. Records of chemical analyses for the water year 1965 are published in Part 2 of this report.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used May 23-30, Aug. 27-30)

0.6	13	3.0	810
.7	18	4.0	1,590
.8	25	5.0	2,590
1.1	75	7.0	5,480
1.5	175	8.0	7,730
2.0	320	10.0	14,800
2.5	520		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	78	90	*138	69	272	165	95	508	242	966	3,370	416
2	*82	110	132	69	275	165	110	508	112	859	3,260	364
3	73	241	122	69	266	152	95	556	108	803	2,910	424
4	54	160	128	80	*263	150	100	547	1,140	740	2,690	408
5	61	*162	122	100	263	*175	210	496	3,160	728	2,510	388
6	63	155	95	92	251	165	105	468	1,190	587	2,230	396
7	65	145	92	*88	230	145	*100	448	638	428	1,990	388
8	59	135	90	80	242	148	92	472	524	480	1,730	*692
9	61	128	88	75	251	158	90	412	488	587	1,520	576
10	65	135	88	71	242	180	80	*368	638	464	1,320	416
11	50	148	85	71	224	269	85	317	880	529	1,080	352
12	42	158	82	75	218	275	57	284	1,250	632	*908	308
13	59	145	73	73	218	251	85	278	1,010	740	686	290
14	57	132	75	73	221	230	43	416	1,060	710	680	230
15	63	175	78	*75	233	*245	28	488	1,200	761	620	281
16	92	162	*82	71	239	242	26	360	1,930	734	644	328
17	73	175	73	73	254	266	19	290	*13,000	686	686	376
18	75	170	73	80	*320	248	31	324	4,760	644	852	364
19	98	170	71	80	299	224	13	420	4,300	768	1,390	444
20	108	160	73	78	248	221	115	440	3,770	1,210	1,410	1,090
21	105	138	73	73	290	227	132	480	3,290	1,660	761	894
22	*95	122	85	80	275	251	*215	534	2,910	1,790	1,120	644
23	98	125	90	195	140	263	396	662	2,630	*2,610	754	662
24	102	135	105	182	135	200	538	901	2,430	2,890	831	668
25	85	135	85	200	158	82	576	831	2,320	*5,130	565	686
26	95	130	78	212	165	110	831	929	2,130	5,420	392	710
27	98	118	78	209	165	122	1,290	*570	1,900	2,660	*251	674
28	102	128	90	212	145	95	887	372	1,610	3,010	332	626
29	102	128	88	215	-	98	638	242	*1,370	2,070	392	879
30	102	132	73	275	-----	90	576	182	1,060	1,720	448	845
31	95	-----	71	287	-----	88	-----	165	-----	2,390	468	-----
Total	2,457	4,347	2,776	3,682	6,502	5,700	7,658	14,268	63,050	45,406	38,800	15,819
Mean	79.3	145	89.5	119	232	184	255	460	2,102	1,465	1,252	527
Ac-ft	4,870	8,620	5,510	7,300	12,900	11,310	15,190	28,300	125,100	90,060	76,960	31,380

Calendar year 1964: Max 1,680 Min 22 Mean 185 Ac-ft 134,000  
Water year 1964-65: Max 13,000 Min 13 Mean 577 Ac-ft 417,500

\* Discharge measurement made on this day.

## PLATTE RIVER BASIN

6-7225. South St. Vrain Creek near Ward, Colo.

Location.--Lat 40°05'27", long 105°30'50", in NE¼SW¼ sec.36, T.2 N., R.73 W., on left bank at downstream side of bridge, 1.3 miles north of Ward and ¾ miles downstream from Brainard Lake.

Drainage area.--14.4 sq mi.

Records available.--October 1925 to September 1927, October 1928 to September 1931, September 1954 to September 1965. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 9,372 ft (from topographic map). May 29, 1926, to Sept. 30, 1927, and May 21, 1929, to Sept. 30, 1931, at site 600 ft downstream at datum 24.37 ft lower.

Average discharge.--16 years, 29.1 cfs (21,070 acre-ft per year).

Extremes.--Maximum discharge during year, 372 cfs June 17 (gage height, 3.90 ft); minimum daily discharge, 1.7 cfs Mar. 19.

1925-27, 1928-31, 1954-65: Maximum discharge, 462 cfs June 29, 1957; maximum gage height, 4.11 ft June 27, 1957; minimum daily discharge determined, 1 cfs Mar. 20, 1930.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station. Slight regulation by several small lakes above station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.7	6.7	2.2	2.3	2.3	2.1	2.2	9.4	* 54	184	135	20
2	14	5.0	2.3	2.3	2.3	2.1	2.2	13	51	198	93	19
3	14	* 5.0	2.3	2.3	2.3	2.1	2.2	17	55	193	* 83	18
4	13	4.1	2.3	2.4	2.3	2.1	2.2	19	57	180	76	17
5	13	4.4	2.3	2.3	2.4	2.1	2.2	19	55	167	66	18
6	13	5.6	2.2	2.3	2.4	2.2	2.2	13	53	159	61	18
7	13	5.6	* 2.2	2.3	2.4	2.2	2.2	10	56	159	56	17
8	12	6.4	2.1	2.4	2.3	2.2	2.2	9.8	60	176	51	* 17
9	12	7.0	2.1	2.5	* 2.2	2.3	2.2	9.8	72	172	51	15
10	12	5.6	2.2	2.5	2.1	* 2.3	* 2.2	* 7.6	96	159	48	14
11	12	5.6	2.2	2.5	2.0	2.3	2.2	7.0	150	167	44	14
12	* 11	b 4.0	2.1	* 2.5	2.0	2.2	2.2	8.9	96	184	44	17
13	11	b 3.4	2.1	2.6	2.0	2.2	2.2	12	120	176	43	15
14	8.9	b 3.2	2.0	2.6	2.0	2.2	2.2	11	160	146	41	14
15	7.0	b 3.0	2.0	2.5	2.0	2.2	2.2	8.9	200	128	41	12
16	6.2	b 2.8	2.1	2.5	2.1	2.2	2.2	9.8	* 280	110	41	11
17	5.3	b 2.6	2.1	2.5	2.1	2.1	2.2	20	328	110	43	11
18	5.3	b 2.6	2.1	2.5	2.1	1.9	2.5	29	280	128	45	12
19	9.8	b 2.8	2.1	2.5	2.2	1.7	2.6	33	255	135	49	13
20	6.2	b 2.8	2.2	2.6	2.1	1.8	3.1	37	238	139	48	14
21	5.0	b 2.6	2.2	2.5	2.1	1.9	4.6	41	* 238	* 184	41	13
22	4.6	b 2.6	2.3	2.5	2.0	2.0	7.6	45	238	198	39	12
23	5.0	2.6	2.3	2.4	2.0	2.0	11	53	223	184	38	12
24	5.0	2.4	2.4	2.2	2.1	2.0	13	55	213	249	35	13
25	6.7	2.3	2.3	2.2	2.1	2.1	9.4	48	208	193	32	15
26	7.6	2.2	2.2	2.3	2.1	2.1	11	41	176	159	29	14
27	4.7	2.5	2.2	2.2	2.1	2.2	12	34	150	132	28	13
28	3.8	2.5	2.2	2.2	2.1	2.2	6.4	32	* 150	99	26	12
29	3.2	2.3	2.3	2.1	-	2.2	5.3	33	167	79	25	16
30	3.4	2.2	2.3	2.2	-----	2.2	6.2	37	184	88	25	13
31	4.1	-----	2.3	2.3	-----	2.2	-----	48	-----	180	22	-----
Total	268.8	112.4	68.2	74.0	60.2	65.6	132.1	771.2	4,663	4,915	1,499	439
Mean	8.67	3.75	2.20	2.39	2.15	2.12	4.40	24.9	155	159	48.4	14.6
Ac-ft	533	223	135	147	119	130	262	1,530	9,250	9,750	2,970	871

Calendar year 1964: Max 145 Min 1.6 Mean 21.2 Ac-ft 15,400  
 Water year 1964-65: Max 328 Min 1.7 Mean 35.8 Ac-ft 25,920

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 8 to Apr. 9 (stage-discharge relation affected by ice during most of period), June 13-16.

6-7240. St. Vrain Creek at Lyons, Colo.

Location.--Lat 40°13'05", long 105°15'34", in NW¼NW¼ sec.20, T.3 N., R.70 W., on left bank 75 ft southwest of State Highways 7 and 66 at southeast edge of Lyons, 400 ft upstream from St. Vrain Supply Canal, and 0.4 mile downstream from confluence of North and South St. Vrain Creeks.

Drainage area.--212 sq mi.

Records available.--August 1887 to September 1891, June 1895 to September 1965. Monthly discharge only for some periods, published in WSP 1310. Published as "near Lyons" 1901, 1903.

Gage.--Water-stage recorder. Altitude of gage is 5,292 ft (from topographic map). Prior to Apr. 6, 1923, staff gages near present site at different datums. Apr. 6, 1923, to Sept. 30, 1956, water-stage recorder at same site at datum 1.00 ft higher.

Average discharge.--74 years, 131 cfs (94,840 acre-ft per year).

Extremes.--Maximum discharge during year, 1,840 cfs June 17 (gage height, 5.70 ft); minimum daily, 1.4 cfs Mar. 27, 29. 1887-91, 1895-1965: Maximum discharge, 10,500 cfs June 22, 1941 (gage height, 8.06 ft, from floodmark), from rating curve extended above 2,100 cfs on basis of slope-area measurement at gage height 7.90 ft; no flow Jan. 19, 20, 1922, Jan. 12, 13, 1950. Outstanding floods occurred in June 1864 and May 1876. Flood in May or June 1894 reached a stage of 9.13 ft, from information by local resident (discharge, about 9,800 cfs). For discussion of these floods, see WSP 997.

Remarks.--Records good. Diversions above station for irrigation of about 20,000 acres. Flow partly regulated by small reservoirs above station.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used June 28 to July 5)

Oct. 1 to June 27				June 28 to Sept. 30	
1.8	1.0	2.6	38	2.2	28
1.9	2.0	2.7	54	2.5	79
2.1	6.0	2.9	105	3.0	210
2.2	9.0	3.5	330	3.5	390
2.3	13	4.0	570	4.0	660
2.4	19	5.0	1,260	4.8	1,190
2.5	26	5.7	1,840		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22	8.7	7.2	9.0	7.8	5.0	4.6	196	203	576	624	75
2	22	12	6.9	7.8	7.5	*4.2	5.0	210	186	636	455	70
3	20	14	6.0	6.9	*9.0	4.2	8.7	214	218	594	395	64
4	17	*11	6.6	10	9.8	6.3	11	203	242	570	343	64
5	19	8.1	4.6	*9.8	11	5.8	8.7	192	254	510	*301	62
6	21	8.4	5.0	9.0	10	5.2	16	150	200	510	266	66
7	*19	11	*5.0	8.7	9.8	5.2	*25	133	254	525	252	66
8	17	11	6.0	7.2	7.5	5.2	25	133	*282	552	238	66
9	18	11	9.4	6.3	8.7	5.6	34	130	348	540	214	60
10	17	9.8	9.4	6.3	8.1	5.8	44	126	549	535	189	57
11	19	8.4	9.0	6.3	7.2	6.0	57	105	1,240	530	172	57
12	20	4.8	4.8	5.8	7.8	5.8	33	96	1,270	582	169	55
13	19	4.2	3.2	6.0	7.5	5.2	28	108	1,360	606	152	55
14	15	16	3.2	7.8	9.4	5.2	26	130	1,400	500	134	*50
15	15	11	4.0	9.0	8.7	5.4	28	108	1,490	450	147	47
16	*13	12	5.2	8.4	*8.7	5.8	33	99	1,350	400	160	49
17	12	13	4.8	7.5	9.0	5.0	38	119	1,340	382	174	50
18	13	14	4.2	7.8	9.4	4.8	44	168	*1,360	410	*186	52
19	12	13	4.4	6.6	8.4	5.0	38	178	1,280	470	192	55
20	11	*12	4.8	5.8	9.0	5.2	51	*218	1,140	435	189	64
21	11	9.8	*5.2	6.0	6.6	6.3	69	238	1,090	430	166	57
22	9.8	11	7.8	5.6	7.5	*4.4	*88	246	1,100	*525	163	55
23	12	11	13	4.2	8.1	2.8	102	339	*988	490	163	60
24	12	8.1	14	5.8	5.6	1.9	119	330	925	666	147	44
25	11	9.0	11	5.2	6.9	1.5	99	314	897	762	131	42
26	5.4	7.8	6.1	4.2	7.2	1.8	102	270	778	630	114	42
27	4.4	6.9	11	5.0	7.5	1.4	108	246	642	495	107	39
28	4.4	5.2	11	6.0	6.3	1.7	88	206	*588	370	97	41
29	4.0	6.6	6.6	*8.4	-	1.4	122	189	582	308	90	57
30	3.6	6.9	5.0	8.4	-----	2.8	150	196	606	287	93	54
31	4.0	-----	6.0	11	-----	4.8	-----	189	-----	666	86	-----
Total	422.6	295.7	210.4	221.8	230.0	136.7	1,605.0	5,779	24,162	15,942	6,309	1,675
Mean	13.6	9.86	6.79	7.15	8.21	4.41	53.5	186	805	514	204	55.8
Ac-ft	838	587	417	440	436	271	3,180	11,460	47,920	31,620	12,510	3,320

Calendar year 1964: Max 390 Min 0.7 Mean 66.2 Ac-ft 48,060  
Water year 1964-65: Max 1,490 Min 1.4 Mean 156 Ac-ft 113,000

\* Discharge measurement made on this day.

## PLATTE RIVER BASIN

6-7251. St. Vrain Creek near Longmont, Colo.

Location.--Lat 40°09'07", long 105°03'10", in NW¼SW¼ sec.7, T.2 N., R.68 W., on left bank 630 ft downstream from county line bridge, 2.0 miles downstream from Lefthand Creek, and 3.0 miles southeast of Longmont.

Drainage area.--370 sq mi.

Records available.--October 1964 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 4,890 ft (from topographic map).

Extremes.--Maximum discharge during year, 1,810 cfs June 17 (gage height, 4.90 ft), from rating curve extended above 1,300 cfs; minimum daily, 14 cfs Apr. 22, May 12, 13.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Natural flow of stream affected by storage reservoirs, diversions for irrigation, and return flow from irrigated areas.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Dec. 1 to Feb. 12, July 8-21)

Oct. 1 to June 17 (1700)

June 17 (1700) to Sept. 30

1.4	14	3.0	425	1.2	33	2.4	275
1.5	20	3.5	705	1.4	52	3.0	580
1.8	52	4.0	1,040	1.6	80	4.0	1,210
2.2	113	4.5	1,430	2.0	155	4.9	1,840
2.6	240						

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	32	29	27	26	31	21	20	38	*30	119	742	66
2	31	28	25	31	32	21	19	44	33	131	525	64
3	30	*29	25	30	34	19	19	33	26	119	*454	62
4	30	28	26	36	37	22	22	36	32	95	370	60
5	30	28	25	35	39	20	28	35	74	64	247	56
6	29	27	24	37	37	20	21	27	53	46	192	62
7	29	28	*24	38	33	19	*19	20	42	52	170	55
8	29	28	27	*23	29	19	18	24	53	52	127	*52
9	29	28	30	24	*23	21	17	21	47	55	99	*66
10	*29	29	27	27	20	*23	15	*22	48	46	72	66
11	29	28	27	32	19	21	15	18	1,330	53	56	68
12	*29	28	25	35	24	28	15	14	*1,080	70	46	60
13	29	29	21	35	23	23	16	14	*844	108	39	66
14	30	31	22	39	21	20	18	41	*830	68	38	58
15	29	34	31	40	21	20	18	52	*633	55	52	53
16	29	33	29	41	24	20	16	20	*893	*55	77	53
17	28	34	24	41	26	21	15	24	1,300	57	77	64
18	28	37	25	39	28	21	19	25	1,570	62	80	70
19	28	35	26	37	28	21	19	26	1,320	65	83	71
20	28	32	34	36	29	21	18	29	1,140	82	97	106
21	28	31	36	36	28	19	15	25	*1,130	*104	78	85
22	28	30	34	35	28	25	14	53	1,090	155	94	62
23	28	30	31	35	23	24	20	72	982	113	117	72
24	29	31	29	34	27	23	27	51	859	281	97	61
25	29	32	27	32	23	23	25	51	808	718	92	64
26	30	30	28	30	23	21	42	69	628	564	82	58
27	32	29	27	33	23	23	42	74	432	432	80	53
28	34	28	35	36	21	21	28	75	*254	299	71	48
29	34	27	31	34	-	19	20	59	180	212	72	106
30	32	26	27	34	-----	20	19	47	175	172	76	*104
31	29	-----	24	35	-----	19	-----	51	-----	634	68	-----
Total	918	897	853	1,056	754	658	619	1,190	17,916	5,138	4,570	1,991
Mean	29.6	29.9	27.5	34.1	26.9	21.2	20.6	38.4	597	166	147	66.4
Ac-ft	1,820	1,780	1,690	2,090	1,500	1,310	1,230	2,360	35,540	10,190	9,060	3,950

Calendar year 1964: Max - Min - Mean - Ac-ft -  
Water year 1964-65: Max 1,570 Min 14 Mean 100 Ac-ft 72,520

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-10, Nov. 28, 29, Dec. 6, 7, 17, 18, 24-26, Jan. 5-8, 15-28, Feb. 4-8.

6-7255. Middle Boulder Creek at Nederland, Colo.

Location.--Lat 39°57'42", long 105°30'14", in NE¼SE¼ sec.13, T.1 S., R.73 W., on left bank at Nederland just downstream from North Beaver Creek, 1,000 ft upstream from Barker Reservoir.

Drainage area.--36.2 sq mi.

Records available.--June 1907 to September 1965. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder and compound sharp-crested weir. Datum of gage is 8,186.0 ft above mean sea level (Public Service Co. bench mark). Prior to Mar. 18, 1909, at datum 4.0 ft lower. Mar. 18, 1909, to Apr. 23, 1952, at datum 2.5 ft lower than present datum.

Average discharge.--58 years, 54.1 cfs (39,170 acre-ft per year).

Extremes.--Maximum discharge during year, 640 cfs July 24 (gage height, 4.25 ft); minimum daily, 3.7 cfs Nov. 12, Dec. 14, 18, 19. 1907-65: Maximum discharge, 811 cfs June 2, 1914 (gage height, 5.37 ft, datum then in use), by computation of peak flow over compound weir; minimum daily, 0.8 cfs Jan. 14, 1908.

Remarks.--Records fair. No diversion above station. Flow regulated at times by Jasper Lake (capacity, 326 acre-ft). North Beaver Creek entered Middle Boulder Creek downstream from station June 1 to Dec. 31, 1907, March 1911 to Dec. 31, 1916.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Stage-discharge relation affected by ice Dec. 13)  
(Shifting-control method used July 24 to Aug. 9)

0.2	3.5	1.5	91
.3	5.5	2.0	188
.5	9.5	2.5	297
.8	18	3.0	420
1.1	34	4.0	700

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.3	7.1	6.3	6.3	5.5	4.9	7.5	54	178	302	220	36
2	7.7	7.3	6.3	6.3	6.3	4.7	7.9	69	172	321	186	33
3	7.5	7.3	* 6.1	6.1	* 6.1	4.7	8.1	81	192	328	176	33
4	7.5	6.7	5.9	5.9	6.1	4.7	7.3	93	* 202	311	158	32
5	8.9	* 7.1	5.9	5.7	5.9	4.7	6.3	88	190	287	140	31
6	* 18	7.7	5.1	* 5.5	5.7	4.7	6.7	* 69	172	273	* 126	31
7	19	6.7	4.5	5.1	5.3	4.7	6.7	59	194	264	114	31
8	20	6.3	4.7	4.9	5.3	4.7	7.1	50	218	292	105	33
9	19	6.5	4.9	4.7	5.3	4.7	8.9	44	262	264	98	30
10	20	6.3	4.9	4.7	5.3	4.7	9.1	40	328	241	91	29
11	20	4.9	4.5	4.7	5.3	4.7	9.1	38	425	232	91	28
12	18	3.7	4.2	4.7	5.3	4.5	* 7.9	44	360	259	85	29
13	17	6.9	4.0	5.1	5.3	4.7	7.9	59	430	257	78	* 27
14	16	7.1	3.7	4.7	5.3	4.7	9.1	66	415	216	78	26
15	15	7.3	3.9	4.9	5.3	4.7	9.1	56	390	200	85	24
16	10	7.5	4.1	4.9	5.1	4.1	12	57	422	* 174	80	24
17	8.3	* 7.3	4.1	4.5	5.3	4.1	12	78	465	178	80	24
18	7.5	7.1	3.7	4.3	5.7	4.1	12	103	465	198	80	24
19	6.9	7.1	3.7	4.3	* 6.1	4.5	14	124	430	241	100	25
20	7.1	7.3	3.9	4.3	5.9	4.1	22	* 150	418	243	98	26
21	6.7	7.3	* 4.1	* 4.1	5.7	4.1	29	160	410	271	85	26
22	* 6.5	7.1	4.5	4.5	5.5	3.9	32	182	395	340	81	26
23	6.5	6.7	5.5	4.3	5.3	* 3.9	42	228	370	369	74	26
24	6.7	6.1	5.7	5.5	5.1	4.1	45	237	352	470	68	27
25	6.3	6.3	5.7	4.5	5.1	4.5	36	182	340	388	59	29
26	6.1	6.3	6.1	4.7	5.3	4.1	40	148	302	321	54	27
27	6.1	6.1	6.3	4.5	5.3	4.1	32	122	273	259	50	26
28	6.5	8.3	6.5	4.5	5.3	3.9	30	105	273	220	46	26
29	6.7	7.3	6.5	4.7	-	4.5	33	106	297	190	45	32
30	6.9	6.3	6.5	4.9	-----	5.9	39	130	311	194	45	29
31	6.5	-----	6.7	5.1	-----	6.9	-----	160	-----	290	* 42	-----
Total	333.2	203.0	158.5	152.9	154.0	141.3	548.7	3,182	9,651	8,393	2,918	850
Mean	10.7	6.77	5.11	4.93	5.50	4.56	18.3	103	322	271	94.1	28.3
Ac-ft	661	403	314	303	305	280	1,090	6,310	19,140	16,650	5,790	1,690

Calendar year 1964: Max 239 Min 3.7 Mean 40.0 Ac-ft 29,060  
Water year 1964-65: Max 470 Min 3.7 Mean 73.1 Ac-ft 52,940

Peak discharge (base, 280 cfs)

\* Discharge measurement made on this day.

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-24	0100	2.44	283	7-24	0015	4.25	640
6-17	2200	3.43	530	7-31	1400	2.77	335

## PLATTE RIVER BASIN

6-7270. Boulder Creek near Orodell, Colo.

Location.--Lat 40°00'23", long 105°19'49", in NE¼SW¼ sec.34, T.1 N., R.71 W., on left bank along State Highway 119, 0.7 mile southwest of old Orodell, 1 mile upstream from Fourmile Creek, and 3 miles southwest of courthouse in Boulder.

Drainage area.--102 sq mi.

Records available.--August to October 1887, April to October 1888, October 1906 to November 1914, March 1916 to September 1965. Monthly discharge only for some periods, published in WSP 1310. Figures of daily discharge for Feb. 3-10, 17-25, 1912, published in WSP 326, have been found to be unreliable and should not be used. Published as North Boulder Creek, Colorado 1887-88 and as "at Orodell" March 1907 to December 1916.

Gage.--Water-stage recorder. Altitude of gage is 5,826 ft (from topographic map). Prior to Sept. 1, 1907, staff gage and Sept. 1, 1907, to May 11, 1917, water-stage recorder, at sites 1 mile downstream, just upstream from Fourmile Creek, at different datums.

Average discharge.--57 years (1906-14, 1916-65), 91.8 cfs (66,460 acre-ft per year).

Extremes.--Maximum discharge during year, 1,190 cfs July 24 (gage height, 4.01 ft), from rating curve extended above 680 cfs; minimum daily, 1.4 cfs Oct. 24-28.

1887-88, 1906-13, 1916-65: Maximum discharge, 2,500 cfs June 6, 1921 (gage height, 4.31 ft), from rating curve extended above 1,200 cfs; minimum daily, 1 cfs Jan. 29, Feb. 1-3, 16-24, 1933.

Remarks.--Records good except those for Dec. 21 to Mar. 27, and those for periods of no gage-height record, which are poor. Flow regulated by Barker Reservoir (capacity, 11,500 acre-ft). Low flow during nonirrigation season regulated by Orodell powerplant 1,500 ft upstream from station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.2	8.4	22	26	15	16	27	88	182	478	592	69
2	8.2	12	27	29	15	20	27	94	210	490	438	69
3	7.8	15	*23	24	*14	6.3	29	107	243	496	364	63
4	7.8	20	29	25	14	24	28	143	*263	490	342	64
5	7.8	*15	24	25	14	18	32	152	214	466	342	64
6	*8.9	*14	27	*25	15	14	31	*130	140	416	*346	68
7	8.9	14	25	26	16	14	30	107	204	392	315	66
8	8.9	12	25	26	16	14	29	97	*235	422	291	62
9	8.6	13	25	31	15	16	34	85	239	432	275	52
10	7.2	12	28	26	16	16	38	77	224	410	247	42
11	6.8	14	25	34	20	15	32	68	235	382	239	37
12	7.0	9.6	22	27	18	15	*34	63	201	392	185	37
13	6.0	14	26	29	7.2	16	35	68	214	444	161	*34
14	6.0	15	24	28	12	17	35	77	218	400	149	31
15	5.2	15	33	28	20	15	40	85	291	*356	149	29
16	4.0	14	24	35	16	19	37	79	311	287	152	32
17	4.0	*16	a 28	18	15	17	48	89	a 356	259	164	33
18	4.0	18	a 25	20	15	16	34	111	a 392	299	176	32
19	4.0	20	a 22	19	*18	17	44	140	576	396	188	28
20	3.8	15	a 24	12	10	20	47	*197	707	396	179	42
21	4.0	16	*20	*18	13	19	59	228	689	508	167	42
22	*4.0	13	29	16	19	18	80	200	672	632	173	42
23	3.8	13	32	16	17	*16	93	247	*608	707	146	46
24	1.4	13	33	17	12	14	80	324	552	1,090	130	58
25	1.4	17	28	16	20	7.5	58	356	544	890	113	52
26	1.4	15	36	16	20	7.5	69	283	508	672	95	47
27	1.4	14	32	13	15	16	68	146	444	*592	79	38
28	1.4	14	26	14	17	16	66	138	396	490	83	42
29	2.2	14	25	14	-	16	77	167	422	405	77	63
30	1.6	17	25	14	-----	15	75	164	472	396	74	52
31	1.1	-----	23	15	-----	18	-----	173	-----	632	*72	-----
Total	181.1	432.0	817	682	434.2	488.3	1,416	4,483	10,962	15,117	6,503	1,436
Mean	5.84	14.4	26.4	22.0	15.5	15.8	47.2	145	365	488	210	47.9
Ac-ft	359	857	1,620	1,350	861	969	2,810	8,890	21,740	29,980	12,900	2,850

Calendar year 1964: Max 283 Min 1.4 Mean 54.3 Ac-ft 39,420

Water year 1964-65: Max 1,090 Min 1.4 Mean 118 Ac-ft 85,190

\* Discharge measurement made on this day.

a No gage-height record.



6-7295. South Boulder Creek near Eldorado Springs, Colo.

**Location.**--Lat 39°55'52", long 105°17'43", in SE¼ sec.26, T.1 S., R.71 W., on left bank 0.2 mile downstream from South Draw, 1 mile west of Eldorado Springs, 1½ miles downstream from South Boulder diversion canal, 5 miles south of Boulder, and about 6 miles downstream from Gross Reservoir.

**Drainage area.**--109 sq mi.

**Records available.**--April 1888 to October 1892, May 1895 to September 1901, August 1904 to September 1965. No winter records for water years 1889-92, 1900. Monthly discharge only for some periods, published in WSP 1310. Prior to January 1911, published as "at" or "near Marshall;" January 1911 to December 1913 as "at Eldorado Springs." Records for periods June 1900 to September 1901, August 1904 to September 1908, October 1909 to September 1911 are not adjusted for diversions by Community ditch and South Boulder and Coal Creek ditch, all other records contain flow in these ditches.

**Gage.**--Water-stage recorder. Altitude of gage is 6,080 ft (from topographic map). Prior to Sept. 25, 1929, staff gage or water-stage recorder at sites 1 mile downstream at different datums. Sept. 25, 1929, to May 2, 1934, water-stage recorder at site a quarter of a mile downstream at different datum. May 3, 1934, to Sept. 3, 1938, water-stage recorder at site 250 ft upstream at datum 4.00 ft higher than present datum. Sept. 4, 1938, to May 9, 1940, staff gages at site about 300 ft upstream or water-stage recorder at site half a mile downstream at different datums.

**Average discharge.**--59 years (1895-99, 1908-9, 1911-65), 76.7 cfs (55,530 acre-ft per year), adjusted for storage and diversion.

**Extremes.**--Maximum discharge during year, 910 cfs June 16 (gage height, 2.35 ft); minimum not determined.

1888-92, 1895-1901, 1904-65: Maximum discharge, 7,390 cfs Sept. 2, 1938 (gage height, 9.24 ft, from floodmarks, site and datum then in use), from rating curve extended above 600 cfs on basis of slope-area measurement of peak flow; no flow Oct. 15, 1932.

**Remarks.**--Records poor. Discharge measurements generally made twice a month. Many small diversions above station for irrigation. Water is imported above Gross Reservoir from Colorado River basin through Moffat water tunnel (see elsewhere in this report). Flow regulated since May 1, 1955, by Gross Reservoir (capacity, 43,060 acre-ft), about 6 miles above station. Contents Sept. 30, 1965, 42,960 acre-ft. Change in contents during water year 1965, +15,150 acre-ft. City of Denver diverts water 1½ miles above station (60,810 acre-ft in water year 1965).

**Cooperation.**--Contents of Gross Reservoir and diversion by City of Denver furnished by State engineer of Colorado.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.3	8.1					26	93	191	348	480	48
2	9.3	5.3					24	100	196	348	398	51
3	9.3	5.3					28	93	196	340	356	54
4	9.3	5.3					32	87	213	340	294	54
5	8.1	5.3					11	112	242	348	274	54
6	7.6	6.2					7.4	140	261	380	224	54
7	9.7	5.6					8.5	150	274	287	196	30
8	9.7	6.2					8.5	150	280	208	160	20
9	9.7	6.2					9.6	140	287	261	150	28
10	9.7	6.2					9.6	130	287	268	140	28
11	9.3	6.8					6.3	123	348	274	135	30
12	10	7.6					6.3	115	364	274	135	28
13	12	7.6					5.2	93	461	274	135	34
14	12	7.0					16	97	498	202	140	37
15	12	b 6.6					20	93	641	208	140	37
16	12		7	5.5	4.5	8	20	104	740	145	119	40
17	12						20	90	680	115	115	e 48
18	12						20	84	632	112	115	e 52
19	12						18	90	574	130	115	e 54
20	12						20	93	565	119	115	e 58
21	12						20	93	593	130	112	e 56
22	11						34	97	536	208	115	e 56
23	12	7.2					34	97	508	235	104	e 56
24	12						34	155	470	489	93	e 56
25	11						54	208	443	690	78	e 56
26	11						74	191	443	660	74	e 54
27	11						68	186	443	489	59	e 54
28	11						68	186	443	407	59	e 56
29	11						71	196	372	316	54	e 60
30	11						78	196	340	268	45	e 60
31	11							196		470	42	
Total	331.0	203.3	217	170.5	126.0	248	851.4	3,978	12,521	9,343	4,771	1,403
Mean	10.7	6.78	7	5.5	4.5	8	28.4	128	417	301	154	46.8
Ac-ft	657	403	430	338	250	492	1,690	7,890	24,840	18,530	9,460	2,780

Adjusted for storage in Gross Reservoir and diversion to Denver

Mean	7.98	5.52	4.1	2.8	5.0	4.3	38.8	124	422	296	142	44.0
Ac-ft	490	328	252	169	275	262	2,310	7,670	25,160	18,200	8,690	2,610

Observed

Calendar year 1964:	Max	347	Min	-	Mean	45.6	Ac-ft	33,090
Water year 1964-65:	Max	740	Min	-	Mean	93.6	Ac-ft	67,760

Adjusted

Calendar year 1964:	Mean	43.5	Ac-ft	31,560
Water year 1964-65:	Mean	91.8	Ac-ft	66,420

b Stage-discharge relation affected by ice.

e Stage-discharge relation indefinite.

Note.--No gage-height record Nov. 17 to Mar. 31 (stage-discharge relation affected by ice during most of period).

## PLATTE RIVER BASIN

6-7303. Coal Creek near Plainview, Colo.

Location.--Lat 39°52'40", long 105°16'36", in SE¼NE¼ sec.13, T.2 S., R.71 W., on left bank 100 ft upstream from culvert on State Highway 72, 1½ miles south of Plainview, 5 miles downstream from Beaver Creek, and 9 miles north of Golden.

Drainage area.--15.1 sq mi.

Records available.--August 1959 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 6,540 ft (from topographic map). Prior to June 17, 1964, at site 60 ft downstream at datum 4.49 ft lower.

Average discharge.--6 years, 3.89 cfs (2,820 acre-ft per year).

Extremes.--Maximum discharge during year, 101 cfs July 24 (gage height, 1.71 ft), from rating curve extended above 24 cfs; no flow Oct. 1-20, Oct. 25 to Nov. 16.

1959-65: Maximum discharge, 195 cfs June 16, 1963 (gage height, 2.44 ft, site and datum then in use), by contracted-opening measurement of peak flow; no flow for many days in each year.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. No diversion above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.0	0	0.8	5.6
.2	.2	.9	8.8
.3	.5	1.1	20
.4	1.0	1.3	37
.5	1.6	1.6	78
.7	3.7		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0	0.2	0.2	0.2	1.0		55	2.3	2.6	26	1.1
2	0	0	.2	.2	.2	1.2		56	2.2	2.4	23	.8
3	0	0	.2	.2	.2	1.1		49	* 2.0	2.0	19	.8
4	0	0	.2	.3	b.2	1.0		40	1.4	1.8	16	.8
5	0	0	.2	.3	b.2	1.0		33	7.0	1.5	12	.8
6	0	* 0	.2	.3	b.3	1.4	2.6	27	55	1.5	* 9.8	.8
7	* 0	0	.2	.3	.3	1.2		23	4.4	1.3	8.2	.9
8	0	0	.2	.3	.2	1.3		21	35	1.3	6.9	1.1
9	0	0	.2	.3	.2	1.2		18	37	1.2	5.6	.9
10	0	0	.2	.3	.2			16	30	1.1	4.8	.8
11	0	0	.2	.3	.2		4.2	13	35	1.1	3.9	.7
12	0	0	.3	.3	.2		* 4.4	11	46	1.2	3.3	.6
13	0	0	.4	.3	.1		4.5	10	40	1.1	2.9	*.5
14	0	0	.2	.3	.1		4.3	9.3	35	*.9	2.7	.4
15	0	0	.2	.3	.1		4.3	8.5	30	.8	2.6	.4
16	0	0	.1	.3	.1		4.8	8.5	26	.6	3.5	.5
17	0	.1	.1	.3	.1		4.8	7.5	22	.5	3.5	.8
18	0	.1	.1	.3	.2		5.0	6.9	18	.5	3.0	.8
19	0	.1	.1	.3	*.3		5.2	6.6	15	1.4	3.2	1.0
20	0	.1	.2	.3	b.5	1.4	6.2	* 5.6	12	.8	2.7	1.4
21	.1	.1	.2	.3	b.7		7.2	5.6	10	2.1	2.5	1.5
22	.1	.1	.3	.3	b.9		7.8	5.6	* 8.5	3.6	2.7	1.6
23	*.1	.2	.4	.3	.7		8.2	5.6	6.9	3.0	2.6	1.7
24	.1	.2	*.4	.3	* 1.6		8.5	4.8	6.2	19	2.1	1.6
25	0	.2	.3	.2	1.1		8.2	4.8	5.0	32	1.7	1.4
26	0	.2	.3	.4	1.1		10	5.2	4.5	28	1.4	1.4
27	0	.2	.3	.2	1.2		13	4.8	3.7	* 2.4	1.3	1.2
28	0	.2	.3	.2	1.2		18	3.6	3.3	19	1.2	1.1
29	0	.2	.2	.2	-		* 30	3.0	3.1	15	1.1	2.0
30	0	.2	.2	.2	-----		4.5	2.8	3.0	14	1.4	2.5
31	0	-----	.2	.2	-----		2.4	2.4	-----	23	* 1.4	-----
Total	0.4	2.2	7.0	8.5	12.6	41.2	229.6	473.1	624.7	208.3	182.0	31.9
Mean	0.01	0.07	0.23	0.27	0.45	1.33	7.65	15.3	20.8	6.72	5.87	1.06
Ac-ft	0.8	4.4	14	17	25	82	455	938	1,240	413	361	63

Calendar year 1964: Max 12 Min 0 Mean 1.63 Ac-ft 1,180

Water year 1964-65: Max 70 Min 0 Mean 4.99 Ac-ft 3,610

Peak discharge (base, 25 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-1	1800	1.49	61	7-24	2000	1.71	101
6-5	0700	1.64	88	8-1	0900	1.19	27
6-12	1430	1.38	47				

\* Discharge measurement or observation of no flow made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 8-22, Dec. 17, 18, Jan. 30 to Feb. 3, Feb. 7-19, 23, 24, Mar. 10 to Apr. 12 (stage-discharge relation affected by ice during part of periods).

6-7310. St. Vrain Creek at mouth, near Platteville, Colo.

Location.--Lat 40°15'29", long 104°52'45", in SE¼NW¼ sec.3, T.3 N., R.67 W., on right bank 140 ft downstream from bridge on county road, 1.3 miles upstream from mouth, and 4 miles northwest of Platteville.

Drainage area.--976 sq mi.

Records available.--July 1904 to December 1906, April to December 1915, March 1927 to September 1965. Prior to October 1933 monthly discharge only, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 4,740 ft (from topographic map). July 1, 1904, to Dec. 31, 1906, and Apr. 1 to Dec. 31, 1915, staff gage at bridge 140 ft upstream at different datums. Feb. 24, 1927, to June 10, 1939, water-stage recorder at bridge 140 ft upstream and June 11, 1939, to Apr. 24, 1960, water-stage recorder at site 180 ft upstream at different datum.

Average discharge.--40 years (1904-6, 1927-65), 194 cfs (140,500 acre-ft per year).

Extremes.--Maximum discharge during year, 3,700 cfs July 25 (gage height, 6.26 ft); minimum daily, 37 cfs May 11.

1904-6, 1915, 1927-65: Maximum discharge, 11,300 cfs Sept. 3, 1938 (gage height, 8.93 ft, site and datum then in use), from rating curve extended above 4,700 cfs; minimum daily, 12 cfs Apr. 23, 1935.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for irrigation of about 177,000 acres. Flow partly regulated by many small reservoirs above station.

Revisions.--Revised figures of discharge, in cubic feet per second, for the water year 1964, superseding those previously published, are given herewith:

1964	1964-Con.	1964-Con.
Sept. 16..... 70	Sept. 21..... 72	Sept. 26..... 76
17..... 72	22..... 72	27..... 74
18..... 72	23..... 76	28..... 74
19..... 72	24..... 78	29..... 72
20..... 72	25..... 76	30..... 72

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
September 1964.....	2,414	125	69	80.5	4,790
Water year 1963-64.....	-	434	36	98.1	71,230

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Jan. 6, Feb. 16-22, May 8-14, June 20 to July 3, Aug. 6 to Sept. 30)

1.0	32	2.5	341	4.0	1,160
1.5	90	3.0	520	5.0	2,190
2.0	199	3.5	780	6.0	3,360

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	72	87	*85	76	75	80	95	94	114	708	2820	224
2	*72	80	87	76	66	78	97	101	112	560	2750	224
3	69	85	85	75	60	78	87	97	104	605	2180	219
4	70	83	83	75	*69	78	85	95	114	620	1870	216
5	72	78	82	75	72	*80	101	95	199	540	1500	222
6	70	80	83	*73	75	76	101	70	293	445	1100	227
7	73	80	78	67	76	78	*88	53	164	355	899	222
8	73	76	78	63	75	75	78	45	132	311	696	237
9	78	*75	85	60	78	75	78	54	160	270	524	237
10	a 70	62	85	59	82	80	80	*42	229	247	331	224
11	a 70	72	83	62	70	82	80	37	*742	232	219	219
12	a 70	73	80	62	63	82	82	41	1680	227	*184	209
13	a 70	83	72	62	69	85	82	42	1500	237	179	199
14	a 70	82	b 70	66	72	82	82	44	1530	261	182	196
15	a 70	90	b 68	72	63	*80	82	82	*1320	240	194	194
16	a 70	99	*b 66	70	60	83	76	82	1470	219	212	194
17	a 70	99	b 64	67	72	83	65	78	1860	212	*216	209
18	a 70	97	b 68	65	*85	75	63	73	2910	209	212	234
19	a 70	97	b 72	*65	95	82	65	73	2760	216	290	256
20	a 70	94	b 76	66	110	80	58	94	2530	*281	331	299
21	*a 70	90	b 80	66	103	87	48	95	2300	406	305	375
22	66	88	85	72	90	92	*44	108	2170	690	321	315
23	70	90	87	70	97	94	56	164	1950	936	424	290
24	76	a 92	85	70	88	92	57	155	1710	1310	386	299
25	82	a 96	85	73	90	88	65	192	*1450	2940	341	*270
26	88	a 88	88	69	99	94	69	324	1200	*3280	290	242
27	85	a 80	92	69	95	101	132	*261	984	2800	264	227
28	83	a 78	97	72	90	99	112	160	732	2340	256	219
29	82	a 80	90	73	-	95	94	132	442	1870	264	278
30	83	a 82	78	76	-----	94	94	128	417	1470	261	406
31	85	-----	76	78	-----	94	-----	120	-----	1710	237	-----
Total	2,289	2,543	2,493	2,144	2,239	2,622	2,396	3,231	33,278	26,747	20,238	7,382
Mean	73.8	84.8	80.4	69.2	80.0	84.6	79.9	104	1,109	863	653	246
Ac-ft	4,540	5,040	4,940	4,250	4,440	5,200	4,750	6,410	66,010	53,050	40,140	14,640

Calendar year 1964: Max 434 Min 36 Mean 92.1 Ac-ft 66,870  
Water year 1964-65: Max 3,280 Min 37 Mean 295 Ac-ft 213,400

\* Discharge measurement made on this day.

a No gage-height record.

b Stage-discharge relation affected by ice.

## PLATTE RIVER BASIN

6-7330. Big Thompson River at Estes Park, Colo.

Location.--Lat 40°22'42", long 105°30'48", in NW 1/4 sec. 30, T.5 N., R.72 W., on right bank in Estes Park, 600 ft downstream from bridge on State Highways 7 and 66, 900 ft downstream from Black Canyon Creek, and 0.3 mile northwest of Estes powerplant. Station is upstream from Lake Estes.

Drainage area.--137 sq mi.

Records available.--October 1946 to September 1965. Prior to October 1947, published as Thompson River at Estes Park.

Gage.--Water-stage recorder and Parshall flume with overflow weirs. Datum of gage is 7,492.5 ft above mean sea level (levels by Bureau of Reclamation). Prior to May 18, 1949, at site 740 ft downstream at different datum. May 18, 1949, to Mar. 22, 1951, at site 60 ft upstream at datum 1.2 ft higher.

Average discharge.--19 years, 128 cfs (92,670 acre-ft per year), adjusted for inflow from Alva B. Adams tunnel Aug. 10, 1947, to Aug. 2, 1950.

Extremes.--Maximum discharge during year, 1,640 cfs June 17 (gage height, 6.89 ft); minimum daily, 9 cfs Mar. 4, 8, 9, 20, 21.

1946-65: Maximum discharge, 1,660 cfs June 18, 1949 (gage height, 3.16 ft, site and datum then in use); maximum gage height, that of June 17, 1965; minimum discharge not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Diversion from Colorado River basin to Big Thompson River basin above station through Alva B. Adams tunnel began Aug. 10, 1947, and ended Aug. 2, 1950. Small power development and small diversions for irrigation and municipal use above station. Diversions above station from Wind River to Lake Estes (bypassing this station) were 682 acre-ft, June to July 1965.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.4	13	3.0	335
.8	40	4.0	531
1.2	77	5.0	760
1.6	123	6.0	1,160
2.0	175	7.0	1,710
2.5	250		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	31	18	14	12	12	12	*24	121	337	730	445	128
2	28	18	14	13	11	11	32	147	307	835	376	119
3	26	18	*14	12	11	10	32	169	362	781	344	119
4	26	18	14	*12	*12	*9	28	182	378	721	317	118
5	27	18	12	13	13	10	22	178	348	655	*292	109
6	26	21	10	13	13	10	21	*143	319	618	264	117
7	26	17	9.9	13	13	10	25	124	427	589	247	106
8	*25	17	10	13	12	9	*26	121	502	*620	234	109
9	25	16	11	12	11	9	29	100	603	612	228	101
10	25	16	*12	11	11	10	29	91	904	552	217	94
11	26	14	12	12	*12	*10	25	80	1,480	552	205	87
12	25	*12	11	12	11	10	22	81	1,100	664	205	94
13	24	17	11	12	11	10	21	110	1,010	662	202	86
14	24	16	11	*12	11	10	22	133	*1,050	527	266	77
15	24	18	11	12	12	10	24	131	1,050	473	391	73
16	22	17	11	13	12	11	28	111	1,290	431	315	79
17	22	16	*10	12	12	11	30	145	1,520	489	269	79
18	22	16	11	12	*12	*11	30	204	1,400	523	310	85
19	21	*14	11	12	12	10	33	214	1,240	581	310	90
20	21	13	12	13	12	9	46	273	1,140	525	295	99
21	20	14	13	*12	13	9	61	298	1,090	533	250	89
22	21	14	14	12	12	10	*72	290	1,030	514	244	87
23	22	14	15	12	12	10	85	408	976	485	224	97
24	22	13	*17	12	11	10	96	441	897	596	220	89
25	22	15	16	11	*11	*11	81	348	882	744	187	98
26	20	15	16	11	11	10	80	276	793	552	*168	107
27	20	14	15	11	11	10	70	*238	671	493	157	*110
28	20	13	15	*10	12	11	73	204	646	415	145	117
29	*19	13	14	11	11	11	82	193	704	372	143	144
30	19	13	13	12	-----	11	95	223	768	364	158	117
31	19	-----	13	12	-----	14	-----	278	-----	502	140	-----
Total	720	468	392.9	372	329	319	1,344	6,055	25,224	17,710	7,768	3,024
Mean	23.2	15.6	12.7	12.0	11.8	10.3	44.8	195	841	571	251	101
Ac-ft	1,430	928	779	738	653	633	2,670	12,010	50,030	35,130	15,410	6,000

Calendar year 1964: Max 481 Min 7.4 Mean 90.5 Ac-ft 65,680  
 Water year 1964-65: Max 1,520 Min 9 Mean 175 Ac-ft 126,400

Peak discharge (base, 600 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-11	0330	6.85	1,620	7-13	0130	5.19	817
6-17	0330	6.89	1,640	7-25	0400	5.37	878
7-2	0400	5.55	950				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 12, 16, 17, 19, 20, Dec. 10 to Mar. 31 (no gage-height record Dec. 10-25, Dec. 31 to Jan. 7, Jan. 27 to Feb. 5, Feb. 12 to Mar. 30).

6-7355. Big Thompson River near Estes Park, Colo.

Location.--Lat 40°22'35", long 105°29'06", in NE¼NE¼ sec.29, T.5 N., R.72 W., on right bank 100 ft upstream from Dry Creek, 600 ft downstream from Olympus Dam, and 2.0 miles east of Estes Park.

Drainage area.--156 sq mi.

Records available.--July 1930 to September 1965. Prior to October 1933 monthly discharge only, published in WSP 1310. Published as Thompson River near Estes Park 1934-47.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 7,422.5 ft above mean sea level (levels by Bureau of Reclamation). Prior to Jan. 29, 1934, staff gage on highway bridge 1½ miles downstream at different datum. Jan. 29, 1934, to Mar. 21, 1951, water-stage recorder at site 0.4 mile downstream at datum 10.5 ft lower.

Extremes.--Maximum discharge during year, 1,060 cfs June 19 (gage height, 5.79 ft); minimum daily, 10 cfs Dec. 30, 31. 1930-65: Maximum discharge observed, 2,800 cfs June 20, 1933 (gage height, 4.0 ft, site and datum then in use), from rating curve extended above 460 cfs; minimum daily, 4.4 cfs Dec. 12, 1940, but may have been less during periods of no gage-height record.

Remarks.--Records excellent. Low flow regulated by Lake Estes since Nov. 30, 1948. Diversion from Colorado River to Big Thompson River basin above station through Alva B. Adams tunnel began Aug. 10, 1947 (see elsewhere in this report for diversion during water year 1965); since Apr. 15, 1953, this imported water has been diverted from Lake Estes through Olympus tunnel bypassing this station. Since May 17, 1955, part of the natural flow of Big Thompson River (69,180 acre-ft in 1965) has also been diverted through Olympus tunnel and returned to the river below the station at mouth of canyon, near Drake. Small power developments and small diversions for irrigation and municipal use above station.

Rating table (gage height, in feet, and discharge,  
in cubic feet per second)

0.3	8.4	2.0	175
.4	13	3.0	335
.7	33	5.0	760
1.0	58	5.8	1,060
1.5	111		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	19	12	11	11	12	*33	88	142	187	174	94
2	31	18	12	11	11	12	40	117	106	288	116	85
3	28	18	*12	11	11	12	40	123	133	233	117	91
4	28	18	12	11	*11	12	37	117	118	203	105	95
5	28	19	12	12	12	12	31	109	106	190	*107	85
6	29	22	12	11	12	12	29	111	113	190	110	86
7	28	18	12	*11	12	12	35	106	175	168	116	87
8	*28	17	12	11	12	12	34	103	164	*194	109	95
9	28	17	12	11	12	12	36	85	190	170	117	88
10	28	16	12	11	12	12	36	88	378	154	109	79
11	28	16	12	11	12	*12	31	86	938	180	113	74
12	28	*14	13	11	12	14	28	86	591	218	116	79
13	27	17	12	11	12	17	27	*112	480	180	110	73
14	27	17	12	11	12	17	28	135	*537	113	172	64
15	26	18	12	11	12	17	31	131	516	129	263	70
16	26	18	12	11	12	17	34	111	755	128	140	81
17	25	17	12	12	11	17	36	138	*972	199	96	66
18	24	16	11	12	*11	18	34	164	864	202	125	66
19	24	17	11	12	12	18	37	136	832	196	118	65
20	22	17	11	12	12	17	51	145	620	148	103	71
21	21	15	11	12	12	17	63	120	558	168	104	61
22	21	16	*11	12	12	17	74	142	495	151	115	59
23	22	16	11	12	12	17	90	201	441	140	104	62
24	22	13	14	12	12	17	103	148	354	224	105	51
25	22	12	16	12	12	17	87	117	339	357	92	60
26	20	12	16	12	12	17	73	94	241	169	97	62
27	20	13	13	12	12	17	59	*101	164	125	99	*62
28	20	13	11	12	12	17	62	100	193	91	99	69
29	*20	12	11	12	-	17	71	98	228	109	105	75
30	20	12	10	12	-----	17	67	130	232	142	112	44
31	20	-----	10	11	-----	22	-----	148	-----	234	100	-----
Total	775	483	372	356	330	476	1,437	3,690	11,975	5,580	3,668	2,199
Mean	25.0	16.1	12.0	11.5	11.8	15.4	47.9	119	399	180	118	73.3
Ac-ft	1,540	958	738	706	655	944	2,850	7,320	23,750	11,070	7,280	4,360

Calendar year 1964: Max 212 Min 8.9 Mean 52.6 Ac-ft 38,150  
 Water year 1964-65: Max 972 Min 10 Mean 85.9 Ac-ft 62,170

\* Discharge measurement made on this day.

6-7380. Big Thompson River at mouth of canyon, near Drake, Colo.

**Location.**--Lat 40°25'18", long 105°13'34", in SW¼SW¼ sec.3, T.5 N., R.70 W., on right bank at mouth of canyon, 400 ft upstream from Handy Ditch diversion dam and 6.0 miles east of Drake.

**Drainage area.**--304 sq mi.

**Records available.**--August 1887 to September 1892, May 1895 to September 1903, October 1926 to September 1933 (no winter records prior to October 1932, except water years 1927-28), April 1938 to September 1949, March 1951 to September 1965. Monthly discharge only for some periods, published in WSP 1310. Published as Big Thompson Creek at Arkins 1887-92, Big Thompson Creek near Arkins 1901-3, and as Thompson River at mouth of canyon, near Drake 1927-30, 1938-47.

**Gage.**--Water-stage recorder. Datum of gage is 5,297.47 ft above mean sea level (Bureau of Reclamation bench mark). Aug. 25, 1887, to Sept. 30, 1892, and Apr. 1, 1899, to Sept. 21, 1903, staff gages at sites within half a mile downstream below Handy Ditch diversion dam at different datums. May 9, 1895, to Mar. 31, 1899, staff gage at site 1½ miles downstream and 600 ft downstream from Home Supply Ditch diversion dam at different datum. Oct. 1 to Dec. 31, 1926, staff gage at site 6½ miles upstream at different datum. Jan. 1, 1927, to Sept. 30, 1933, water-stage recorder at site 1 mile upstream at different datum. Apr. 19, 1938, to Sept. 30, 1949, water-stage recorder at site 50 ft downstream at datum 1.45 ft lower.

**Extremes.**--Maximum discharge during year, 2,220 cfs June 16 (gage height, 6.08 ft), from rating curve extended above 1,300 cfs; minimum daily, 9 cfs Dec. 7, 13, 14.

1887-92, 1895-1903, 1926-33, 1938-49, 1951-65: Maximum discharge, 7,600 cfs July 19, 1945 (gage height, 7.55 ft, site and datum then in use), from rating curve extended above 2,200 cfs; minimum daily recorded, 3.2 cfs Nov. 12, 1959.

**Remarks.**--Records good except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements generally made twice a month. Diversions above station for irrigation. Diversion from Colorado River to Big Thompson River basin above station through Alva B. Adams tunnel began Aug. 10, 1947 (see elsewhere in this report for diversion for water year 1965); since Apr. 15, 1953, this imported water has been diverted through Olympus tunnel bypassing this station. Part of the natural flow of Big Thompson River has also been diverted through Olympus tunnel since May 17, 1955 (69,180 acre-ft in 1965), and Dille tunnel since Apr. 20, 1959 (11,900 acre-ft in 1965), and returned to the river just below this station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.0	6.0	2.0	136
1.1	10	2.5	270
1.2	16	3.0	465
1.4	34	4.0	965
1.7	77	6.0	2,160

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	44	22	21	17	15	13	34	65	170	319	231	104
2	38	22	15	14	15	10	47	94	124	400	158	102
3	38	22	13	14	15	11	54	110	150	380	126	102
4	35	22	17	15	16	15	50	110	143	333	130	112
5	38	18	10	15	16	15	44	100	134	308	108	106
6	38	22	12	18	17	15	33	85	126	298	110	112
7	38	26	9	17	17	13	40	90	172	288	106	104
8	36	22	10	16	15	15	40	86	195	280	102	114
9	34	22	16	15	17	15	40	65	231	302	98	110
10	35	22	20	14	19	16	44	63	377	237	118	102
11	34	21	16	16	18	15	40	60	1,180	274	118	96
12	36	15	14	16	17	16	36	56	850	316	122	96
13	34	18	9	15	19	19	39	65	660	319	114	96
14	35	23	9	16	18	19	39	112	760	210	118	86
15	32	20	12	18	17	20	39	108	590	213	243	83
16	33	22	13	16	16	22	42	92	985	190	178	98
17	29	21	14	16	17	23	44	106	1,360	240	148	96
18	30	23	15	15	15	20	41	148	1,120	302	188	86
19	28	18	20	17	15	19	39	126	870	288	185	90
20	27	20	14	15	16	22	47	136	730	237	178	96
21	27	20	13	17	13	27	65	141	640	277	148	90
22	26	15	16	15	16	23	79	116	555	261	155	81
23	26	23	20	10	14	20	94	195	492	231	132	96
24	27	22	20	12	13	18	116	195	501	322	132	75
25	27	21	18	17	15	20	104	168	560	478	110	85
26	26	18	16	13	15	21	83	148	442	305	118	88
27	25	19	20	14	16	22	46	146	330	213	116	86
28	26	10	17	16	15	24	39	146	322	165	114	88
29	26	15	13	17	-	26	52	141	364	146	114	106
30	26	20	10	16	-	26	62	148	384	130	132	79
31	24	-	10	18	-	28	-	162	-	255	112	-
Total	978	604	452	480	447	588	1,572	3,583	15,517	8,517	4,262	2,865
Mean	31.5	20.1	14.6	15.5	16.0	19.0	52.4	116	517	275	137	95.5
Ac-ft	1,940	1,200	897	952	887	1,170	3,120	7,110	30,780	16,890	8,450	5,680

Calendar year 1964: Max 195 Min 9 Mean 58.8 Ac-ft 42,660  
 Water year 1964-65: Max 1,360 Min 9 Mean 109 Ac-ft 79,080

## Reservoirs in South Platte River basin

6-6955. Elevenmile Canyon Reservoir near Lake George.--Lat 38°54'19", long 105°28'30", in N½SW¼ sec.20, T.13 S., R.72 W., at north end of dam on South Platte River, 8 miles southwest of Lake George. Records available, October 1932 to September 1965. Prior to September 1938, published in WSP 1310. Gage is mercury manometer. Prior to May 12, 1964, twice daily staff gage readings. Datum of gage is at mean sea level (datum of Denver Board of Water Commissioners). Maximum contents observed during year, 78,660 acre-ft Sept. 30 (elevation, 8,590.88 ft); minimum observed, 27,370 acre-ft May 2 (elevation, 8,566.60 ft). Maximum contents observed during period 1932-65, 103,400 acre-ft Mar. 29, 1960 (elevation, 8,598.62 ft); no contents at times in 1935.

Reservoir is formed by concrete arch dam completed by Denver Board of Water Commissioners in November 1932. Spillway built 5.00 ft higher Aug. 1, 1957. Storage began in October 1932. Capacity, 97,780 acre-ft between elevations 8,488.25 (invert of outlet pipe) and 8,597.00 ft (crest of spillway). Dead storage is negligible. Records given herein represent total contents. Water is for municipal use by city of Denver. Records furnished by Denver Board of Water Commissioners.

6-7010. Cheesman Lake near Deckers.--Lat 39°12'26", long 105°16'18", in NW¼SW¼ sec.6, T.10 S., R.70 W., at dam on South Platte River, 4 miles southwest of Deckers. Records available, September 1900 to December 1901, September 1902 to September 1965. Prior to October 1938, published in WSP 1310. Published as Lake Cheesman Reservoir prior to 1947. Staff gage read twice daily. Datum of gage is 6,622.91 ft above mean sea level (datum of Denver Board of Water Commissioners). Maximum contents observed during year, 79,640 acre-ft Aug. 31 (gage height, 212.66 ft); minimum observed, 19,030 acre-ft Oct. 1 (gage height, 113.83 ft). Maximum contents observed during 1900-1901, 1902-65, 80,820 acre-ft June 23, 1918, and June 7, 1921 (gage height, 214.00 ft); minimum observed since appreciable storage was attained, 3,650 acre-ft Apr. 20, 1933 (gage height, 55.02 ft).

Reservoir is formed by masonry dam completed about October 1902. Capacity, 79,060 acre-ft at gage height 212 ft (spillway crest) above sill of lowest gate. No dead storage. Records given herein represent total contents. Water is for municipal use by City of Denver. Records furnished by Denver Board of Water Commissioners.

6-7375. Horsetooth Reservoir near Fort Collins.--Lat 40°36'00", long 105°10'06", in NW¼SW¼ sec.6, T.7 N., R.69 W., on right bank near abutment of Horsetooth Dam on tributaries of Cache la Poudre River, 4.8 miles west of city hall in Fort Collins. Records available, April 1951 to September 1965. Staff gage read at irregular intervals varying from 1 to 10 days. Datum of gage is 5,270.00 ft above mean sea level (levels by Bureau of Reclamation). Gage readings have been reduced to elevations above mean sea level. Maximum contents observed during year, 108,300 acre-ft June 25, 30 (elevation, 5,410.00 ft); minimum contents, 34,770 acre-ft Oct. 26 (elevation, 5,353.50 ft). Maximum contents observed during period 1951-65, 141,100 acre-ft June 23, 25, 1961 (elevation, 5,428.75 ft); minimum observed, 3,040 acre-ft Sept. 23, 1954 (elevation, 5,302.20 ft); no storage prior to Apr. 18, 1951.

Reservoir is formed by earth- and rock-fill dike and dams closing openings in a subsequent valley between hogbacks. Dams completed July 21, 1949; storage began Jan. 10, 1951; dead storage pools filled Apr. 18, 1951. Usable capacity, 143,500 acre-ft above elevations 5,320 ft (invert of channel from Spring Canyon Dam), 5,310 ft (invert of channel from Dixon Canyon Dam), 5,270 ft (trashrack sill of outlet at Soldier Canyon Dam), and below maximum water surface elevation 5,430 ft (6 ft below crest of Satanka Dike). Dead storage, 8,270 acre-ft. Reservoir is used for storage of water diverted from Colorado River basin through Alva B. Adams tunnel for supplemental irrigation supply to Cache la Poudre River basin as part of the Colorado-Big Thompson project. Figures given herein represent usable contents. Records furnished by Bureau of Reclamation.

6-7425. Carter Lake near Berthoud.--Lat 40°19'28", long 105°12'41", in SE¼ sec.10, T.4 N., R.70 W., in hoist house 293 ft from right abutment of Carter Lake Dam on Dry Creek, 7.0 miles west of Berthoud, and 8.9 miles upstream from mouth. Records available, March 1954 to September 1965. Electric tape gage read at irregular intervals varying from 1 to 13 days. Datum of gage is 5,618.00 ft above mean sea level (levels by Bureau of Reclamation). Gage readings have been reduced to elevations above mean sea level. Maximum contents observed during year, 96,480 acre-ft June 23 (elevation, 5,747.90 ft); minimum observed, 22,430 acre-ft Oct. 6 (elevation, 5,665.92 ft). Maximum contents observed during period 1954-65, 108,900 acre-ft June 27, 1962; (elevation, 5,758.94 ft); minimum observed since appreciable storage was attained, 960 acre-ft Oct. 25, 1954 (elevation, 5,621.40 ft).

Reservoir is formed by earth- and rock-fill dam and dikes enlarging the natural basin of Carter Lake. Storage began in February 1954 and dead storage pool was filled Mar. 5, 1954. Usable capacity, 113,500 acre-ft between elevations 5,618.00 (trashrack sill at Carter Lake Dam outlet) and 5,763.00 ft (maximum water surface, 6 ft below crest of dam). Dead storage, 3,310 acre-ft. Water diverted from Colorado River basin through Alva B. Adams tunnel is pumped from Flatiron Reservoir into Carter Lake for supplemental irrigation supply to Little Thompson River, St. Vrain Creek, and Boulder Creek basins. Water above elevation 5,620 ft may be released for return to Flatiron Reservoir where pump turbines can operate in reverse to generate power and water can be used for irrigation in Big Thompson or Cache la Poudre River basins. It is part of the Colorado-Big Thompson project. Figures given herein represent usable contents. Records furnished by Bureau of Reclamation.

## PLATTE RIVER BASIN

## Reservoirs in South Platte River basin--Continued

Month-end elevation and contents, water year October 1964 to September 1965

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)	Gage height (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Elevenmile Canyon Reservoir				Cheesman Lake		
Sept. 30.....	8,568.01	29,380	-	113.81	19,020	-
Oct. 31.....	8,567.81	29,100	-280	115.02	19,480	+460
Nov. 30.....	8,567.69	28,920	-180	116.92	20,210	+730
Dec. 31.....	8,567.55	28,720	-200	118.34	20,760	+550
Calendar year 1964...	-	-	-32,250	-	-	-2,460
Jan. 31.....	8,567.24	28,270	-450	120.18	21,500	+740
Feb. 28.....	8,566.90	27,790	-480	122.49	22,440	+940
Mar. 31.....	8,566.99	27,910	+120	126.62	24,180	+1,740
Apr. 30.....	8,566.74	27,560	-350	136.73	28,770	+4,590
May 31.....	8,567.37	28,460	+900	137.68	29,230	+460
June 30.....	8,572.02	35,730	+7,270	178.48	52,990	+23,760
July 31.....	8,580.12	51,440	+15,710	191.90	62,670	+9,680
Aug. 31.....	8,589.38	74,420	+22,980	212.66	79,640	+16,970
Sept. 30.....	8,590.88	78,660	+4,240	212.41	79,420	-220
Water year 1964-65...	-	-	+49,280	-	-	+60,400
Horsetooth Reservoir				Carter Lake		
Sept. 30.....	5,355.40	36,640	-	5,663.77	21,010	-
Oct. 31.....	-	a35,210	-1,430	5,677.45	30,580	+9,570
Nov. 30.....	5,361.25	42,650	+7,440	5,697.32	46,570	+15,990
Dec. 31.....	5,373.05	55,990	+13,340	5,711.40	59,220	+12,650
Calendar year 1964...	-	-	+6,130	-	-	+5,880
Jan. 31.....	-	a69,370	+13,380	-	a70,490	+11,270
Feb. 28.....	-	a80,450	+11,080	-	a81,590	+11,100
Mar. 31.....	5,401.40	94,660	+14,210	5,745.25	93,580	+11,990
Apr. 30.....	5,406.40	102,500	+7,840	5,746.87	95,350	+1,770
May 31.....	5,404.50	99,470	-3,030	-	a92,920	-2,430
June 30.....	5,410.00	108,300	+8,830	5,747.60	96,150	+3,230
July 31.....	5,407.95	105,000	-3,300	5,739.20	87,080	-9,070
Aug. 31.....	5,395.30	85,550	-19,450	5,724.85	72,260	-14,820
Sept. 30.....	5,385.70	72,110	-13,440	5,711.96	59,750	-12,510
Water year 1964-65...	-	-	+35,470	-	-	+38,740

† Elevation or gage height at 1700.

a No elevation record; contents estimated.



6-7440. Big Thompson River at mouth, near La Salle, Colo.

Location.--Lat 40°21'00", long 104°47'04", in SW¼SE¼ sec.33, T.5 N., R.66 W., on left bank just southeast of gage on Evans Town ditch, 0.7 mile upstream from highway bridge, 1.6 miles upstream from mouth, and 4 miles west of La Salle.

Drainage area.--828 sq mi.

Records available.--April 1914 to October 1915, March 1927 to September 1965. Prior to October 1933 monthly discharge only, published in WSP 1310. Published as Thompson River at mouth, near La Salle 1934-47.

Gage.--Water-stage recorder. Altitude of gage is 4,680 ft (from topographic map). Apr. 1, 1914, to Oct. 31, 1915, staff gage and Mar. 1, 1927, to Sept. 30, 1951, water-stage recorder, at bridge 0.7 mile downstream at different datums. Datum lowered 0.50 ft May 21, 1962.

Extremes.--Maximum discharge during year, 1,960 cfs June 18 (gage height, 6.77 ft); minimum daily, 3.7 cfs May 13, 17, 20. 1914-15, 1927-65: Maximum discharge, 6,100 cfs Aug. 4, 1951 (gage height, 7.80 ft, site and datum then in use), from rating curve extended above 4,500 cfs; maximum gage height, 8.72 ft May 9, 1957, present datum; no flow at times in 1934-35, 1948.

Remarks.--Records fair except those for period of no gage-height record, which are poor. Natural flow of stream affected by trans-mountain diversions, storage reservoirs, power developments, diversions for irrigation of about 95,000 acres above station, and return flow from irrigated areas.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used June 13, 14, June 19 to July 18,  
Aug. 17-24, Sept. 7-30)

0.2	3.5	2.0	181
.3	4.5	3.0	350
.4	6.5	4.0	660
.6	15	6.0	1,580
1.0	50		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	39	88	*69	67	*51	44	43	6.5	34	*12	102	53
2	38	*85	69	66	50	46	44	8.6	29	17	73	52
3	37	80	69	60	50	39	41	17	24	32	*45	43
4	38	78	69	66	*50	43	41	9.3	18	27	36	39
5	*40	79	71	69	53	*49	48	5.9	68	26	22	40
6	45	79	72	*68	51	47	43	4.4	68	11	17	51
7	41	77	62	68	50	44	40	4.3	49	7.6	14	61
8	40	81	66	67	48	44	40	4.7	52	8.6	18	77
9	40	75	72	61	48	44	*39	14	73	9.3	17	81
10	42	75	72	61	50	45	38	*12	116	19	14	69
11	50	77	71	63	38	44	38	4.5	208	26	16	63
12	52	78	71	62	44	44	38	3.8	504	32	16	67
13	56	75	58	60	44	45	38	3.7	142	48	18	77
14	62	74	*66	61	45	44	36	8.2	*83	43	21	63
15	62	80	73	68	41	*43	35	15	*283	44	38	47
16	74	81	65	67	*46	43	34	5.7	182	48	47	38
17	61	80	48	65	47	a 40	31	3.7	842	44	*50	52
18	62	81	67	61	49	a 38	34	3.9	*1,480	58	56	62
19	63	81	68	63	51	a 41	34	4.4	680	79	68	60
20	61	81	72	62	54	a 41	33	3.7	286	*321	74	90
21	*62	73	77	61	57	a 47	16	7.9	*114	233	60	110
22	60	72	81	62	50	a 48	7.6	20	61	267	57	88
23	65	72	84	60	47	a 43	*6.3	75	39	203	77	92
24	83	73	73	66	44	a 40	32	84	34	270	79	92
25	83	73	71	57	50	a 40	120	72	29	459	61	84
26	85	73	66	46	51	a 45	121	68	25	251	53	75
27	80	71	67	45	50	50	*127	*59	21	206	*49	65
28	75	71	72	53	48	47	121	50	14	163	51	66
29	75	69	71	54	-	44	46	50	13	142	57	98
30	80	69	60	56	-----	43	8.6	46	9.6	121	56	97
31	83	-----	61	56	-----	42	-----	39	-----	111	59	-----
Total	1,834	2,299	2,133	1,901	1,357	1,357	1,373.5	714.2	5,580.6	3,338.5	1,421	2,052
Mean	59.2	76.6	68.8	61.3	48.5	43.8	45.8	23.0	186	108	45.8	68.4
Ac-ft	3,640	4,560	4,230	3,770	2,690	2,690	2,720	1,420	11,070	6,620	2,820	4,070

Calendar year 1964: Max 202 Min 0.1 Mean 52.1 Ac-ft 37,820  
Water year 1964-65: Max 1,480 Min 3.7 Mean 69.5 Ac-ft 50,300

\* Discharge measurement made on this day.

a No gage-height record.

## PLATTE RIVER BASIN

6-7475. Cache la Poudre River near Rustic, Colo.

Location.--Lat 40°41'44", long 105°41'23", in NW¼NE¼ sec.4, T.8 N., R.74 W., on right bank 20 ft downstream from trail bridge, 500 ft south of State Highway 14, 800 ft downstream from unnamed tributary, 5.8 miles west of Rustic, 8½ miles downstream from outlet of Laramie-Poudre tunnel, and 33 miles west of Fort Collins.

Drainage area.--199 sq mi.

Records available.--August 1956 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,610 ft (from topographic map).

Average discharge.--9 years, 259 cfs (187,500 acre-ft per year).

Extremes.--Maximum discharge during year, 2,440 cfs June 17 (gage height, 6.08 ft); minimum daily, 11 cfs Feb. 12, 13.  
1956-65: Maximum discharge, 3,610 cfs June 29, 1957 (gage height, 7.12 ft); minimum daily, 8.0 cfs Jan. 12, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by transbasin and transmountain diversions (see elsewhere in this report), storage reservoirs, and a few small diversions for irrigation.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.5	8.0	3.0	226
1.7	16	3.5	390
2.0	36	4.0	620
2.3	66	5.0	1,280
2.6	120	6.0	2,320

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30	17	13	15	12	13	15	223	892	1370	625	223
2	29	18	*13	15	*13	12	15	430	826	1470	595	211
3	28	20	b12	14	14	12	15	448	*941	1550	570	211
4	29	15	12	15	14	12	15	452	948	1360	540	171
5	28	13	b12	15	14	12	*15	*452	878	1250	*506	165
6	29	14	b12	15	14	12	14	414	864	1200	470	199
7	*33	*13	b12	*15	12	12	15	406	1100	1190	434	199
8	34	14	b12	14	12	*13	16	313	1190	1160	394	202
9	33	14	12	14	12	14	17	174	1270	1090	383	190
10	34	15	12	14	12	12	17	131	1830	983	344	171
11	36	14	12	14	12	13	17	118	1670	948	327	129
12	33	12	13	14	11	14	16	122	1190	*1110	324	124
13	33	13	13	14	11	14	17	150	1170	1160	320	113
14	34	15	13	14	12	14	16	158	1180	892	330	102
15	33	14	14	14	12	14	19	142	1340	772	355	100
16	32	18	16	13	12	14	20	150	1780	718	444	107
17	32	18	16	13	13	12	21	214	2220	814	398	105
18	32	16	16	13	13	12	20	296	*1940	997	498	122
19	29	14	16	13	13	13	21	355	1700	899	470	135
20	31	17	16	13	13	14	30	*511	1910	832	498	152
21	32	14	16	13	13	16	32	670	1910	814	414	135
22	32	14	16	13	12	15	38	885	1850	857	422	133
23	33	13	15	12	12	15	43	1130	1670	871	426	140
24	32	b12	14	12	13	15	55	1130	1530	990	422	133
25	30	13	14	12	13	16	56	850	1370	976	348	174
26	27	14	14	13	13	14	61	670	1230	864	334	199
27	30	12	14	13	13	14	61	565	1120	754	317	208
28	33	14	14	13	13	14	62	498	1030	688	300	205
29	34	14	15	13	-	14	64	498	1300	625	268	211
30	34	13	15	14	-----	15	54	625	*1380	605	271	171
31	22	-----	14	13	-----	14	-----	820	-----	660	244	-----
Total	971	437	428	422	353	420	877	14,000	41,229	30,469	12,591	4,840
Mean	31.3	14.6	13.8	13.6	12.6	13.5	29.2	452	1,374	983	406	161
Ac-ft	1,930	867	849	837	700	833	1,740	27,770	81,780	60,430	24,970	9,600

Calendar year 1964: Max 1,590 Min 9 Mean 217 Ac-ft 157,500

Water year 1964-65: Max 2,220 Min 11 Mean 293 Ac-ft 212,300

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 10 to Apr. 5 (stage-discharge relation affected by ice during most of period).

6-7482. Fall Creek near Rustic, Colo.

Location.--Lat 40°33'06", long 105°37'35", in NW¼ sec.30, at line of sec.19, T.7 N., R.73 W., on left bank on upstream side of bridge, 1.5 miles upstream from mouth, 11 miles southwest of Rustic, and 29 miles west of Fort Collins.

Drainage area.--3.64 sq mi.

Records available.--October 1960 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 9,765 ft (from topographic map).

Average discharge.--5 years, 6.38 cfs (4,620 acre-ft per year).

Extremes.--Maximum discharge during year, 108 cfs June 16 (gage height, 3.41 ft), from rating curve extended above 59 cfs; minimum daily, 0.3 cfs for many days.

1960-65: Maximum discharge, that of June 16, 1965; minimum daily, 0.1 cfs Jan. 11-13, 19, 20, 23, 24, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. No diversion above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.6	0.3	1.7	12
.7	.6	2.0	22
.9	1.9	2.4	41
1.1	3.4	2.9	74
1.4	6.8	3.5	115

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.7	1.2	* 0.8	b 0.5	0.6	0.4	0.4	2.4	12	* 40	16	6.8
2	2.6	1.3	.8	b 5	.5	.4	.4	3.1	14	43	15	6.7
3	2.5	1.3	.8	b 5	.5	.4	.4	3.5	17	42	14	6.7
4	2.4	.9	.8	.6	.5	.4	.4	3.7	16	40	14	6.3
5	2.4	1.1	.7	.6	.4	.3	.4	3.7	14	39	* 13	6.4
6	2.4	* 1.3	.6	.6	.4	.3	.4	2.8	15	37	13	6.2
7	* 2.3	1.3	.6	.6	.4	.3	.4	2.5	22	34	12	6.2
8	2.2	1.2	.6	.6	.4	.3	.4	2.4	26	37	12	6.2
9	2.2	1.2	.6	* .6	.4	.3	.4	2.2	* 32	33	11	* 6.2
10	2.3	1.0	.6	.6	.4	.3	.4	2.1	55	32	11	6.4
11	2.2	1.0	.5	.5	.4	.3	.4	2.2	55	34	10	6.4
12	2.2	.8	b .5	.6	.4	.3	.4	2.7	38	42	10	6.3
13	4.2	.9	.5	.6	.4	.3	.4	3.3	42	35	10	6.2
14	2.0	1.2	.4	.5	.4	.3	.4	3.1	48	* 30	10	6.0
15	1.9	1.1	.4	.5	.4	.3	.4	2.9	52	26	11	5.4
16	1.9	1.0	.4	.5	.4	.3	.4	3.3	77	24	12	5.6
17	1.8	1.0	b .3	.5	* .4	* .4	.5	5.4	84	24	14	5.6
18	1.7	1.0	.3	.5	.4	.4	.4	6.7	72	25	14	5.6
19	1.7	1.0	.3	.5	.4	.4	.5	7.2	* 57	26	12	5.6
20	1.7	.9	.3	.5	.4	.4	.9	11	50	24	11	5.6
21	1.6	.9	.3	.4	.4	.3	1.5	13	57	24	10	5.6
22	1.6	.9	.5	.4	.4	.3	1.8	18	55	24	9.6	5.6
23	1.7	.9	.5	.4	.4	.4	2.2	22	48	24	9.6	5.2
24	1.7	.8	.5	.4	.4	.4	2.3	18	* 46	26	8.8	5.0
25	1.6	.8	.5	.5	.4	.4	1.7	13	44	26	8.5	5.2
26	1.4	.9	.6	.4	.4	.4	1.1	* 9.9	40	23	7.8	5.2
27	1.4	.9	.5	.4	.4	.3	1.0	8.2	34	21	7.6	5.2
28	1.5	.9	.5	.5	.4	.3	1.1	7.6	34	18	7.4	5.6
29	1.5	.8	b .5	.5	-	.3	* 1.3	7.6	38	17	8.7	5.2
30	1.5	.8	b .5	.5	-----	.3	1.7	9.0	39	16	8.5	5.0
31	1.5	-----	b .5	.6	-----	.4	-----	13	-----	17	7.4	-----
Total	62.3	30.3	16.3	15.9	11.7	10.6	24.4	215.5	1,233	903	338.9	175.2
Mean	2.01	1.01	0.53	0.51	0.42	0.34	0.81	6.95	41.1	29.1	10.9	5.84
Ac-ft	124	60	32	32	23	21	48	427	2,450	1,790	672	348

Calendar year 1964: Max 25 Min 0.3 Mean 5.30 Ac-ft 3,850  
 Water year 1964-65: Max 84 Min 0.3 Mean 8.32 Ac-ft 6,030

Peak discharge (base, 30 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-10	2000	2.87	70	7-2	1900	2.58	53
6-16	2030	3.41	108	7-12	1730	2.67	59

\* Discharge measurement made on this day.  
 b Stage-discharge relation affected by ice.  
 Note.--No gage-height record Oct. 22 to Nov. 6, Nov. 15-18, Sept. 14-30.

## PLATTE RIVER BASIN

6-7485.1. Little Beaver Creek near Idylwilde, Colo.

Location.--Lat 40°38'20", long 105°39'40", in NW¼ sec.26, T.8 N., R.74 W., on left bank 4.5 miles south of Idylwilde and 8 miles upstream from mouth.

Drainage area.--0.89 sq mi.

Records available.--October 1960 to September 1965.

Gage.--Water-stage recorder and Parshall flume or V-notch sharp-crested weir. Altitude of gage is 10,000 ft (from topographic map).

Average discharge.--5 years, 1.05 cfs (760 acre-ft per year).

Extremes.--Maximum discharge during year, 19 cfs June 17 (gage height, 1.92 ft); minimum daily, 0.05 cfs Mar. 6-16. 1960-65: Maximum discharge, that of June 17, 1965; minimum daily, 0.01 cfs Apr. 25 to May 14, 1961.

Remarks.--Records excellent except those for periods of no gage-height record, which are good.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.3	0.02	1.0	3.0
.4	.09	1.2	5.4
.5	.26	1.4	8.5
.6	.53	1.6	12
.7	.93	1.8	16
.8	1.5		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.28	0.24	0.15	0.12	0.07	0.07	0.07	0.09	0.64	*9.8	1.8	0.60
2	.28	.24	.15	.11	.07	.07	.07	.09	.64	10	1.6	.60
3	.28	.22	.15	.11	.07	.07	.07	.09	.84	9.8	1.8	.60
4	.28	.28	.13	.09	.07	.06	.07	.09	1.1	8.9	*1.6	.60
5	.28	.18	.13	.09	.07	.06	.07	.11	1.2	8.7	1.4	.64
6	.28	.18	.13	.09	.07	.05	.07	.09	1.4	7.8	1.3	.60
7	.28	.18	.13	.09	.07	.05	.07	.08	1.7	7.3	1.2	.56
8	.28	.18	.13	.09	.07	.05	.07	.08	2.7	7.3	1.2	.56
9	.28	.18	.13	.09	.07	.05	.07	.08	*4.0	6.4	1.1	.53
10	.28	.18	.13	a.09	.07	.05	.07	.07	7.0	6.5	1.1	.53
11	.28	.18	.13	a.09	.07	.05	.07	.07	9.6	6.1	1.0	.56
12	.28	.18	.13	a.09	.07	.05	.07	.07	8.9	6.1	1.0	.56
13	.28	.18	.13	a.09	.07	.05	.07	.08	8.0	*5.1	.98	.53
14	.28	.18	.13	a.09	.07	.05	.07	.09	9.6	4.3	.98	.53
15	.28	.18	.13	a.09	.07	.05	.07	.09	11	4.0	1.0	.50
16	.28	.18	.13	a.08	.07	*.05	.07	.09	14	3.8	1.0	.53
17	.28	.18	.13	a.08	.07	.06	.07	.13	16	3.8	1.2	.53
18	.26	.18	.13	a.08	.07	.06	.07	.16	16	3.7	1.1	.53
19	.26	.16	.12	a.08	.07	.06	.07	.16	14	3.3	1.0	.53
20	.28	.16	.12	a.08	.07	.06	.07	.24	13	3.1	.93	.53
21	.28	.15	.12	.08	.07	.06	.07	.24	14	3.0	.93	.53
22	.24	.15	.12	.08	.07	.06	.07	.33	*14	2.8	.88	.53
23	.24	.15	.12	.07	.07	.07	.07	.60	12	2.9	.84	.50
24	.24	.15	.12	.07	.07	.07	.07	.80	*11	2.9	.84	.47
25	.26	.15	.12	.07	.07	.07	.07	.64	a 10	2.6	.75	.50
26	.24	.15	.12	.07	.07	.07	.07	.56	a 9.0	2.5	.71	.50
27	.24	.15	.12	.07	.07	.07	.06	*.53	a 8.0	2.2	.67	.50
28	.24	.15	.12	.07	.07	.07	.07	.53	a 8.0	2.0	.67	.53
29	.24	.15	.12	.07	-	.07	.07	.53	a 8.3	1.9	.71	.50
30	.26	.15	.12	.07	-----	.07	.08	.56	a 8.8	2.0	.67	.47
31	.24	-----	.12	.07	-----	.07	-----	.64	-----	2.0	.64	-----
Total	8.28	5.32	3.96	2.61	1.96	1.87	2.10	8.01	244.42	152.6	32.60	16.18
Mean	0.267	0.177	0.128	0.084	0.070	0.060	0.070	0.258	8.15	4.92	1.05	0.539
Ac-ft	16	11	7.9	5.2	3.9	3.7	4.2	16	485	303	65	32

Calendar year 1964: Max 7.2 Min 0.05 Mean 0.885 Ac-ft 643  
 Water year 1964-65: Max 16 Min 0.05 Mean 1.31 Ac-ft 953

Peak discharge (base, 10 cfs).--June 17 (1815) 19 cfs (1.92 ft); July 2 (1730) 13 cfs (1.62 ft).

\* Discharge measurement made on this day.  
 a No gage-height record.

6-7485.3. Little Beaver Creek near Rustic, Colo.

Location.--Lat 40°37'23", long 105°33'52", in N½ sec.34, T.8 N., R.73 W., on left bank 2.6 miles upstream from mouth and 5.5 miles south of Rustic.

Drainage area.--11.4 sq mi.

Records available.--October 1960 to September 1965.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 8,350 ft (from topographic map).

Average discharge.--5 years, 7.51 cfs (5,440 acre-ft per year).

Extremes.--Maximum discharge during year, 187 cfs June 17 (gage height, 1.89 ft), from rating curve extended above 94 cfs; minimum daily, 0.9 cfs Nov. 12.

1960-65: Maximum discharge, that of June 17, 1965; minimum daily, 0.9 cfs Feb. 19 to Mar. 4, Mar. 9, 10, 1964, Nov. 12, 1964.

Remarks.--Records excellent. No diversion above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

0.2	0.6	0.8	17
.3	1.5	1.1	37
.4	3.0	1.3	59
.5	5.2	1.5	94
.6	8.0	1.8	163

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.6	1.6	1.5	1.6	1.2	1.1	1.5	5.5	24	48	12	3.9
2	1.6	2.0	1.6	1.5	1.2	1.1	1.6	6.9	24	48	10	3.9
3	1.6	1.8	1.5	1.5	1.2	1.0	1.6	7.4	*27	46	10	3.9
4	1.8	*1.0	1.5	1.5	1.3	1.0	1.4	7.7	28	43	*9.2	4.1
5	2.0	1.3	1.5	1.5	1.3	1.0	1.3	*7.7	28	41	8.8	4.3
6	*2.0	1.6	1.5	1.6	1.3	1.0	1.4	6.9	29	39	8.4	4.1
7	2.1	1.6	1.3	*1.5	1.3	1.0	1.4	6.0	33	37	7.7	3.7
8	2.1	1.5	1.4	1.4	1.2	*1.0	1.4	5.8	35	37	7.4	3.2
9	2.1	1.5	1.5	1.4	1.2	1.0	1.6	5.2	40	35	7.2	3.2
10	2.1	1.5	1.6	1.4	1.2	1.0	1.8	5.0	69	31	7.2	*3.0
11	2.1	1.3	1.5	1.4	1.2	1.0	1.5	5.0	118	29	6.9	3.4
12	2.1	2	1.5	1.4	1.2	1.0	1.4	5.8	92	28	6.6	3.9
13	2.1	1.6	1.4	1.4	1.2	1.0	1.4	6.3	81	25	6.3	3.4
14	2.2	1.4	1.5	1.4	1.1	1.0	1.5	6.6	86	*22	6.3	3.2
15	2.2	1.4	1.6	1.4	1.1	1.0	1.8	6.6	96	21	6.9	3.2
16	2.2	1.3	1.6	1.4	1.1	1.0	*2.1	7.4	116	18	7.2	4.1
17	2.1	1.3	1.4	1.4	1.1	1.0	1.8	11	153	18	7.4	4.1
18	2.1	1.3	1.5	1.3	1.1	1.0	1.6	12	134	18	8.4	4.3
19	1.8	1.3	1.5	1.3	*1.1	1.0	2.2	14	*112	16	8.0	4.3
20	2.1	1.3	1.5	1.3	1.1	1.0	3.2	*16	98	16	6.9	4.8
21	2.1	1.2	1.5	1.3	1.1	1.0	4.1	18	94	16	6.6	4.3
22	2.1	1.2	1.6	1.3	1.1	1.0	4.3	21	92	17	6.9	4.3
23	2.2	1.3	2.0	1.2	1.1	1.0	4.3	25	73	18	6.3	4.5
24	2.2	1.2	1.8	1.3	1.1	1.0	3.7	25	*67	19	6.0	4.3
25	2.1	1.3	2.0	1.3	1.1	1.0	2.4	24	59	18	5.0	5.0
26	2.0	1.4	2.0	1.3	1.1	1.0	1.2	21	55	14	4.8	5.5
27	2.0	1.5	2.0	1.3	1.1	1.0	2.2	20	48	13	4.5	5.2
28	2.1	1.4	2.1	1.3	1.1	1.0	3.4	19	48	12	4.3	5.8
29	2.1	1.4	2.1	1.3	-	1.1	4.1	19	51	12	4.8	6.6
30	2.1	1.4	2.1	1.2	-----	1.3	4.3	20	*51	12	5.0	5.0
31	2.1	-----	1.8	1.2	-----	1.5	-----	22	-----	15	4.1	-----
Total	63.1	41.8	50.9	42.6	32.5	32.1	67.5	388.8	2,061	782	217.1	126.5
Mean	2.04	1.39	1.64	1.37	1.16	1.04	2.25	12.5	68.7	25.2	7.00	4.22
Ac-ft	125	83	101	84	64	64	134	771	4,090	1,550	431	251

Calendar year 1964: Max 35 Min 0.9 Mean 5.14 Ac-ft 3,730  
 Water year 1964-65: Max 153 Min 0.9 Mean 10.7 Ac-ft 7,750

Peak discharge (base, 40 cfs).--June 11 (1630) 129 cfs (1.66 ft); June 17 (1815) 187 cfs (1.89 ft).

\* Discharge measurement made on this day.

## PLATTE RIVER BASIN

6-7486. South Fork Cache la Poudre River near Rustic, Colo.

Location.--Lat 40°38'30", long 105°29'30", in SW¼ sec.20, T.8 N., R.72 W., on left bank 5.7 miles upstream from mouth, 6 miles south-east of Rustic, and 22 miles west of Fort Collins.

Drainage area.--90.3 sq mi.

Records available.--August 1956 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 7,596.86 ft above mean sea level (Bureau of Reclamation bench mark).

Average discharge.--9 years, 65.3 cfs (47,280 acre-ft per year).

Extremes.--Maximum discharge during year, 1,260 cfs June 17 (gage height, 5.05 ft), from rating curve extended above 780 cfs; minimum daily, 4.2 cfs Mar. 3-11.

1956-65: Maximum discharge, that of June 17, 1965; minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station. Slight regulation by small reservoirs and lakes.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.5	4.6	2.5	83
1.7	9.0	2.9	170
1.8	12	3.5	375
2.0	23	4.0	610
2.2	41	5.0	1,240

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	9.9	8.0	9.0	5.4	4.8	8.0	46	182	363	138	49
2	10	10	*8.5	8.2	5.4	4.8	9.0	54	173	375	127	48
3	10	10	8.2	8.2	5.4	4.2	9.0	60	*191	379	123	46
4	9.9	8.8	8.2	8.2	5.4	4.2	7.0	61	200	359	117	46
5	10	*9.6	8.2	8.2	5.4	4.2	6.0	*62	197	347	*110	44
6	*10	11	8.2	9.0	5.4	4.2	7.0	54	185	332	98	45
7	10	12	6.8	8.4	5.4	4.2	7.0	49	215	304	96	42
8	9.9	11	7.6	7.8	5.4	*4.2	7.0	51	240	304	98	42
9	9.9	9.9	8.2	7.8	5.4	4.2	8.5	42	296	279	104	*40
10	10	9.0	8.5	7.8	5.4	4.2	9.5	41	470	244	102	38
11	11	8.8	8.2	7.8	5.4	4.2	8.0	39	676	251	98	38
12	10	6.3	8.2	7.8	5.4	5.0	7.0	40	520	279	91	39
13	10	9.5	7.6	*7.8	5.4	5.0	7.0	48	475	*262	125	35
14	10	8.4	8.2	6.6	4.8	5.0	8.5	51	520	221	119	34
15	10	8.4	8.5	6.6	4.8	5.0	10	46	565	209	121	32
16	10	7.4	8.5	6.6	4.8	5.0	*12	48	742	194	134	34
17	9.9	7.4	7.6	6.6	4.8	5.0	10	61	1,000	185	144	34
18	10	7.2	8.2	6.6	*4.8	5.0	9.0	77	910	170	157	37
19	9.9	7.2	8.2	6.6	4.8	5.0	12	78	*826	170	149	38
20	9.6	7.2	8.2	6.6	4.8	5.0	17	*100	760	182	140	41
21	9.6	6.6	8.2	6.6	4.8	5.0	21	117	742	179	119	38
22	9.6	6.6	9.0	6.0	4.8	5.0	25	154	*718	188	100	37
23	9.6	7.0	11	5.4	4.8	5.0	27	206	652	194	86	41
24	10	6.6	10	6.0	4.8	5.0	26	221	610	218	78	38
25	10	7.0	11	6.0	4.8	5.0	20	197	540	248	60	41
26	10	7.6	11	6.0	4.8	5.0	14	194	407	209	54	42
27	11	8.2	11	6.0	4.8	5.0	17	182	339	182	52	40
28	11	7.6	12	6.0	4.8	5.0	21	167	324	165	51	43
29	10	7.6	12	6.0	-	5.0	25	162	355	149	54	51
30	10	7.6	12	5.4	-----	6.0	4.0	162	*363	144	61	42
31	10	-----	10	5.4	-----	8.0	-----	173	-----	157	52	-----
Total	311.9	251.4	279.0	217.0	142.2	151.4	414.5	3,043	14,393	7,442	3,158	1,215
Mean	10.1	8.38	9.00	7.00	5.08	4.88	13.8	98.2	480	240	102	40.5
Ac-ft	619	499	553	430	282	300	822	6,040	28,550	14,760	6,260	2,410

Calendar year 1964: Max 274 Min 5.0 Mean 44.2 Ac-ft 32,060  
 Water year 1964-65: Max 1,000 Min 4.2 Mean 85.0 Ac-ft 61,520

Peak discharge (base, 250 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-11	0130	4.35	808	7-12	2200	3.39	328
6-17	0045	5.05	1,260	7-25	0130	3.24	276
7-2	2330	3.60	415				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 6-9, Nov. 13 to Apr. 21 (no gage-height record Nov. 27, 28, Dec. 2 to Apr. 16), Apr. 25-28. No gage-height record Aug. 22-26.

Transbasin diversions from North Platte River basin to  
Cache la Poudre River basin in Colorado

The following seven diversions, which are equipped with water-stage recorders, divert water from tributaries of the North Platte River to the Cache la Poudre River or its tributaries. Records furnished by State engineer.

6-7455. Cameron Pass ditch diverts water from tributaries of Michigan River in sec.10, T.6 N., R.76 W., to Joe Wright Creek (tributary to Cache la Poudre River) in sec.2, T.6 N., R.76 W.

6-7460. Michigan ditch diverts water from Michigan River, headgate in sec.12, T.6 N., R.76 W., and many small tributaries and Agnes Creek (tributary to Michigan River), headgate in sec.15, T.6 N., R.76 W., to Joe Wright Creek (tributary to Cache la Poudre River) in sec.2, T.6 N., R.76 W.

6-7465. Skyline ditch diverts water from West Branch Laramie River (tributary to Laramie River), headgate in sec.14, T.8 N., R.76 W., to Chambers Lake (tributary to Cache la Poudre River) in sec.31, T.8 N., R.75 W.

6-7470. Laramie-Poudre tunnel diverts water from Laramie River in sec.7, T.8 N., R.75 W., and Rawah Creek (tributary to Laramie River) in sec.14, T.9 N., R.76 W., to Cache la Poudre River in sec.9, T.8 N., R.75 W.

6-7472. Bob Creek ditch diverts water from Nunn Creek (tributary to Laramie River) in sec.9, T.9 N., R.75 W., to Roaring Creek (tributary to Cache la Poudre River) in sec.11, T.9 N., R.75 W.

6-7500. Columbine ditch diverts water from Nunn Creek (tributary to Laramie River) in sec.3, T.9 N., R.75 W., to North Fork Cache la Poudre River (tributary to Cache la Poudre River) in sec.25, T.10 N., R.75 W.

6-7505. Wilson supply ditch diverts water from Sand Creek in sec.22, T.11 N., R.75 W., and at times includes water diverted from tributaries of Deadman Creek in sec.9, T.10 N., R.75 W. Diversion is from the Laramie River basin to Sheep Creek (tributary to North Fork Cache la Poudre River) in sec.13, T.11 N., R.75 W., in the Cache la Poudre River basin. Records herein represent total flow diverted from the Laramie River basin by Wilson supply ditch.

Diversions, in acre-feet, water year October 1964 to September 1965

Month	Cameron Pass ditch	Michigan ditch	Skyline ditch	Laramie- Poudre tunnel	Bob Creek ditch	Columbine ditch	Wilson supply ditch	Total
October.....	0	0	0	0	0	0	0	0
November.....	0	0	0	0	0	0	0	0
December.....	0	0	0	0	0	0	0	0
January.....	0	0	0	0	0	0	0	0
February.....	0	0	0	0	0	0	0	0
March.....	0	0	0	0	0	0	0	0
April.....	0	0	0	0	0	0	0	0
May.....	0	0	0	2,530	0	0	1,000	3,530
June.....	0	63	0	3,540	0	0	1,980	5,580
July.....	0	1,010	772	9,550	0	0	114	11,450
August.....	0	8.9	0	2,680	0	0	0	2,690
September.....	0	0	0	0	0	0	0	0
Water year 1964-65.....	0	1,080	772	18,300	0	0	3,090	23,240

## PLATTE RIVER BASIN

6-7515. North Fork Cache la Poudre River near Livermore, Colo.

Location.--Lat 40°42'10", long 105°14'01", in NW¼SW¼ sec.33, T.9 N., R.70 W., on right bank 0.6 mile upstream from mouth, 0.7 mile downstream from Milton Seaman Reservoir, and 6.0 miles southeast of Livermore.

Drainage area.--568 sq mi.

Records available.--May 1929 to September 1931 (published as "at Livermore"), May 1947 to September 1965 (discontinued).

Gage.--Water-stage recorder (digital). Altitude of gage is 5,380 ft (from topographic map). May 24, 1929, to Sept. 30, 1931, chain gage on highway bridge at Livermore 9 miles upstream at datum 5,715.03 ft above mean sea level, datum of 1929.

Average discharge.--20 years, 44.9 cfs (32,510 acre-ft per year).

Extremes.--Maximum discharge during year, 1,590 cfs June 11 (gage height, 6.64 ft); no flow for many days.

1929-31, 1947-65: Maximum discharge, 6,800 cfs May 31, 1930 (gage height, 9.82 ft, from floodmarks, site and datum then in use), from rating curve extended above 390 cfs on basis of slope-area measurement of peak flow; no flow for many days in 1961-65.

Maximum flood known, 20,000 cfs (estimated) May 20, 1904.

Remarks.--Records good above 4 cfs and poor below except those for period of no gage-height record, which are fair. Natural flow of stream affected by transbasin diversions (see elsewhere in this report), storage reservoirs, and diversions for irrigation (22,530 acre-ft in water year 1965).

Rating table (gage height, in feet, and discharge, in cubic feet per second)

2.5	0	3.6	48
2.6	.1	3.9	83
2.7	.6	4.2	140
2.8	1.6	4.5	225
2.9	3.6	5.0	415
3.1	11	5.5	720
3.2	15	6.0	1,080
3.4	29	6.5	1,480

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	9.0	5.8	0.1	4.0	0	0	2.4	*79	189	130	11
2	.1	12	*5.4	.1	*5.4	0	0	2.4	105	195	180	10
3	.1	12	5.8	.1	5.4	0	0	2.4	110	150	170	11
4	.1	12	5.4	0	4.0	0	0	1.0	168	86	*170	11
5	.1	12	5.0	0	.1	0	0	.2	105	110	168	9.7
6	.1	10	5.0	0	.1	0	0	.1	96	127	125	10
7	*.1	*7.6	5.0	0	0	0	0	0	201	94	88	10
8	.1	3.1	5.4	0	0	4.3	0	.1	165	73	62	9.3
9	.1	3.1	5.4	0	0	*12	0	1.1	129	57	64	8.3
10	.1	3.1	5.4	0	0	4.7	0	2.6	315	49	37	7.6
11	0	3.1	5.4	.2	0	0	0	7.2	1,450	43	9.3	*6.8
12	0	3.1	6.5	1.4	.1	5.8	0	4.3	1,420	*43	8.3	7.6
13	0	3.3	15	1.3	.1	9.3	0	1.3	1,220	35	8.3	8.3
14	0	3.3	5.4	2.2	0	9.3	0	2.2	975	25	8.6	8.3
15	0	3.3	4.7	5.0	0	9.3	0	5.0	832	16	9.0	8.3
16	0	3.3	3.1	12	.1	9.3	0	5.0	1,060	7.6	10	9.0
17	0	3.3	3.3	15	0	9.3	3.3	4.3	930	7.9	11	7.2
18	0	3.3	11	*14	0	9.3	15	3.6	*1,300	7.9	11	1.3
19	0	3.3	11	9.0	0	9.3	15	4.3	1,020	13	25	.9
20	0	3.6	9.7	9.0	0	9.3	15	5.0	714	65	14	2.2
21	0	2.0	9.7	9.0	0	9.3	15	16	*577	64	13	3.3
22	0	.9	6.1	7.9	0	9.3	15	49	470	59	13	3.1
23	0	.9	.2	9.3	0	9.3	15	57	426	59	13	3.3
24	0	1.1	.1	2.8	0	7.9	13	82	366	58	13	3.1
25	0	1.6	.1	3.3	0	.1	4.0	138	*352	59	12	2.2
26	0	1.6	.1	5.4	0	.1	.1	192	361	62	12	.9
27	0	1.6	.1	3.3	0	0	1.0	*207	266	60	12	.7
28	0	2.4	.1	2.8	0	0	6.1	204	*94	58	12	.6
29	0	5.8	.1	2.6	-	0	*6.1	153	91	56	12	1.0
30	0	5.8	.1	2.6	-----	0	4.0	59	177	56	12	1.7
31	3.3	-----	.1	2.6	-----	0	-----	56	-----	85	11	-----
Total	4.3	140.5	145.5	121.0	19.3	137.2	127.6	1,267.5	15,574	2,069.4	1,443.5	177.7
Mean	0.14	4.68	4.69	3.90	0.69	4.43	4.25	40.9	519	66.8	46.6	5.92
Ac-ft	8.5	279	289	240	38	272	253	2,510	30,890	4,100	2,860	352

Calendar year 1964: Max 170 Min 0 Mean 15.8 Ac-ft 11,490  
 Water year 1964-65: Max 1,450 Min 0 Mean 58.2 Ac-ft 42,090

\* Discharge measurement made on this day.

Note.--No gage-height record July 26 to Aug. 4.



6-7520. Cache la Poudre River at mouth of canyon, near Fort Collins, Colo.

Location.--Lat 40°39'52", long 105°13'26", in NW¼ sec.15, T.8 N., R.70 W., on left bank at mouth of canyon, 0.5 mile downstream from headgate of Poudre Valley Canal, 1.2 miles upstream from Lewstone Creek, and 9.3 miles northwest of court house in Fort Collins.

Drainage area.--1,055 sq mi.

Records available.--June to August 1881, May to July 1883, October 1883 to September 1965. Monthly discharge only for some periods, published in WSP 1310. Records for Mar. 23 to Apr. 30 and July 4 to Aug. 20, 1883, published in WSP 9, have been found to be unreliable and should not be used. Prior to 1902, published as Cache la Poudre Creek or River at or near Fort Collins.

Gage.--Water-stage recorder. Altitude of gage is 5,220 ft (from topographic map).

Average discharge.--82 years (1883-1965), 393 cfs (284,500 acre-ft per year).

Extremes.--Maximum discharge during year, 4,810 cfs June 11 (gage height, 6.42 ft); minimum daily, 6.4 cfs Sept. 29, 30.

1881, 1883-1965: Maximum discharge not determined, occurred May 20, 1904; maximum discharge determined, 21,000 cfs June 9, 1891 (from reports of State engineer of Colorado), caused by failure of Chambers Lake Dam; minimum daily discharge, 1.6 cfs Nov. 20, 28, 1948, caused by diversion of Poudre Valley Canal half a mile upstream.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by transbasin and transmountain diversions (see elsewhere in this report), diversions for irrigation (82,530 acre-ft in water year 1965), and diversions for municipal use (7,660 acre-ft in water year 1965). Records of suspended sediment loads for the water year 1965 are published in Part 2 of this report.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 15-20, Sept. 28-30)

1.1	5.0	2.2	222	4.0	1,550
1.2	12	2.6	430	4.5	2,110
1.4	30	3.0	690	5.0	2,740
1.6	54	3.5	1,080	6.0	4,190
1.8	98				

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	32	18	12	18	15	23	86	1,170	*1,670	830	169
2	35	31	14	14	15	11	28	354	*1,120	1,770	846	156
3	39	29	10	13	*14	2	30	466	1,240	1,860	809	147
4	37	28	11	12	15	10	32	496	1,360	1,660	760	156
5	29	23	10	*15	16	*20	28	454	1,260	1,540	718	166
6	26	16	8	15	18	17	19	359	1,140	1,580	634	182
7	*28	17	9	14	17	12	*19	327	1,500	1,580	538	202
8	*29	18	*9	14	17	12	22	282	1,610	1,480	448	219
9	30	18	10	13	13	12	21	169	1,680	1,450	424	191
10	31	15	15	12	15	14	26	93	2,470	1,330	376	162
11	29	12	15	12	14	15	25	54	4,160	1,350	306	144
12	30	90	13	*12	12	16	22	43	3,280	1,390	287	138
13	33	80	10	11	13	24	18	46	2,730	1,550	311	135
14	34	13	8	12	12	13	18	104	2,240	1,260	321	118
15	34	20	8	13	*16	13	15	112	2,230	1,060	321	*109
16	33	15	*9	14	15	14	18	147	3,100	958	424	106
17	32	16	10	15	15	16	18	188	3,740	982	442	120
18	32	18	9	14	15	12	39	297	*3,880	1,070	*526	123
19	32	18	9	*13	17	*11	43	354	3,220	1,040	538	153
20	27	*17	10	14	16	12	40	484	2,940	1,070	496	169
21	27	16	14	13	17	13	53	*676	2,840	1,020	338	162
22	27	14	*22	12	14	17	65	910	*2,700	*1,020	365	153
23	27	15	25	10	17	12	*73	1,310	2,480	1,070	306	106
24	32	16	23	14	13	14	86	1,520	2,160	1,220	327	48
25	32	13	18	17	15	11	86	1,330	1,980	1,350	240	51
26	27	14	15	*20	*19	*13	96	*1,160	1,650	1,240	185	90
27	25	12	13	15	20	11	83	1,020	1,370	1,060	166	109
28	27	11	15	12	17	10	76	902	1,060	926	147	19
29	27	13	11	13	-	11	76	802	1,400	823	115	64
30	*29	*20	10	15	-----	22	78	788	1,680	760	144	64
31	27	-----	11	15	-----	24	-----	966	-----	788	169	-----
Total	935	517.0	392	420	435	436	1,276	16,299	65,390	38,927	12,857	3,815.8
Mean	30.2	17.2	12.6	13.5	15.5	14.1	42.5	526	2,180	1,260	415	127
Ac-ft	1,850	1,030	778	833	863	865	2,530	32,330	129,700	77,210	25,500	7,570

Calendar year 1964: Max 1,730 Min 8.0 Mean 217 Ac-ft 157,600  
Water year 1964-65: Max 4,160 Min 6.4 Mean 388 Ac-ft 281,100

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 15, 16, 30, Dec. 5 to Mar. 5, Mar. 18-29 (stage-discharge relation affected by ice during most of periods). Stage-discharge relation affected by ice Nov. 12, 13, 18-23, 25-29, Dec. 1-4, Mar. 6-11, 13-17.

## PLATTE RIVER BASIN

6-7525. Cache la Poudre River near Greeley, Colo.

Location.--Lat 40°25'04", long 104°38'22", in NW¼ sec.11, T.5 N., R.65 W., on right bank 25 ft downstream from highway bridge, 3 miles east of courthouse in Greeley, and 3 miles upstream from mouth.

Drainage area.--1,877 sq mi.

Records available.--March to October 1903, August to November 1904, January 1914 to December 1919, June 1924 to September 1965. Monthly discharge only for some periods, published in WSP 1310.

Gage.--Water-stage recorder. Altitude of gage is 4,610 ft (from topographic map). Prior to Apr. 4, 1916, staff gage and Apr. 4, 1916, to Dec. 17, 1919, water-stage recorder, at sites within 2 miles downstream at different datums. May 27, 1924, to Dec. 13, 1933, at present site at datum 0.51 ft higher.

Average discharge.--46 years (1914-19, 1924-65), 96.8 cfs (70,080 acre-ft per year).

Extremes.--Maximum discharge during year, 3,480 cfs June 19 (gage height, 8.42 ft); minimum daily, 7.5 cfs May 13. 1903-4, 1914-19, 1924-65: Maximum daily discharge, 4,220 cfs June 24, 26, 1917; minimum daily, 0.8 cfs Oct. 3, 1946.

Remarks.--Records good. Natural flow of stream affected by transmountain and transbasin diversions, storage reservoirs, power developments, diversion for municipal supply, diversions above station for irrigation of about 250,000 acres, and return flow from irrigated areas. Records of chemical analyses for the water year 1965 are published in Part 2 of this report.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1-31, May 14 to June 17, June 21-24)

Oct. 1 to June 24				June 25 to Sept. 30			
2.7	7.0	5.0	570	2.2	15	3.4	168
2.8	12	6.0	1,050	2.3	21	4.0	306
3.0	32	7.0	1,900	2.4	29	5.0	625
3.4	84	8.0	3,040	2.6	48	6.0	1,100
4.0	240	8.4	3,580	3.0	98	7.0	1,900

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	82	81	68	58	73	57	12	34	112	29	22
2	*28	86	82	67	57	71	57	9.5	32	94	22	30
3	16	90	82	67	58	67	57	9.0	31	98	19	31
4	26	94	82	68	*60	70	56	10	40	91	16	34
5	36	103	81	73	63	*74	57	10	90	84	16	42
6	45	92	79	*71	63	74	60	8.5	88	72	18	44
7	48	86	79	70	62	68	60	10	86	71	18	44
8	46	86	81	70	60	68	58	12	86	57	20	43
9	51	*82	81	67	60	68	*58	31	79	55	18	45
10	50	84	81	66	62	68	58	*18	126	39	17	40
11	44	82	79	67	56	68	55	12	*639	32	17	35
12	43	82	78	67	56	68	56	8.5	1,740	27	*19	31
13	52	78	74	66	61	68	55	7.5	1,500	24	19	33
14	54	74	76	67	64	68	54	9.0	789	25	19	40
15	57	74	79	67	61	*67	55	15	731	24	19	44
16	66	78	*76	67	*60	67	52	23	1,480	21	16	42
17	70	76	54	64	71	61	52	20	2,350	19	17	49
18	64	76	66	64	88	60	58	14	*2,900	18	23	54
19	68	76	73	*63	97	62	79	11	3,400	19	27	61
20	79	81	76	63	94	64	76	9.0	3,160	43	37	87
21	*108	81	78	61	92	67	*67	8.0	2,760	*64	31	102
22	105	81	79	63	86	66	62	17	2,690	222	34	116
23	105	86	78	57	82	66	38	82	2,460	180	45	107
24	105	*84	76	57	73	62	19	101	*2,210	143	49	87
25	99	86	73	61	81	61	17	234	1,850	332	47	*74
26	103	81	70	56	81	58	11	243	1,660	195	34	63
27	110	82	68	55	79	58	10	*162	1,320	120	25	60
28	105	78	70	61	76	58	20	61	777	88	20	56
29	105	76	71	61	-	58	22	37	301	61	23	101
30	103	78	67	63	-----	57	12	31	148	43	*23	110
31	81	-----	70	66	-----	57	-----	26	-----	34	26	-----
Total	2,098	2,475	2,340	2,003	1,961	2,022	1,448	1,261.0	35,557	2,507	763	1,727
Mean	67.7	82.5	75.5	64.6	70.0	65.2	48.3	40.7	1,185	80.9	24.6	57.6
Ac-ft	4,160	4,910	4,640	3,970	3,890	4,010	2,870	2,500	70,530	4,970	1,510	3,430

Calendar year 1964: Max 234 Min 4.9 Mean 62.4 Ac-ft 45,280

Water year 1964-65: Max 3,400 Min 7.5 Mean 154 Ac-ft 111,400

\* Discharge measurement made on this day.

6-7540. South Platte River near Kersey, Colo.

Location.--Lat 40°24'44", long 104°33'46", in NW¼SW¼ sec.9, T.5 N., R.64 W., on downstream side of bridge on State Highway 37, 1.9 miles north of railroad in Kersey, and 2½ miles downstream from Cache la Poudre River.

Drainage area.--9,598 sq mi.

Records available.--May 1901 to December 1903, March 1905 to September 1965. Monthly discharge only for some periods, published in WSP 1310. Published as "at Kersey" 1901-3.

Gage.--Water-stage recorder since July 8, 1919. Datum of gage is 4,575.77 ft above mean sea level, datum of 1929. Prior to July 8, 1919, staff or chain gages at former bridge 150 ft downstream at different datum. July 8, 1919, to Sept. 7, 1921, at site 450 ft downstream from present site at different datum. Sept. 8, 1921, to Sept. 12, 1923, at site 750 ft downstream from present site at different datum. Sept. 13, 1923, to July 2, 1935, at site 200 ft downstream from present site at present datum.

Average discharge.--62 years, 730 cfs (528,500 acre-ft per year).

Extremes.--Maximum discharge during year, 23,500 cfs June 18 (gage height, 10.75 ft); minimum daily, 60 cfs May 13. 1901-3, 1905-65: Maximum daily discharge, 31,000 cfs June 7, 1921, from rating curve extended above 17,000 cfs by logarithmic plotting; minimum daily, 28 cfs Apr. 30, 1955.

Remarks.--Records good except those for June 12-18, which are poor. Discharge measurements generally made twice a month. Natural flow of stream affected by transmountain and transbasin diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation of about 888,000 acres, and return flow from irrigated areas. Records of chemical analyses and suspended sediment loads for the water year 1965 are published in Part 2 of this report.

Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 1-15, June 12, 13, 17, 18, 30,  
July 1, 21-24, Aug. 2 to Sept. 15, Sept. 21-30)

1.7	50	3.5	630	6.0	4,020
2.0	96	4.0	1,030	7.0	6,800
2.5	204	4.5	1,480	9.0	14,800
3.0	368	5.0	2,110	10.8	23,800

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	154	330	505	449	547	431	400	190	440	1,690	5,130	341
2	152	338	517	440	541	417	400	130	380	1,430	6,740	338
3	143	334	505	426	541	426	400	105	312	1,210	5,420	326
4	145	323	495	431	541	464	392	90	207	1,090	4,100	316
5	154	357	485	436	559	454	422	75	876	916	3,440	308
6	168	364	490	445	565	454	469	70	3,960	720	2,750	384
7	182	353	469	454	572	396	422	67	1,850	505	2,290	396
8	199	319	449	440	547	376	392	66	1,150	357	1,990	431
9	214	312	464	426	523	360	386	83	884	294	1,590	535
10	217	316	454	417	559	376	372	74	924	245	1,240	630
11	233	326	449	413	535	380	349	69	1,440	227	788	529
12	230	316	445	413	553	480	a 330	77	3,720	217	553	449
13	225	308	422	408	523	517	a 308	60	5,390	209	417	445
14	254	301	454	408	529	529	280	66	4,000	214	357	368
15	254	326	495	417	511	517	257	82	6,030	214	334	345
16	287	417	485	417	490	511	227	134	7,700	204	316	372
17	277	500	a 384	413	523	517	190	110	8,480	199	298	454
18	274	559	b 500	408	541	505	190	80	15,900	192	294	553
19	301	598	376	400	604	529	192	80	16,200	202	349	728
20	323	604	459	404	690	517	185	70	13,500	426	876	1,000
21	338	584	511	400	698	511	147	67	11,600	1,200	1,000	1,820
22	360	559	565	400	598	529	126	94	10,600	2,290	788	2,020
23	376	541	553	396	529	541	103	134	9,800	2,980	994	1,820
24	388	517	517	422	523	559	82	876	9,400	4,520	900	1,860
25	388	529	505	459	485	547	82	1,210	8,400	7,570	772	1,830
26	404	529	495	459	454	485	143	1,730	a 7,080	9,640	578	1,810
27	408	517	485	459	449	464	291	1,710	a 5,990	10,700	423	1,770
28	376	505	490	480	449	464	758	1,260	a 4,170	7,460	388	1,700
29	357	500	480	490	-	445	591	908	a 2,420	6,350	376	1,830
30	349	500	464	517	-----	422	301	735	a 1,510	4,150	368	2,510
31	326	-----	449	517	-----	413	-----	565	-----	3,400	357	-----
Total	8,456	12,882	14,816	13,464	15,179	14,536	9,187	11,067	164,313	71,021	46,216	28,218
Mean	273	429	478	434	542	469	306	357	5,477	2,291	1,491	941
Ac-ft	16,770	25,550	29,390	26,710	30,110	28,830	18,220	21,950	325,900	140,900	91,670	55,970

Calendar year 1964: Max 3,160 Min 43 Mean 336 Ac-ft 243,700  
Water year 1964-65: Max 16,200 Min 60 Mean 1,122 Ac-ft 812,000

a No gage-height record.

b Stage-discharge relation affected by ice.

## PLATTE RIVER BASIN

6-7576. Kiowa Creek at K-79 Reservoir, near Eastonville, Colo.

Location.--Lat 39°04'00", long 104°34'55", in SE¼NW¼ sec.29, T.11 S., R.64 W., in reservoir area, 140 ft upstream and 250 ft from left end of earth-fill dam on Kiowa Creek and 1.2 miles west of Eastonville.

Drainage area.--3.20 sq mi.

Records available.--August 1955 to September 1965, no winter records (discontinued).

Gage.--Water-stage recorder and concrete drop-inlet control structure. Datum of gage is 7,287.14 ft above mean sea level (Soil Conservation Service bench mark).

Extremes.--Maximum outflow during year, 2,370 cfs June 17 (gage height, 23.63 ft), from rating curve extended above 68 cfs as explained below; no flow May 6-14, 18. Maximum inflow not determined, occurred on June 17.

1955-65: Maximum outflow, that of June 17, 1965, from rating curve extended above 68 cfs on basis of slope-area measurement of peak flow in spillway and theoretical flow in outlet tube; no flow for many days in each year. Maximum inflow not determined, occurred on June 17, 1965.

Remarks.--Records fair except those for periods of no gage-height record, which are poor.

Records of daily discharge are outflow from reservoir, determined from stage-discharge relation for outlet structure. Reservoir is formed by earth dam, 755 ft long, with grass sodded emergency spillway section at gage height 20.1 ft; dam completed in June 1955. Outlet is a 3-foot square uncontrolled drop-inlet structure covered with an anti-vortex baffle, with two 12-inch square uncontrolled portholes on upstream face and two on right face. Crest of drop inlet is at gage height 10.84 ft; inverts of portholes on upstream face are at gage heights 2.90 and 6.87 ft and inverts of portholes on right face are at 4.87 and 8.85 ft. Drop inlet structure connects to a 24-inch diameter outlet pipe at base of dam. Reservoir capacity based on 1961 survey, 123 acre-ft at spillway crest, 21.1 acre-ft at crest of drop inlet, and 10.6, 3.60, 0.48, and 0.00 acre-ft at inverts of portholes. No dead storage. Dam constructed by U. S. Soil Conservation Service as part of the Kiowa Creek Watershed Protection Project. Records of suspended sediment loads for the water year 1965 are published in part 2 of this report.

Cooperation.--Reservoir capacity table furnished by U. S. Soil Conservation Service.

Discharge, in cubic feet per second, water year October 1964 to September 1965												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1										0.1	0.1	
2										.6	.08	
3										.6	.06	
4										.1	1.7	
5	0.01						0.2			.1	3.0	
6								0.0		.1	1.5	
7								0.0		.1	.2	
8								0.0			.1	
9								0.0				
10	(*)						.1					
11							*0	.2				
12							0.0	.1				
13							0.0	.2			.04	
14							0.0	.1				
15								.1				
16								.01	.2	.05		
17									*122			
18								0	*59		.1	
19							.03	(*)	7.5		*.1	
20	.04							.02	.9	(*)		
21									.6			
22							(*)	.4	.4			
23								.3	.3			
24								.2	.2	.1		
25										.05	.04	
26							.1	.2	.2			
27							.1	.1	.1			
28							.1	.1	.1	1.0		
29					-		0.08	.1	.1	1.6		
30	(*)				- - - -		0.03	.1	.1	.08		
31		- - - -			- - - -		- - - -	- - - -	- - - -	.3		- - - -
Total	1.00	-	-	-	-	-	2.87	1.08	194.13	5.73	7.78	0.90
Mean	0.032	-	-	-	-	-	0.096	0.035	6.47	0.185	0.251	0.030
(+)	0.53	-	-	-	-	-	0.53	0.52	0.58	0.69	0.54	0.54
(#)	0.86	-	-	-	-	-	0.86	0.85	0.89	0.97	0.87	0.87
(+)	0	-	-	-	-	-	-	2.57	10.10	3.40	1.30	1.00

\* Discharge measurement made on this day.

(+) Contents, in acre-feet, at end of month in reservoir.

(#) Surface area, in acres, at end of month.

(++) Precipitation, in inches, during month, at rain gage at reservoir.

Note.--No gage-height record Oct. 1-8, Apr. 1-13, June 17, 18.

6-7580. Kiowa Creek at Elbert, Colo.

Location.--Lat 39°12'35", long 104°32'00", in SE $\frac{1}{4}$ NE $\frac{1}{4}$  sec.3, T.10 S., R.64 W., on right bank a quarter of a mile southeast of Elbert and half a mile upstream from West Kiowa Creek.

Drainage area.--28.6 sq mi.

Records available.--May 1955 to September 1965 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 6,740 ft (from topographic map).

Average discharge.--10 years, 0.89 cfs (644 acre-ft per year).

Extremes.--Maximum discharge during year, 41,500 cfs June 17 (gage height, 12.57 ft), from rating curve extended above 120 cfs on basis of slope-area measurement of peak flow; no flow most of year.

1955-65: Maximum discharge, that of June 17, 1965; no flow most of each year.

Maximum flood known, that of June 17, 1965. Flood of May 30-31, 1935, 43,500 cfs, by slope-area measurement of peak flow at site about 1 mile downstream (most of the water is believed to have passed this station). For discussion of the 1935 flood, see WSP 997.

Remarks.--Records poor. Discharge measurement or observation of no flow generally made once a month. Flood flow decreased by a series of about 24 retarding dams on Kiowa Creek and tributaries above station. Records of suspended sediment loads for the water year 1965 are published in Part 2 of this report.

Discharge in cubic feet per second, water year October 1964 to September 1965

June 17.....	2,280	June 27.....	2	July 10.....	0.1
18.....	380	28.....	2	11.....	.1
19.....	20	29.....	2	12.....	.1
20.....	10	30.....	1	13.....	.1
21.....	8	July 1.....	1	14.....	.1
22.....	6	2.....	1	24.....	.1
23.....	4	3.....	.5	27.....	.1
24.....	3	7.....	5	Aug. 3.....	.1
25.....	3	8.....	.1	18.....	.1
26.....	2	9.....	.2		

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
June.....	2,723	2,280	0	90.8	5,400
July.....	8.5	5	0	.27	17
August.....	.2	.1	0	.01	.4
Calendar year 1964.....	-	0	0	0	0
Water year 1964-65.....	-	2,280	0	7.48	5,420

Note.--Flow occurred only on days listed above.

## PLATTE RIVER BASIN

6-7581. West Kiowa Creek at Elbert, Colo.

Location.--Lat 39°12'38", long 104°32'16", in SE¼NE¼ sec.3, T.10 S., R.64 W., on right bank 260 ft downstream from bridge on State Highway 217, a quarter of a mile south of Elbert, and half a mile upstream from mouth.

Drainage area.--35.9 sq mi.

Records available.--August 1962 to September 1965 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 6,740 ft (from topographic map).

Extremes.--Maximum discharge during year, 20,000 cfs June 17 (gage height, 7.40 ft), from rating curve extended above 80 cfs on basis of slope-area measurement of peak flow; no flow for many days.

1962-65: Maximum discharge, that of June 17, 1965; no flow for many days in each year.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Flood flows decreased by a series of about 12 retarding dams on West Kiowa Creek and tributaries above station. Records of suspended sediment loads for the water 1965 are published in Part 2 of this report.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used June 17 to Sept. 30)  
(Stage-discharge relation affected by ice Mar. 2-6)

1.1 0  
1.2 .2  
1.3 .8  
1.4 2.2

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			0	1.6	0.2	0.2	0.6	0.1	0.2	1.0	0.3	0.5
2			*0	1.7	*.1	b.2	.4	.1	.1	1.0	.2	.4
3			0	1.1	.4	b.2	.4	.1	.1	.8	*1.9	.4
4			0	.7	.3	b.2	.4	.1	.1	.8	2.6	.4
5			0	.2	.1	b.3	.4	*.1	2.2	.9	1.6	.4
6			0	*.2	.1	b.4	.3	.1	.6	1.0	.7	.3
7			0	.2	.1	.6	.2	.1	.2	*1.6	.3	.2
8			0	.2	.1	*.5	.2	.1	.1	1.0	.3	.2
9	(*)		0	.2	.1	.8	*.2	.1	.1	.8	.3	.2
10			.3	.3	.2	.7	.2	.1	.1	.6	.3	.2
11			.3	.2	.2	.5	.4	.1	.2	.5	.3	.2
12			.3	.2	.2	.6	.3	.1	.2	.4	.2	.3
13			.1	.5	.4	.5	.2	.1	.1	.4	.2	.3
14			.3	.6	.7	.5	.2	.1	.1	.4	.2	.2
15			.2	.2	.5	.5	.2	.1	.1	.3	.2	.3
16			.1	.2	.5	.5	.2	.1	*.2	.3	.2	.2
17			0	.3	.5	.5	.1	*.1	*71.0	.1	.2	.2
18			0	.3	.8	.5	.1	.1	150	.2	*7.3	.2
19			.3	.2	.8	.6	.1	.1	*50	*.2	2.2	.3
20			.2	.1	.4	.7	*.2	.1	20	.2	1.3	.4
21			.3	.1	.3	.7	.2	.2	10	.2	1.6	.4
22			.4	.1	.3	.7	.2	.3	5	.2	1.3	.5
23			.8	.2	.1	.8	.2	.5	5	.1	1.2	.5
24			.8	.3	.4	.6	.2	.6	4	.1	.8	.5
25			.4	.1	.6	.6	.3	.7	3	.1	.8	.5
26			.4	.1	.6	.4	.3	.6	2	.1	.7	.6
27			.4	.4	.6	.5	.4	.5	2	.1	.8	*.6
28			.3	.6	.2	.5	.3	.4	2	.1	1.1	.5
29			.3	.4	-	.6	.2	.3	2	.3	.7	.4
30			.2	.1	-----	1.2	.1	.3	2	.3	.5	.4
31		-----	.6	.1	-----	.9	-----	.2	-----	.2	.4	-----
Total	0	0	7.0	11.7	9.8	17.0	7.7	6.6	971.7	28.7	47.8	10.7
Mean	0	0	0.23	0.38	0.35	0.55	0.26	0.21	32.4	0.93	1.54	0.36
Ac-ft	0	0	14	23	19	34	15	13	1,930	57	95	21

Calendar year 1964: Max 3.7 Min 0 Mean 0.12 Ac-ft 90  
Water year 1964-65: Max 710 Min 0 Mean 3.06 Ac-ft 2,220

\* Discharge measurement or observation of no flow made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Apr. 21 to May 11, May 13, 14, May 26 to June 3, June 18 to July 12, July 15 to Aug. 2, Sept. 16-30.

6-7582. Kiowa Creek at Kiowa, Colo.

Location.--Lat 39°20', long 104°29', in SW¼ sec.20, T.8 S., R.63 W., on left bank 0.7 mile upstream from bridge on State Highway 86 and 0.7 mile south of Kiowa.

Drainage area.--111 sq mi.

Records available.--October 1955 to September 1965 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 6,350 ft (estimated from nearby bench mark).

Average discharge.--10 years, 3.80 cfs (2,750 acre-ft per year).

Extremes.--Maximum discharge during year, 19,700 cfs June 17 (gage height, about 18.5 ft, from floodmark), by contracted-opening measurement of peak flow at point 0.7 mile downstream; no flow for many days.

1955-65: Maximum discharge, that of June 17, 1965; no flow for many days in each year.

Maximum flood known occurred May 30-31, 1935; discharge at Elbert about 9½ miles upstream, 43,500 cfs, and at site about 12 miles downstream, 110,000 cfs, by slope-area measurement of peak flow. For discussion of this flood see WSP 997.

Remarks.--Records poor. Little or no diversion above station. Flood flow regulated to some extent by a series of about 64 retarding dams on Kiowa Creek and tributaries above station. Records of suspended sediment loads for the water year 1965 are published in Part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			0	0.1	0.1	0.6	0.8	0.4	0	3	2.7	* 0.1
2			* 0	.2	* .3	.4	.8	.3	* 0	3	2.3	0
3			0	.2	.4	.5	.7	.2	0	3	* 4.9	0
4			0	.3	.4	.6	.7	.1	.7	3	* 3.1	0
5			0	.4	.3	1.0	.7	* .1	5.2	3	2.4	.2
6			0	* .8	.2	1.4	.6	.1	2.3	3	1.0	1.5
7			.1	.4	.2	1.4	.6	.1	* 1.4	* 6.2	2.7	0
8			.1	.3	.1	* 1.6	.5	.1	1.9	* 9.0	1.6	0
9	(*)		.1	.2	.1	1.6	* .7	.1	1.6	10	1.6	0
10			.1	.2	.1	1.3	.7	.1	1.6	8	1.0	0
11			.1	.2	.1	1.0	.8	.1	2.7	6	1.0	0
12			.1	.1	.1	.8	.4	.1	2.3	3.5	.8	0
13			.1	.1	.1	.7	.5	.1	2.3	2	.6	0
14			.1	* .1	.1	.5	.5	.2	2.1	1.2	.6	0
15			.1	.1	.1	.6	.6	.5	2.5	1.2	1.0	* 0
16			.1	.1	.1	.6	.5	.1	* 3.5	1.4	1.2	0
17			.1	.2	.1	.4	.5	* .1	* 7.70	1.4	* 1.6	0
18			.1	.3	.2	.4	.5	.1	2.130	1.4	6.6	0
19			.1	.4	.4	.5	.5	0	110	* 1.6	1.0	0
20			.1	.3	.6	.5	* .5	0	45	1.4	5.2	0
21			.1	.3	.6	.5	.4	0	* 20	1.4	4.8	0
22			.1	.2	.4	.5	.5	0	10	1.3	6.3	0
23			.2	.2	.3	.5	.5	0	8	1.2	4.1	0
24			.2	.3	.3	.5	.5	0	6	1.4	3.2	0
25			.2	.3	.4	.5	.5	0	4	1.2	1.9	0
26			.1	.2	.6	.5	1.0	0	4	1.2	1.9	0
27			.1	.2	1.0	.6	1.0	0	4	1.6	1.9	0
28			.1	.3	.8	.6	.6	0	3	3.8	.6	0
29			.1	.4	-	.8	.5	0	3	2.7	.4	0
30			.1	.4	-	1.0	.4	0	3	2.7	.5	0
31			.1	.2	-	.8	-	0	-	3.0	.1	-
Total	0	0	2.8	8.0	8.5	23.2	18.0	2.9	3150.1	230.6	180.2	1.8
Mean	0	0	0.09	0.26	0.30	0.75	0.60	0.09	105	7.44	5.81	0.06
Ac-ft	0	0	5.6	16	17	46	36	5.8	6,250	457	357	3.6

Calendar year 1964: Max 31 Min 0 Mean 1.20 Ac-ft 870  
 Water year 1964-65: Max 2,130 Min 0 Mean 9.93 Ac-ft 7,190

\* Discharge measurement or observation of no flow made on this day.

\*\* Field estimate made on this day.

Note.--No gage-height record Dec. 7 to Jan. 6, Jan. 14, 26-29, Feb. 11-17, 21-25, Mar. 1-5, 9-28 (stage-discharge relation affected by ice during most of periods), May 2-13, June 16 to July 13, July 16-18, 21-23, 25, 26, Aug. 12-16. Stage-discharge relation affected by ice Jan. 7-13, 15-25, Jan. 30 to Feb. 10, Feb. 18-20, 26-28, Mar. 6-8.

## PLATTE RIVER BASIN

6-7585. South Platte River near Weldona, Colo.

Location.--Lat 40°19'20", long 103°55'15", in SW¼SW¼ sec.7, T.4 N., R.58 W., on left bank 400 ft downstream from bridge on State Highway 144, 2.8 miles southeast of Weldona, and 4.2 miles upstream from Bijou Creek.

Drainage area.--13,245 sq mi.

Records available.--October 1952 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 4,307.80 ft above mean sea level, datum of 1929.

Average discharge.--13 years, 439 cfs (317,800 acre-ft per year).

Extremes.--Maximum discharge during year, 18,800 cfs June 19 (gage height, 10.33 ft), from rating curve extended above 6,300 cfs; minimum daily, 53 cfs Jan. 27.

1952-65: Maximum discharge, that of June 19, 1965; minimum daily, 43 cfs Dec. 9, 1952.

Remarks.--Records good. Natural flow of stream affected by transmountain and transbasin diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation, and return flow from irrigated areas.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used June 17, June 27 to July 23)

2.5	40	4.0	760	8.0	8,000
2.6	58	5.0	1,540	9.0	12,200
2.8	116	6.0	2,820	10.0	17,100
3.3	334	7.0	4,840		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	139	319	90	63	120	247	350	247	381	648	1,850	339
2	131	275	90	61	110	* 247	339	252	319	355	2,760	329
3	135	225	87	61	115	238	329	212	256	284	3,760	324
4	131	190	87	61	124	238	324	186	289	238	3,320	355
5	135	174	87	58	*124	247	329	166	530	182	2,790	344
6	150	166	84	58	124	252	319	212	879	162	2,230	360
7	158	146	84	58	124	252	266	252	*1,310	170	1,770	418
8	178	143	84	56	120	229	* 256	266	683	150	1,520	440
9	190	135	84	56	120	212	252	275	608	106	1,320	476
10	198	*127	84	56	124	198	294	279	536	97	1,040	560
11	216	127	81	*58	131	186	270	*270	482	94	837	584
12	216	143	76	58	143	150	247	294	608	90	560	482
13	220	154	74	58	162	131	252	284	1,430	90	413	413
14	186	150	72	58	146	124	229	299	2,100	94	413	381
15	190	146	74	58	*170	116	234	261	1,470	90	413	319
16	212	124	*71	58	174	*116	261	212	2,320	87	*435	360
17	225	120	74	58	162	116	294	190	*4,460	87	391	506
18	234	135	70	58	166	120	275	186	5,820	97	386	596
19	229	154	120	58	166	127	256	198	12,500	103	360	760
20	*243	124	140	*58	170	127	*229	190	13,500	103	386	872
21	252	116	150	58	178	127	207	182	9,540	*212	893	1,040
22	261	110	158	58	207	127	186	186	7,440	518	1,040	1,280
23	266	*106	131	56	207	127	162	186	6,240	795	1,730	1,170
24	266	103	100	58	212	143	146	294	5,370	1,200	1,310	*1,050
25	273	100	81	54	207	143	170	*429	4,610	1,870	1,320	1,020
26	284	100	68	54	203	225	190	512	4,030	3,210	998	1,030
27	304	97	79	53	207	309	166	446	3,650	5,060	725	1,060
28	319	97	74	61	225	314	220	524	2,950	*6,240	683	1,030
29	279	94	* 68	116	-	334	355	488	2,010	4,900	299	1,080
30	266	90	66	123	-----	339	370	370	* 1,140	3,540	* 229	1,180
31	309	-----	66	127	-----	350	-----	386	-----	2,230	304	-----
Total	6,795	4,290	2,754	1,986	4,441	6,211	7,777	8,734	97,461	33,102	36,485	20,158
Mean	219	143	88.8	64.1	159	200	259	282	3,249	1,068	1,177	672
Ac-ft	13,480	8,510	5,460	3,940	8,810	12,320	15,430	17,320	193,300	65,660	72,370	39,980

Calendar year 1964: Max 1,370 Min 66 Mean 193 Ac-ft 139,800  
Water year 1964-65: Max 13,500 Min 53 Mean 631 Ac-ft 456,600

\* Discharge measurement made on this day.



6-7600. South Platte River at Balzac, Colo.

Note.--Records for the 1965 water year not available in time for inclusion in this report. They will be published in a subsequent annual report.

## PLATTE RIVER BASIN

6-7640. South Platte River at Julesburg, Colo.

Location.--Lat 40°58'46", long 102°15'15", in NE¼ sec.33, T.12 N., R.44 W., on left bank 215 ft downstream from bridge on U. S. Highway 385, 0.9 mile southeast of Julesburg, 3 miles upstream from Colorado-Nebraska State line, and 8 miles downstream from Lodgepole Creek.

Drainage area.--23,138 sq mi.

Records available.--April 1902 to September 1965. Monthly discharge only for some periods, published in WSP 1310. Published as "near Julesburg" 1903-8, 1915-16 and as "at Ovid" 1922-24.

Gage.--Water-stage recorder. Datum of gage is 3,446.76 ft above mean sea level, datum of 1929. Apr. 1, 1902, to May 10, 1922, staff or chain gages, and Oct. 1, 1924, to Sept. 30, 1956, water-stage recorder on channel 1,600 ft to right at several sites within 1,800 ft of present site at various datums. May 11, 1922, to Sept. 30, 1924, water-stage recorder and supplemental chain gages at site about 8½ miles upstream at Ovid at different datum. Oct. 1, 1956, to Dec. 10, 1958, water-stage recorder at site 135 ft downstream at present datum (used as a supplemental gage Oct. 1, 1941, to Sept. 30, 1956). Since Oct. 1, 1956, supplemental water-stage recorder on channel 1,600 ft to right at site 85 ft downstream.

Average discharge.--63 years, 458 cfs (331,600 acre-ft per year).

Extremes.--Maximum discharge during year, 37,600 cfs June 20 (gage height, 10.44 ft, from floodmark in gage well); minimum daily, 9.9 cfs Oct. 1.

1902-65: Maximum discharge, that of June 20, 1965; no flow Aug. 18-20, 1902, July 25 to Aug. 7, 1903.

Remarks.--Records good except those for June 19 to Sept. 22, which are poor. Discharge measurements generally made 4 times a month. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals, diversions for irrigation of about 1,220,000 acres above station, and return flow from irrigated areas. Records of chemical analyses and water temperatures for the water year 1965 are published in Part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.9	26	80	70	94	172	102	23	44	2,400	3,770	280
2	11	28	82	101	122	161	104	21	41	2,100	3,080	230
3	19	36	65	103	132	153	106	24	62	1,700	2,270	200
4	26	38	58	111	145	150	106	24	86	1,450	1,640	170
5	26	49	52	120	149	164	105	30	214	2,260	1,330	150
6	26	51	55	115	157	166	102	25	258	1,090	1,320	135
7	26	52	57	118	168	151	99	23	177	570	1,280	120
8	26	50	57	117	164	149	102	25	157	463	1,150	115
9	26	47	61	102	170	142	93	27	153	393	837	114
10	28	44	73	94	180	130	72	24	166	542	526	114
11	26	37	72	94	109	122	80	21	193	274	372	130
12	26	38	72	94	80	113	80	20	284	246	246	150
13	27	37	70	85	97	111	76	19	210	197	155	180
14	27	39	43	87	112	111	74	23	197	160	114	190
15	23	56	73	89	126	111	65	23	1,080	351	93	204
16	22	53	65	91	133	99	40	27	1,890	130	84	197
17	22	45	43	92	145	92	32	24	1,910	106	95	185
18	26	50	44	89	174	90	28	20	2,040	88	88	180
19	25	49	43	84	240	84	28	21	3,700	101	84	180
20	26	46	47	84	268	84	27	21	30,000	114	84	180
21	26	46	51	84	223	83	25	20	23,000	1,010	82	340
22	27	61	65	84	197	83	27	28	17,000	738	82	760
23	26	64	106	77	145	86	27	29	12,500	379	82	894
24	26	64	145	68	110	87	25	252	9,200	288	218	966
25	26	64	155	68	123	88	26	167	7,000	225	1,540	954
26	26	62	142	68	193	95	25	163	5,800	253	2,000	966
27	26	61	114	62	247	108	23	88	4,800	966	1,400	906
28	24	61	103	67	199	119	23	66	4,100	2,360	1,000	894
29	22	64	101	87	-	110	21	53	3,400	2,900	700	990
30	20	59	84	97	-	103	21	48	2,900	3,480	520	990
31	25	-----	62	85	-----	107	-----	44	-----	3,840	340	-----
Total	747.9	1,477	2,340	2,787	4,402	3,624	1,764	1,423	132,562	31,174	26,582	12,064
Mean	24.1	49.2	75.5	89.9	157	117	58.8	45.9	4,419	1,006	857	402
Ac-ft	1,480	2,930	4,640	5,530	8,730	7,190	3,500	2,820	262,900	61,830	52,720	23,930

Calendar year 1964: Max 326 Min 7.5 Mean 101 Ac-ft 73,400  
 Water year 1964-65: Max 30,000 Min 9.9 Mean 605 Ac-ft 438,200

Note.--No gage-height record Mar. 19-28 (stage-discharge relation affected by ice during most of period), June 19 to July 4, Aug. 26 to Sept. 8.

6-8250. South Fork Republican River near Idalia, Colo.

Location.--Lat 39°37'00", long 102°14'30", in SE¼SW¼ sec.13, T.5 S., R.44 W., on left bank 0.7 mile east of U. S. Highway 385, 1½ miles upstream from Landsman Creek, 4 miles upstream from Bonny Dam, and 6½ miles southeast of Idalia.

Drainage area.--1,300 sq mi, approximately.

Records available.--May 1950 to September 1965.

Gage.--Water-stage recorder. Prior to Aug. 10, 1951, at site 4 miles upstream at different datum. Aug. 10, 1951, to Sept. 30, 1955, at site 2½ miles upstream at different datum.

Average discharge.--15 years, 33.7 cfs (24,400 acre-ft per year).

Extremes.--Maximum discharge during year, 5,500 cfs June 17 (gage height, 10.25 ft), from rating curve extended above 46 cfs on basis of slope-area measurement at gage height 8.40 ft and contracted-opening measurement at gage height 10.21 ft; no flow Aug. 10-16. 1950-65: Maximum discharge, 14,300 cfs May 16, 1957; maximum gage height, that of June 17, 1965; no flow at times in 1952-54, 1959-61, 1963-65.

Maximum flood known since at least 1865, 103,000 cfs May 31, 1935, by slope-area measurement three-quarters of a mile upstream.

Remarks.--Records poor. Discharge measurements generally made two or more times a month. Diversions above station for irrigation.

Cooperation.--Four discharge measurements furnished by Bureau of Reclamation.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	21	29	34	34	36	33	17	25	87	11	39
2	12	26	26	35	32	35	32	17	26	36	8.1	34
3	13	26	30	35	31	33	29	18	29	31	9.5	33
4	15	25	32	35	30	32	32	19	26	35	17	33
5	15	26	31	35	32	34	34	19	93	34	8.1	35
6	17	26	31	34	33	37	33	20	38	34	2.0	36
7	16	26	33	32	32	36	33	19	27	33	.2	34
8	16	25	35	30	33	35	31	18	26	32	.1	35
9	16	25	36	35	33	34	29	18	281	30	.1	33
10	16	25	36	37	30	34	27	20	24	28	0	35
11	16	26	36	38	28	33	28	16	23	29	0	36
12	17	26	32	38	27	33	29	12	22	29	0	34
13	18	26	33	45	27	33	27	9.5	24	29	0	29
14	19	26	32	40	29	33	26	12	28	26	0	30
15	19	26	30	36	31	32	25	12	28	24	0	30
16	18	26	29	33	33	30	26	10	32	19	0	33
17	19	26	28	32	36	27	24	8.1	2020	9.5	.6	34
18	19	28	27	33	40	30	24	8.1	232	22	14	37
19	21	31	28	33	34	28	25	7.4	77	6.0	22	44
20	21	29	30	32	31	26	25	7.4	62	.4	85	56
21	23	29	32	33	29	29	24	8.1	42	.2	36	37
22	23	28	33	34	31	33	23	12	40	.1	32	31
23	23	27	34	33	19	29	23	17	230	.1	105	33
24	23	26	35	34	32	28	25	40	89	61	1,270	30
25	22	27	34	35	34	28	24	37	36	39	102	31
26	23	28	33	34	36	33	23	34	34	23	50	33
27	22	29	32	36	38	38	22	39	35	6.0	44	32
28	22	28	31	39	37	36	21	33	37	11	41	33
29	19	27	31	37	-	37	18	31	36	4.8	41	35
30	18	31	31	38	-	38	17	30	624	5.2	41	30
31	19	-	32	36	-	36	-	30	-	5.6	42	-
Total	572	801	982	1,091	892	1,016	792	598.6	4,346	729.9	1,981.7	1,035
Mean	18.5	26.7	31.7	35.2	31.9	32.8	26.4	19.3	145	23.5	63.9	34.5
Ac-ft	1,130	1,590	1,950	2,160	1,770	2,020	1,570	1,190	8,620	1,450	3,930	2,050

Calendar year 1964: Max 92 Min 0 Mean 24.4 Ac-Ft 17,700  
 Water year 1964-65: Max 2,020 Min 0 Mean 40.6 Ac-Ft 29,430

Peak discharge (base, 1,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-9	0230	8.75	1,890	6-30	1215	9.45	2,280
6-17	1130	10.25	5,500	7-24	0945	9.88	2,760
6-23	2045	8.74	1,440				

Note.--Stage-discharge relation affected by ice Dec. 6, 7, 14-24, 26-28, Dec. 30 to Jan. 1, Jan. 9-14, 23, 24, 27, Feb. 1-5, 11-17, 25, 26, Mar. 2-5, 19-21, 24-26.

## KANSAS RIVER BASIN

6-8255. Landsman Creek near Hale, Colo.

Location.--Lat 39°34'30", long 102°15'10", in SE¼ sec.35, T.5 S., R.44 W., on right bank 900 ft upstream from bridge on U. S. Highway 385, 3.2 miles upstream from mouth, 5.2 miles southwest of Bonny Dam, and 7 miles southwest of Hale. Prior to August 3, 1965, at site 1,200 ft downstream.

Drainage area.--268 sq mi.

Records available.--May 1950 to September 1965.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 3,720 ft (from topographic map). Prior to Aug. 3, 1965, at site 1,200 ft downstream; at datum 0.68 ft lower prior to Oct. 21, 1950, and June 6 to Aug. 10, 1951; and at datum 0.79 ft higher Oct. 21, 1950, to June 5, 1951.

Average discharge.--15 years, 4.84 cfs (3,500 acre-ft per year).

Extremes.--Maximum discharge during year, 2,020 cfs June 17 (gage height, 7.88 ft), from rating curve extended above 13 cfs on basis of slope-area measurement at gage height 8.01 ft; no flow Oct. 4-6, Nov. 2-4, 8, 10, 11, July 21-23, 27, 28.

1950-65: Maximum discharge, 4,570 cfs July 24, 1957 (gage height, 8.84 ft, site then in use), from rating curve extended above 940 cfs on basis of slope-area measurement at gage height 7.69 ft; no flow for several days in 1955, 1965.

Maximum stage known, about 10 ft May 30, 31, 1935, present datum, from information by local resident.

Remarks.--Records poor. Discharge measurements generally made two or more times a month. Small diversions above station for irrigation.

Cooperation.--Five discharge measurements furnished by Bureau of Reclamation.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	0.1	0.4	1.2	1.2	1.3	1.1	0.6	1.3	4.9	a1.5	1.2
2	.2	0	.4	1.2	1.2	a 1.3	1.0	.5	1.6	1.6	a .6	1.0
3	.3	0	.4	1.2	1.1	a 1.3	.7	.5	1.6	1.6	a .6	.9
4	0	0	.4	1.3	1.1	a 1.3	.8	.5	1.6	1.5	.6	.8
5	0	.1	.4	1.5	1.2	1.3	8	.5	435	1.5	.4	1.0
6	0	.1	.4	1.5	1.3	1.2	.8	.6	50	1.4	.3	3.2
7	.1	.1	.4	1.5	1.0	1.1	.8	.4	3.7	1.7	.3	1.7
8	.2	0	.4	1.5	1.0	1.0	.8	.4	3.0	1.9	.3	1.9
9	.1	.1	.4	1.3	.9	1.0	.8	.4	97	1.9	.3	1.3
10	.1	0	.4	1.3	.8	1.0	.8	.4	3.9	1.9	.3	1.3
11	.2	0	.4	1.3	a .6	1.0	.8	.4	3.1	1.9	.2	1.3
12	.1	.1	.4	1.3	a .6	1.0	.8	.4	2.7	1.5	.2	1.2
13	.1	.1	.3	1.0	a .6	1.0	.8	.3	2.3	1.1	.2	1.2
14	.1	.1	.3	1.0	a .7	1.0	.8	.4	2.3	1.0	.2	1.0
15	.1	.1	.4	1.0	a .8	1.0	.8	.3	2.0	1.0	.2	1.0
16	.2	.1	.4	1.0	a .8	1.2	.8	.2	1.7	.8	.2	1.2
17	.3	.1	.4	1.0	a .9	1.1	.8	.2	992	.8	.4	1.4
18	.1	.1	.4	1.0	.9	1.0	.8	.3	64	.4	.4	1.9
19	.1	.1	.4	1.0	.5	1.0	.9	.4	6.2	.2	.8	3.0
20	.1	.1	.6	1.0	.5	1.0	.8	.3	5.1	.1	1.9	7.7
21	.2	.1	.7	.9	.4	1.1	.8	.6	3.4	0	1.0	3.5
22	.4	.1	.8	.9	.8	1.1	.8	.6	3.1	0	1.2	2.8
23	.4	.1	1.0	.8	a .6	1.1	.9	.8	23	0	13	2.8
24	.2	.1	1.1	.8	a .7	1.1	.9	.9	79	91	609	2.6
25	.1	.1	1.1	.9	a 1.0	1.1	.9	.7	a 2.3	1.0	129	2.4
26	.1	.3	1.0	.8	1.0	1.1	.8	.6	1.6	.5	28	2.1
27	.3	.3	1.0	.7	1.3	1.2	.8	.6	1.6	0	12	2.1
28	.4	.3	1.2	.8	1.3	1.1	.8	.6	1.6	0	6.0	2.1
29	.4	.3	1.1	.9	-	1.0	.8	.7	1.6	a .7	3.5	2.6
30	.4	.3	1.0	1.0	-----	1.1	.7	.8	46	a .8	2.4	2.0
31	.4	-----	1.2	1.2	-----	1.1	-----	1.0	-----	a .8	1.5	-----
Total	5.8	3.4	19.2	33.8	24.8	34.2	24.7	15.9	1843.3	167.6	816.5	60.2
Mean	0.19	0.11	0.62	1.09	0.89	1.10	0.82	0.51	61.4	5.41	26.3	2.01
Ac-ft	12	6.7	38	67	49	68	49	32	3,660	332	1,620	119

Calendar year 1964: Max 232 Min 0 Mean 1.67 Ac-ft 1,210  
 Water year 1964-65: Max 992 Min 0 Mean 8.35 Ac-ft 6,050

Peak discharge (base, 350 cfs)

a No gage-height record.

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-5	1600	8.25	1,900	6-30	1945	5.07	430
6-9	0415	6.80	1,050	7-24	0245	6.24	905
6-17	1230	7.88	2,020	8-24	0700	10.55	1,240
6-24	0315	5.09	437				

6-8260. Bonny Reservoir near Hale, Colo.

Location.--Lat 39°38'00", long 102°10'40", in SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.9, T.5 S., R.43 W., in stair well to outlet conduit of Bonny Dam on South Fork Republican River, 2 miles west of Hale and 3 miles downstream from Landsman Creek.

Records available.--October 1950 to September 1965.

Gage.--Mercury manometer gage. Datum of gage is at mean sea level (levels by Bureau of Reclamation).

Extremes.--Maximum contents observed during year, 44,730 acre-ft Sept. 9 (elevation, 3,673.62 ft); minimum observed, 23,660 acre-ft June 4 (elevation, 3,661.97 ft).

1950-65: Maximum contents observed, 55,030 acre-ft May 17, 1957 (elevation, 3,678.10 ft); minimum observed since appreciable contents was attained, 22,520 acre-ft Oct. 6-14, 1952 (elevation, 3,661.20 ft).

Remarks.--Reservoir is formed by earth-fill dam. Storage began July 6, 1950; dam completed May 4, 1951. Capacity of reservoir, 170,200 acre-ft below elevation 3,710 ft (crest of spillway) of which 128,800 acre-ft is for flood control and 39,900 acre-ft for irrigation. Dead storage, 1,420 acre-ft below elevation 3,635.50 ft (sill of trashrack at outlet conduit). Figures given herein represent total contents.

Cooperation.--Records furnished by Bureau of Reclamation.

Capacity table (elevation, in feet, and total contents, in acre-ft)  
(Furnished by Bureau of Reclamation)

3,660.0	20,810
3,665.0	28,460
3,670.0	37,390
3,675.0	47,760

Contents, in acre-feet, between 0500 and 0700, water year October 1964 to September 1965												
Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	36,060	35,440	36,290	37,580	39,170	40,750	36,160	30,450	23,710	40,080	40,120	44,640
2	35,970	35,430	36,310	37,620	39,190	40,730	35,970	30,240	23,680	40,320	40,080	44,620
3	35,880	35,370	36,330	37,660	39,230	40,520	35,820	29,940	23,680	40,380	40,020	44,600
4	35,800	35,370	36,350	37,740	39,290	40,280	35,650	29,730	23,660	40,420	39,980	44,600
5	35,760	35,370	36,400	37,790	39,390	40,120	35,460	29,510	23,760	40,440	39,920	44,580
6	35,730	35,370	36,440	37,850	39,470	39,920	35,320	29,190	25,140	40,440	39,840	44,600
7	35,950	35,390	36,500	37,910	39,510	39,790	35,170	28,940	25,340	40,440	39,790	44,600
8	35,910	35,410	36,540	37,990	39,570	39,630	34,980	28,730	25,360	40,460	39,690	44,640
9	35,880	35,430	36,590	37,990	39,650	39,450	34,800	28,430	25,720	40,440	39,630	44,730
10	35,860	35,460	36,630	38,000	39,690	39,270	34,670	28,160	26,520	40,400	39,550	44,710
11	35,800	35,500	36,670	38,080	39,750	39,110	34,380	27,910	26,660	40,360	39,490	44,690
12	35,800	35,520	36,740	38,120	39,770	38,940	34,120	27,680	26,770	40,360	39,450	44,530
13	35,780	35,540	36,760	38,160	39,790	38,760	33,940	27,440	26,840	40,340	39,370	44,320
14	35,760	35,580	36,780	38,220	39,840	38,590	33,780	27,240	26,930	40,320	39,290	44,090
15	35,740	35,580	36,820	38,250	39,940	38,430	33,600	27,010	26,960	40,280	39,820	43,830
16	35,710	35,580	36,860	38,350	39,980	38,270	33,440	26,760	27,010	40,260	39,150	43,580
17	35,690	35,580	36,860	38,410	40,060	37,990	33,260	26,480	27,470	40,200	39,080	43,310
18	35,650	35,690	36,860	38,440	40,140	37,700	33,020	26,200	35,240	40,120	39,250	43,040
19	35,610	35,740	36,920	38,510	40,220	37,540	32,880	26,020	36,420	40,200	39,270	43,040
20	35,580	35,800	36,950	38,530	40,340	37,370	32,700	25,770	36,800	40,160	39,750	43,060
21	35,580	35,820	37,010	38,590	40,360	37,520	32,520	25,530	36,950	40,100	39,880	43,080
22	35,540	35,880	37,070	38,640	40,440	37,620	32,340	25,300	37,070	40,040	39,940	42,910
23	35,520	35,970	37,180	38,640	40,480	37,330	32,150	25,160	37,160	39,940	39,980	42,720
24	35,520	36,010	37,280	38,700	40,500	37,180	31,970	25,080	38,160	40,220	40,300	42,600
25	35,500	36,080	37,310	38,800	40,500	37,050	31,760	24,980	38,410	40,420	44,390	42,410
26	35,500	36,080	37,350	38,840	40,650	36,870	31,580	24,800	38,510	40,460	44,600	42,210
27	35,500	36,100	37,390	38,860	40,730	36,840	31,340	24,680	38,510	40,460	44,620	42,040
28	35,480	36,120	37,450	38,880	40,790	36,740	31,110	24,480	38,530	40,400	44,620	41,860
29	35,480	36,180	37,520	38,960	-	36,590	30,920	24,330	38,550	40,340	44,620	41,730
30	35,480	36,200	37,510	39,080	-	36,400	30,700	24,120	38,590	40,280	44,660	41,550
31	35,460	-	37,540	39,130	-	36,270	-	23,920	-	40,200	44,640	-
(†)	3,668.98	3,669.37	3,670.08	3,670.90	3,671.73	3,669.41	3,666.32	3,662.14	3,670.62	3,671.44	3,673.58	3,672.10
(‡)	-700	+740	+1,340	+1,590	+1,660	-4,520	-5,570	-6,780	+14,670	+1,610	+4,440	-3,090

Calendar year 1964..... ‡ -830  
Water year 1964-65..... ‡ +5,390

† Elevation, in feet, at end of month.

‡ Change in contents, in acre-ft.

## KANSAS RIVER BASIN

6-8265. South Fork Republican River near Hale, Colo.

Location.--Lat 39°37'25", long 102°09'45", in SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec.15, T.5 S., R.43 W., on right bank half a mile downstream from Bonny Dam and 1 mile west of Hale.

Records available.--October 1946 to September 1948, May 1951 to September 1965.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 3,610 ft (from topographic map). Oct. 1, 1946, to Sept. 30, 1948, at site 4 miles downstream at different datum.

Average discharge.--14 years (1951-65), 25.5 cfs (18,460 acre-ft per year).

Extremes.--Maximum discharge during year, 135 cfs Mar. 4 (gage height, 4.66 ft); minimum daily, 4.8 cfs June 14.

1946-48, 1951-65: Maximum discharge, 3,790 cfs May 28, 1947; maximum gage height, 4.87 ft Apr. 28, 1947, site and datum then in use; no flow Aug. 11-13, 1947.

Greatest flood known occurred May 13, 1935, stage and discharge not determined. A discharge of 103,000 cfs was determined at a site near Newton, 5 $\frac{1}{2}$  miles upstream, with a drainage area of approximately 1,270 sq mi.

Remarks.--Records excellent. Discharge measurements generally made twice a month. Flow regulated by Bonny Reservoir since July 6, 1950 (see preceding page). Many diversions above station for irrigation. Water diverted by Hale ditch from Bonny Reservoir bypasses station (3,520 acre-ft diverted in 1965).

Rating table (gage height, in feet, and discharge, in cubic feet per second)

3.9	3.2	4.3	35
4.0	6.5	4.5	80
4.1	12	4.6	112
4.2	21	4.7	158

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.5	6.2	6.5	6.5	7.0	27	121	117	42	6.5	6.5	7.6
2	6.5	6.2	6.5	6.5	7.0	102	121	117	7.0	6.5	6.5	7.6
3	6.5	6.2	6.5	6.5	6.5	126	121	117	6.2	6.5	6.2	7.6
4	6.5	6.2	6.5	6.5	6.5	130	121	112	5.2	6.2	6.5	7.6
5	6.5	5.8	6.5	6.5	6.5	126	121	112	7.6	5.8	6.2	7.6
6	6.5	6.2	6.2	6.5	6.5	126	126	112	5.8	5.8	6.2	7.6
7	6.5	6.2	6.5	6.5	6.5	126	126	112	5.5	5.8	6.2	7.6
8	6.5	6.2	6.5	6.5	6.5	121	126	112	5.2	5.8	6.2	7.6
9	7.0	6.5	6.5	6.5	6.5	121	126	112	6.5	5.8	5.8	7.6
10	7.0	6.5	6.5	6.5	6.5	121	121	112	5.5	5.8	5.8	7.6
11	7.0	6.5	6.5	6.5	6.5	121	121	112	5.5	5.8	5.8	7.2
12	7.0	6.5	6.5	6.5	6.5	121	117	117	5.2	6.2	5.8	121
13	6.5	6.5	6.5	6.5	6.5	117	117	117	5.2	6.2	5.8	121
14	6.5	6.5	6.5	6.5	6.5	117	117	117	4.8	6.2	5.8	121
15	6.5	6.5	6.5	6.5	6.5	117	117	117	5.2	6.2	5.8	121
16	6.5	6.5	6.2	6.5	6.5	117	117	112	5.8	5.8	5.8	121
17	6.5	6.2	6.2	6.5	7.0	121	117	112	7.6	5.8	7.0	121
18	6.5	6.5	6.2	6.5	7.0	117	117	112	6.2	6.2	6.5	117
19	7.0	6.5	6.5	6.5	7.0	117	121	112	5.8	6.2	7.6	117
20	6.5	6.2	6.5	6.5	7.0	43	121	112	5.5	6.2	9.2	117
21	6.5	6.2	6.5	7.0	7.0	92	121	109	5.8	6.2	7.0	112
22	6.5	6.2	6.5	7.0	7.0	85	117	109	6.2	6.2	7.0	109
23	6.5	6.2	6.5	7.0	7.0	117	117	112	7.0	5.8	7.0	112
24	7.0	6.2	6.5	7.0	7.0	117	117	109	7.0	8.2	7.0	112
25	7.0	6.5	6.5	7.6	6.5	117	117	109	6.5	6.5	28	112
26	7.6	6.5	6.5	7.0	6.5	117	117	109	6.2	6.2	33	112
27	7.0	6.5	6.5	7.0	6.5	117	117	106	6.2	6.5	7.6	112
28	7.0	6.5	6.5	7.0	6.5	121	117	106	6.2	6.5	7.6	112
29	7.0	6.5	6.5	7.0	-	121	117	106	6.5	6.5	7.6	112
30	6.5	6.5	6.5	7.0	-----	121	117	106	7.0	6.5	7.6	117
31	6.2	-----	6.5	7.0	-----	121	-----	106	-----	6.5	7.6	-----
Total	207.3	190.4	200.3	207.6	187.0	3,397.2	3,586	3,462	217.9	192.9	254.2	2,347.0
Mean	6.69	6.35	6.46	6.70	6.68	110	120	112	7.26	6.22	8.20	78.2
Ac-ft	411	378	397	412	371	6,740	7,110	6,870	432	383	504	4,660

Calendar year 1964: Max 117 Min 5.5 Mean 13.0 Ac-ft 9,420  
 Water year 1964-65: Max 130 Min 4.8 Mean 39.6 Ac-ft 28,670

7-820. Lake Fork above Sugar Loaf Reservoir, Colo.

Location.--Lat 39°16'11", long 106°23'40", in NW¼ sec.13, T.9 S., R.81 W., on left bank 1,000 ft upstream from water line of Sugar Loaf Reservoir (Turquoise Lake) at elevation 9,780 ft and 5.7 miles west of Leadville.

Drainage area.--18 sq mi.

Records available.--May 1946 to September 1965. Monthly discharge only for some periods, published in WSP 1241 and 1311.

Gage.--Water-stage recorder. Altitude of gage is 9,800 ft (from topographic map).

Average discharge.--19 years, 42.7 cfs (30,910 acre-ft per year).

Extremes.--Maximum discharge during year, 721 cfs June 19 (gage height, 4.79 ft), from rating curve extended above 500 cfs; minimum not determined.

1946-65: Maximum discharge, 841 cfs (revised) June 28, 1957 (gage height, 5.22 ft), from rating curve extended above 500 cfs; minimum daily recorded, 1.0 cfs Sept. 10-15, 1959.

Revisions.--The maximum discharge for the water year 1957 has been revised to 841 cfs June 28, 1957 (gage height, 5.22 ft), superseding figure published in WSP 1511 and 1731.

Remarks.--Records good except those for periods of no gage-height record, which are poor. No diversion above station. Transmountain diversions from Colorado River basin to Busk Creek above station through Busk-Ivanhoe tunnel (see elsewhere in this report).

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 31

Apr. 1 to Sept. 30

0.6	5.0	0.9	13	3.0	244
.7	7.5	1.1	21	4.0	460
1.0	21	1.5	49	5.0	805
1.3	39	2.0	99		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11								* 198	347	109	36
2	10								181	394	77	33
3	9.9								210	402	86	37
4	9.5								226	385	66	43
5	9.1								164	351	58	40
6	16							21	147	340	52	43
7	32								179	251	47	35
8	26								204	228	44	26
9	21								241	222	42	* 22
10	18								248	198	40	21
11	18								276	190	51	20
12	16								253	207	* 48	20
13	11								239	209	47	19
14	9.9						(*)		293	178	48	18
15	9.5							50	332	* 148	49	17
16	9.1	6	4.5	4	4.5	5	7.5		414	141	46	16
17	9.1								496	134	53	16
18	8.7								565	150	69	20
19	7.2								604	137	75	23
20	7.2								556	123	68	23
21	7.5								532	112	56	22
22	7.5								502	116	54	21
23	7.9								* 493	136	51	* 25
24	9.1								487	122	46	28
25	8.3							130	445	106	40	29
26	8.3								392	95	40	25
27	8.3								340	88	* 38	23
28	8.3								338	* 94	38	25
29	* 8.3								* 362	74	45	27
30	8.3								373	71	47	28
31	8.3									118	42	
Total	358.3	180	139.5	124	126.0	155	225.0	2,271	10,290	5,867	1,672	781
Mean	11.6	6	4.5	4	4.5	5	7.5	73	343	189	53.9	26.0
Ac-ft	711	357	277	246	250	307	446	4,500	20,410	11,640	3,320	1,550

Calendar year 1964: Max - Min - Mean 39.2 Ac-ft 28,440  
 Water year 1964-65: Max 604 Min - Mean 60.8 Ac-ft 44,010

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 27 to May 31 (stage-discharge relation affected by ice during most of period).

## ARKANSAS RIVER BASIN

7-830. Halfmoon Creek near Malta, Colo.

Location.--Lat 39°11'10", long 106°22'55", in NW¼ sec.18, T.10 S., R.80 W., on right bank 118 ft upstream from culvert, 2 miles upstream from mouth, and 3½ miles southwest of Malta.

Drainage area.--23 sq mi.

Records available.--July 1946 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 9,740 ft (from topographic map). Prior to Dec. 1, 1960, at site 185 ft downstream; at datum 3.18 ft lower prior to May 13, 1948, and 3.00 ft lower thereafter.

Average discharge.--19 years, 29.5 cfs (21,360 acre-ft per year).

Extremes.--Maximum discharge during year, 311 cfs July 4 (gage height, 3.64 ft); maximum gage height, 4.32 ft Apr. 24 (backwater from ice); minimum daily discharge, 3.0 cfs Mar. 2, 3.  
1946-65: Maximum discharge, 450 cfs June 30, 1957 (gage height, 3.48 ft, site and datum then in use); minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No regulation or diversion above station.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

Oct. 1 to Mar. 31

Apr. 1 to Sept. 30

2.1	2.2	2.1	6.0	2.8	84
2.2	6.0	2.2	11	3.2	165
2.3	12	2.4	27	3.6	290

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	8.4	4.4	5.0	4.8	3.6	4.4	23	70	217	138	32
2	9.6	8.4	4.0	5.0	4.6	3.0	4.5	38	65	*258	116	31
3	9.0	6.0	4.0	5.2	4.4	3.0	4.4	45	*79	248	*109	34
4	9.0	7.0	4.2	5.2	4.2	3.2	4.2	46	81	252	94	33
5	8.4	8.5	4.4	5.4	4.4	3.6	4.0	45	65	241	86	33
6	*7.8	*9.0	4.6	5.4	4.4	3.8	4.0	39	59	238	78	34
7	*8.4	9.0	4.8	*5.2	4.2	4.0	4.0	35	70	230	71	32
8	7.8	8.0	4.8	5.0	4.2	4.2	4.0	34	82	238	66	32
9	7.2	6.5	*5.0	5.0	*4.0	4.2	4.0	28	91	208	62	29
10	7.8	6.0	5.2	4.8	3.8	4.2	3.8	25	87	202	60	26
11	9.0	5.2	5.4	5.0	3.6	*4.2	3.8	25	84	202	58	26
12	8.4	5.4	5.2	5.2	3.8	4.4	3.6	29	74	241	53	24
13	8.4	5.6	4.8	5.4	4.2	4.2	3.4	38	82	199	53	24
14	7.2	5.6	4.8	5.4	4.4	4.4	*3.4	34	109	188	50	21
15	7.2	5.4	5.2	5.4	4.2	4.4	3.4	26	127	180	49	20
16	7.2	5.4	5.2	5.2	4.0	4.4	3.6	26	*144	*163	47	19
17	7.2	5.6	5.0	5.2	4.0	4.2	3.8	32	151	160	60	*22
18	6.6	5.4	4.8	5.0	4.0	4.0	3.8	42	168	180	78	23
19	7.8	5.0	4.8	5.0	4.2	4.0	4.5	47	188	175	74	23
20	7.8	5.0	5.0	4.8	4.2	4.2	7.5	*56	205	165	65	22
21	7.8	5.0	5.2	4.8	4.4	4.4	9.0	62	214	156	58	22
22	7.8	5.2	5.4	4.8	4.6	4.5	11	71	220	156	54	21
23	6.6	5.6	5.6	4.8	4.6	4.5	12	70	220	165	49	21
24	7.2	6.0	5.8	4.6	4.2	4.5	11	60	*220	158	46	22
25	8.4	6.4	6.2	4.6	4.0	4.0	9.0	50	199	147	43	22
26	10	6.6	6.0	4.4	4.2	4.2	8.5	42	180	138	39	21
27	8.4	6.4	5.8	4.2	4.4	4.2	7.5	35	170	118	37	21
28	7.2	6.6	5.4	4.0	4.4	4.4	8.5	28	196	110	34	22
29	6.0	6.0	5.0	4.2	-	4.5	10	31	214	105	40	22
30	5.6	5.0	5.0	4.4	-----	4.5	16	43	220	103	42	22
31	5.6	-----	5.0	4.8	-----	4.4	-----	60	-----	142	35	-----
Total	242.4	189.2	156.0	152.4	118.4	127.3	184.6	1,265	4,134	5,683	1,944	756
Mean	7.82	6.31	5.03	4.92	4.23	4.11	6.15	40.8	138	183	62.7	25.2
Ac-ft	481	375	309	302	235	252	366	2,510	8,200	11,270	3,860	1,500

Calendar year 1964: Max 115 Min - Mean 22.4 Ac-ft 16,290

Water year 1964-65: Max 258 Min 3.0 Mean 41.0 Ac-ft 29,660

Peak discharge (base, 150 cfs).--July 4 (2145) 311 cfs (3.64 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Dec. 3 to Apr. 20, Apr. 26-28 (stage-discharge relation affected by ice during most of periods). Stage-discharge relation affected by ice Nov. 4-9, Nov. 12 to Dec. 2, Apr. 21-25.



7-837. Arkansas River near Malta, Colo.

Location.--Lat 39°10'05", long 106°19'25", in NW¼ sec.22, T.10 S., R.80 W., on left bank 56 ft downstream from bridge on U. S. Highway 24, 3 miles downstream from Halfmoon Creek, 4.2 miles south of Malta, and 5.8 miles south of Leadville.

Drainage area.--228 sq mi.

Records available.--October 1964 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 9,300 ft (from topographic map).

Extremes.--Maximum discharge during year, 1,300 cfs June 16 (gage height, 4.44 ft); minimum daily, 43 cfs Mar. 17.

Remarks.--Records good except those for periods of ice effect, which are fair. Diversions for irrigation above station of about 5,600 acres. Sugar Loaf Reservoir is on tributary above station (capacity, 17,400 acre-ft). Transmountain diversions from Colorado River basin to Arkansas River basin enter above this station (see elsewhere in this report). Records of chemical analyses for the water year 1965 are published in Part 2 of this report.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

Oct. 1 to July 2

July 3 to Sept. 30

1.9	41	3.1	330	2.2	130	3.5	640
2.2	74	3.5	540	2.5	210	4.0	915
2.5	121	4.2	1,030	3.0	395	4.5	1,330
2.8	206						

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	73	58	66	b56	64	48	51	285	458	804	712	210
2	78	56	66	b58	84	46	51	330	441	*1,020	580	204
3	91	59	63	b58	94	46	72	405	*485	1,070	510	219
4	73	60	61	b58	94	50	110	463	512	1,040	*440	231
5	72	58	59	b60	92	50	108	436	534	945	390	213
6	*72	*55	58	b60	96	48	92	400	502	963	413	228
7	*70	55	56	*b60	138	45	*55	*360	463	893	334	216
8	68	55	b60	b62	131	44	53	281	564	893	314	198
9	68	58	*65	b60	*110	*44	53	380	684	882	303	204
10	80	56	66	61	121	45	51	405	804	849	296	186
11	85	55	70	59	126	45	49	410	804	772	306	178
12	68	55	71	56	b120	45	49	446	783	810	278	170
13	68	60	71	59	b112	45	*49	*458	804	854	314	180
14	66	60	b70	63	b108	45	49	355	783	772	322	165
15	66	62	b70	62	74	46	52	277	884	700	300	152
16	66	65	b70	55	56	45	54	272	*1,060	*690	275	152
17	66	66	b72	52	60	43	59	330	1,000	625	303	*170
18	64	66	b74	51	51	45	60	420	1,030	640	440	186
19	63	61	b76	55	48	48	71	441	994	695	505	207
20	63	61	b74	52	50	52	102	*512	958	640	475	216
21	62	b60	b70	54	50	59	117	582	1,040	570	382	201
22	61	61	b66	52	51	55	131	696	1,050	575	354	189
23	64	65	b64	51	50	46	138	818	1,000	600	322	178
24	65	62	60	52	48	48	135	818	958	706	289	183
25	62	65	61	54	52	46	119	708	*900	640	261	183
26	60	65	63	55	56	46	123	558	762	595	237	186
27	60	65	65	62	46	46	138	390	660	535	231	186
28	60	67	61	64	48	48	143	326	660	555	219	180
29	60	66	60	66	-	48	183	316	708	500	237	192
30	61	67	58	65	-----	46	243	350	832	485	300	186
31	60	-----	b58	62	-----	49	-----	385	-----	651	258	-----
Total	2,095	1,824	2,024	1,794	2,230	1,462	2,760	13,613	23,117	22,969	10,900	5,749
Mean	67.6	60.8	65.3	57.9	79.6	47.2	92.0	439	771	741	352	192
Ac-ft	4,160	3,620	4,010	3,560	4,420	2,900	5,470	27,000	45,850	45,560	21,620	11,400

Calendar year 1964: Max - Min - Mean - Ac-ft -  
 Water year 1964-65: Max 1,070 Min 43 Mean 248 Ac-ft 179,600

\* Discharge measurement made on this day.  
 b Stage-discharge relation affected by ice.

## ARKANSAS RIVER BASIN

7-845. Lake Creek above Twin Lakes Reservoir, Colo.

Location.--Lat 39°03'45", long 106°24'20", in SE¼ sec.26, T.11 S., R.81 W., on left bank 1.6 miles upstream from water line of Twin Lakes Reservoir at elevation 9,190 ft and 1.8 miles southwest of village of Twin Lakes.

Drainage area.--75 sq mi.

Records available.--April 1946 to September 1962, October 1963 to September 1965. Monthly discharge only for some periods, published in WSP 1241, 1311, and 1731.

Gage.--Water-stage recorder. Altitude of gage is 9,280 ft (from topographic map). Prior to May 20, 1950, at site 190 ft downstream at different datum. May 20, 1950, to Apr. 7, 1953, at site 10 ft upstream at present datum.

Average discharge.--18 years, 164 cfs (118,700 acre-ft per year).

Extremes.--Maximum discharge during year, 2,620 cfs June 20 (gage height, 5.10 ft); minimum discharge not determined.  
1946-62, 1963-65: Maximum discharge, 3,150 cfs June 10, 1952 (gage height, 5.74 ft), from rating curve extended above 1,400 cfs; minimum not determined.

Remarks.--Records good except those for period of no gage-height record, which are poor. No diversion above station. Records include inflow from Roaring Fork River in Colorado River basin through Twin Lakes tunnel (see elsewhere in this report).

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 8-20, Aug. 17 to Sept. 1)

Oct. 1 to Mar. 31

Apr. 1 to Sept. 30

0.8	18	1.8	86	3.5	700
.9	24	2.0	116	4.0	1,190
1.2	48	2.5	154	5.0	2,480
		3.0	392		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	37	30						120	376	1,110	620	148
2	36	32						125	356	1,370	532	136
3	37	33						*127	420	1,380	526	136
4	41	30						130	454	1,490	474	150
5	37	33						125	364	1,490	415	148
6	36	*32						130	325	1,420	368	165
7	34	32						123	380	1,360	341	165
8	32	28						116	485	1,160	307	163
9	31	28						97	644	890	274	*161
10	31	28						116	727	781	265	154
11	32							110	826	772	253	146
12	30							100	636	1,190	*237	142
13	30							125	585	790	234	140
14	30							127	853	660	242	132
15	28							106	1,140	*652	242	127
16	27		20	20	20	18	45	129	1,400	592	222	120
17	27							167	1,580	564	210	116
18	25							*247	1,790	599	277	120
19	23							283	1,900	578	294	130
20	*25							429	2,000	709	271	134
21	25	23						508	2,000	920	234	127
22	25							480	*2,050	890	224	123
23	26							438	2,010	920	207	*120
24	25							388	1,830	862	193	121
25	25							314	1,670	853	181	125
26	28							265	1,460	844	150	125
27	33							224	1,420	692	*140	123
28	31							200	1,500	613	138	123
29	32							207	*1,640	606	132	214
30	33							253	1,700	502	169	100
31	33							325		592	156	
Total	945	766	620	620	560	558	1,350	6,634	34,521	27,851	8,528	4,134
Mean	30.5	25.5	20	20	20	18	45	214	1,151	898	275	138
Ac-ft	1,870	1,520	1,230	1,230	1,110	1,110	2,680	13,160	68,470	55,240	16,920	8,200

Calendar year 1964: Max 1,020 Min - Mean 145 Ac-ft 105,100  
Water year 1964-65: Max 2,050 Min - Mean 239 Ac-ft 172,700

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 10 to May 3 (stage-discharge relation affected by ice during most of period).

7-860. Arkansas River at Granite, Colo.

Location.--Lat 39°02'38", long 106°15'55", in SW¼ sec.31, T.11 S., R.79 W., on right bank at Granite, 100 ft east of U. S. Highway 24, 100 ft downstream from county bridge, and 200 ft upstream from Cache Creek.

Drainage area.--427 sq mi.

Records available.--April to October 1895, May to December 1897, August to September 1898, March to October 1899, April to May 1901 (gage heights and discharge measurements only in 1895, 1899, and 1901), April 1910 to September 1965. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 8,914.86 ft above mean sea level, datum of 1929. Prior to Apr. 6, 1910, staff gages near present site at different datums. Apr. 6, 1910, to Oct. 25, 1917, water-stage recorder or staff gage at site 832 ft upstream at different datum. Oct. 26, 1917, to Oct. 26, 1960, water-stage recorder at site 168 ft downstream at present datum.

Average discharge.--55 years (1910-65), 354 cfs (256,300 acre-ft per year).

Extremes.--Maximum discharge during year, 2,590 cfs July 4 (gage height, 4.86 ft); minimum not determined.  
1895, 1897-99, 1910-65: Maximum discharge, 5,360 cfs June 28, 1957 (gage height, 7.20 ft); minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Discharge measurements generally made twice a month. Diversions above station for irrigation of about 6,700 acres. Sugar Loaf and Twin Lakes Reservoirs are on tributaries above station (combined capacity, 70,680 acre-ft). Transmountain diversions from Colorado River basin to Arkansas River basin enter above this station (see elsewhere in this report).

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	132	111						570	903	1,740	1,830	534
2	135	109						642	948	2,290	1,410	528
3	163	111						777	993	2,490	1,070	546
4	132	107						894	1,070	2,500	975	552
5	132	109		61	90			903	1,140	2,450	876	528
6	132	109						813	1,070	2,450	822	546
7	128	107				70		726	1,030	2,370	678	564
8	120	105					66	642	1,060	2,180	649	552
9	120	103						718	1,190	1,970	718	558
10	130	105						759	1,340	1,800	876	540
11	165	105						768	1,420	1,740	831	528
12	128		78					822	1,490	1,800	795	460
13	125							649	1,460	2,160	795	516
14	118	b105						480	1,210	1,580	831	498
15	116							380	1,400	1,210	867	486
16	116						96	364	1,980	1,460	831	465
17	118			69			126	420	1,700	1,360	813	465
18	116						156	522	1,770	1,420	966	486
19	114				71		186	528	1,670	1,520	628	400
20	116						196	588	1,640	1,760	594	336
21	114						213	777	1,600	1,540	465	312
22	114						207	1,090	1,530	1,540	440	292
23	118	81				72	225	1,260	1,480	1,620	385	277
24	118						328	1,230	1,410	1,800	352	270
25	114						372	1,250	1,340	1,760	316	273
26	114						385	1,180	1,200	1,720	360	270
27	111						395	993	1,040	1,620	380	270
28	109		61	90			415	768	1,000	1,580	376	262
29	111						465	694	1,050	1,390	385	292
30	111						534	718	1,210	1,290	450	312
31	114							786		1,580	528	
Total	3,804	2,840	2,316	2,193	2,159	2,204	5,289	23,711	39,344	55,690	22,292	12,918
Mean	123	94.7	75	71	77	71	176	765	1,311	1,796	719	431
Ac-ft	7,550	5,630	4,590	4,350	4,280	4,370	10,490	47,030	78,040	110,500	44,220	25,620

Calendar year 1964: Max 2,000 Min - Mean 337 Ac-ft 244,400  
Water year 1964-65: Max 2,500 Min - Mean 479 Ac-ft 346,700

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 17 to Apr. 20 (stage-discharge relation affected by ice during most of period).

## ARKANSAS RIVER BASIN

7-865. Clear Creek above Clear Creek Reservoir, Colo.

Location.--Lat 39°01'05", long 106°16'40", in SE¼ sec.12, T.12 S., R.80 W., on right bank 0.5 mile upstream from water line of Clear Creek Reservoir at elevation 8,878 ft, 0.4 mile downstream from unnamed tributary, and 1.9 miles southwest of Granite.

Drainage area.--59 sq mi.

Records available.--May 1946 to September 1965. Monthly discharge only for some periods, published in WSP 1241 and 1311.

Gage.--Water-stage recorder. Altitude of gage is 8,890 ft (from topographic map). May 7, 1946, to Apr. 20, 1954, water-stage recorder at site 133 ft upstream at different datum. Apr. 21, 1954, to May 28, 1958, water-stage recorder 333 ft upstream at different datum. Datum raised 2.19 ft Apr. 21, 1954.

Average discharge.--19 years, 71.3 cfs (51,620 acre-ft per year).

Extremes.--Maximum discharge during year, 740 cfs July 12 (gage height, 3.30 ft), from rating curve extended above 420 cfs; minimum not determined.

1946-65: Maximum daily discharge, 1,300 cfs June 29, 1957; maximum gage height recorded, 4.34 ft (site and datum then in use) June 16, 1952; minimum discharge not determined.

Remarks.--Records good except those for period of no gage-height record, which are poor. Diversions for irrigation of about 250 acres above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 17 to July 11, Sept. 8-29)

0.4	11	1.8	184
.5	15	2.2	290
.6	20	3.0	585
.9	44	3.2	680
1.4	102		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	24	18						56	*151	521	279	76
2	21	18						63	145	557	265	72
3	21	18						*65	160	603	270	75
4	*24	17						62	184	640	231	74
5	24	18						59	165	590	213	71
6	24	*18						56	149	594	201	83
7	24	18						53	174	569	179	79
8	23	18						50	216	557	167	75
9	24	17						48	265	517	154	*75
10	25	18						46	273	489	147	71
11	26							45	302	513	140	67
12	25							51	273	594	*132	63
13	25							58	265	457	130	62
14	25							58	314	394	132	58
15	24							56	369	*362	136	56
16	23		13	12	13	12	17	59	418	338	118	55
17	23							78	465	330	149	53
18	23							*104	509	341	151	60
19	23							126	521	338	167	63
20	*21							147	590	314	147	60
21	21	15						158	621	305	128	56
22	21							174	603	302	140	55
23	21							177	*650	305	126	*52
24	24							156	612	308	126	51
25	24							134	557	305	105	54
26	23							115	473	320	99	54
27	23							101	453	282	*92	54
28	23							91	501	*265	89	54
29	22							94	521	242	89	57
30	21							110	561	234	91	56
31	20							138		311	83	
Total	715	478	403	372	364	372	510	2,788	11,460	12,797	4,676	1,891
Mean	23.1	15.9	13	12	13	12	17	89.9	382	413	151	63.0
Ac-ft	1,420	948	799	738	722	738	1,010	5,530	22,730	25,380	9,270	3,750

Calendar year 1964: Max 284 Min - Mean 46.1 Ac-ft 33,480  
Water year 1964-65: Max 650 Min - Mean 101 Ac-ft 73,040

Peak discharge (base, 400 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-23	0200	2.95	734	7-12	0500	3.30	740
7-3	0200	3.00	716				

\* Discharge measurement made on this day.  
Note.--No gage-height record Nov. 11 to May 10 (stage-discharge relation affected by ice during parts of period).

## 7-872. Arkansas River at Buena Vista, Colo.

Location.--Lat 38°50'55", long 106°07'25", in NW¼ sec.9, T.14 S., R.78 W., on right bank at northeast corner of Buena Vista city limits and 1.8 miles upstream from Cottonwood Creek.

Drainage area.--611 sq mi.

Records available.--October 1964 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,920 ft (from topographic map).

Extremes.--Maximum discharge during year, 3,540 cfs July 13 (gage height, 6.32 ft); minimum daily, 93 cfs Mar. 18, 19.

Remarks.--Records good except those for periods of ice effect, which are fair. Natural flow of stream affected by transmountain diversions (see elsewhere in this report), storage reservoirs (combined capacity, 81,890 acre-ft), diversions above station for irrigation of 7,400 acres, and return flow from irrigated areas.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

0.8	93	3.0	870
1.0	122	4.0	1,490
1.5	218	5.0	2,270
2.0	370	6.0	3,290

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	153	125	132	119	113	103	161	882	1,060	*2,350	2,310	728
2	150	125	135	b115	110	96	155	936	1,100	2,800	1,830	706
3	166	125	124	b110	118	100	152	996	*1,150	3,170	*1,390	711
4	150	119	b120	b110	118	107	188	1,130	1,230	3,190	1,300	706
5	143	122	b115	b115	118	107	190	1,170	1,280	3,060	1,190	662
6	*143	*119	b110	b120	120	110	*196	1,080	1,230	3,040	1,150	689
7	*136	114	b110	*b125	124	106	157	960	1,140	3,030	984	722
8	133	113	b110	b125	148	104	141	864	1,190	2,780	912	694
9	135	114	b115	b130	159	*106	141	788	1,360	2,580	924	694
10	136	124	b125	136	150	104	138	782	1,620	2,340	1,080	672
11	180	124	b135	136	141	104	136	804	1,760	2,290	1,050	667
12	182	113	b135	133	141	104	125	984	1,870	2,550	978	585
13	138	124	b130	128	140	103	*106	930	1,810	2,940	960	640
14	140	125	132	128	b140	103	118	706	1,460	2,150	1,040	615
15	138	119	b130	127	b135	103	119	585	1,500	*1,930	1,070	590
16	135	125	b130	b115	119	101	125	540	*2,160	1,910	1,050	565
17	133	135	b125	b115	119	103	136	590	1,760	1,790	1,070	*550
18	133	133	114	124	118	93	152	706	1,870	1,840	1,220	605
19	130	128	157	124	112	93	157	733	1,790	1,950	1,020	575
20	133	119	145	119	110	104	190	*794	1,760	2,180	912	496
21	130	132	146	116	110	110	223	918	1,690	1,970	738	468
22	130	125	161	116	108	104	253	1,220	1,600	1,930	694	424
23	135	125	163	114	110	107	273	1,450	1,720	2,000	645	394
24	141	136	140	124	110	104	455	1,530	1,870	2,220	610	370
25	138	155	125	124	110	103	625	1,500	1,870	2,180	645	370
26	135	143	127	b110	112	103	630	1,300	1,760	2,170	555	363
27	133	145	128	119	103	104	620	1,060	1,570	2,000	560	382
28	133	140	127	127	103	110	625	864	1,340	1,930	536	378
29	132	141	116	125	-	116	706	733	1,220	1,710	550	406
30	128	135	108	124	-----	113	810	755	1,760	1,510	630	442
31	128	-----	113	118	-----	140	-----	876	-----	1,870	706	-----
Total	4,350	3,822	3,983	3,771	3,419	3,268	8,203	29,166	46,500	71,360	30,309	16,869
Mean	140	127	128	122	122	105	273	941	1,550	2,302	978	562
Ac-ft	8,630	7,580	7,900	7,480	6,780	6,480	16,270	57,850	92,230	141,500	60,120	33,460

Calendar year 1964: Max - Min - Mean - Ac-ft -  
Water year 1964-65: Max 3,190 Min 93 Mean 616 Ac-ft 446,300

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

## ARKANSAS RIVER BASIN

7-890. Cottonwood Creek below Hot Springs, near Buena Vista, Colo.

Location.--Lat 38°48'46", long 106°13'18", in SE¼SE¼ sec.21, T.14 S., R.79 W., on left bank a quarter of a mile downstream from Cottonwood Hot Springs, 1 mile downstream from confluence of Middle Cottonwood and South Cottonwood Creeks, 3 miles upstream from North Cottonwood Creek, and 5½ miles southwest of Buena Vista.

Drainage area.--65 sq mi.

Records available.--October 1910 to September 1923, August 1949 to September 1965. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 8,532 ft (river-profile survey). Prior to Oct. 1, 1923, staff gage near present site at different datum.

Average discharge.--29 years, 59.0 cfs (42,710 acre-ft per year).

Extremes.--Maximum discharge recorded during year, 495 cfs June 20 (gage height, 3.36 ft); minimum, 14 cfs Mar. 20 (gage height, 1.29 ft). 1910-23, 1949-65: Maximum discharge, 1,180 cfs July 1, 1957 (gage height, 4.52 ft, from floodmarks), from rating curve extended above 690 cfs; minimum observed, 10 cfs Mar. 20-23, 25, Apr. 9, 19, 1914.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Several small diversions above station for irrigation.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 2-18, June 8 to July 20, July 26, 31, Aug. 1)

1.3	16	2.2	138
1.5	29	2.5	220
1.7	49	3.0	440
1.9	81		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	26	25	21	20	17	18	28	104	*a290	247	100
2	26	26	25	20	20	17	18	31	94	327	220	94
3	25	26	25	21	19	17	18	34	*106	a320	*210	110
4	24	26	24	21	19	17	18	37	115	a310	202	119
5	23	24	24	21	19	17	18	36	100	309	182	110
6	*23	*25	23	21	19	17	*18	34	90	309	172	115
7	*26	25	24	*21	19	17	18	*31	111	309	156	106
8	25	25	*24	21	19	17	18	32	132	327	148	106
9	25	25	24	21	19	*17	18	29	146	309	142	102
10	25	25	25	21	*20	18	18	29	144	292	136	90
11	26	26	25	21	20	18	18	28	146	287	128	85
12	26	24	25	21	19	18	20	30	142	318	121	81
13	26	24	24	21	19	18	21	33	140	314	119	79
14	26	25	25	21	19	18	18	34	163	279	144	74
15	26	26	24	21	19	18	18	32	192	*258	150	71
16	25	26	23	21	19	17	18	32	*239	250	128	69
17	25	25	23	21	19	17	18	45	300	243	127	*71
18	25	25	23	21	18	18	19	61	a410	231	144	87
19	26	24	22	21	18	17	20	66	a380	231	154	92
20	25	23	22	21	18	17	22	*85	395	224	150	90
21	26	23	22	21	18	17	24	96	390	220	134	81
22	25	25	22	21	18	17	25	117	381	220	152	79
23	26	25	22	21	18	18	27	128	381	213	132	79
24	26	25	23	20	18	18	28	111	381	210	121	83
25	25	25	22	20	18	18	27	90	*368	210	113	83
26	25	25	22	20	18	18	26	76	a330	228	110	79
27	25	25	22	20	17	18	24	64	a300	220	104	78
28	26	25	22	20	17	18	23	50	a280	213	100	78
29	26	25	21	20	-	18	23	54	a270	196	108	79
30	26	25	21	20	-----	17	24	67	a290	192	127	78
31	26	-----	21	20	-----	18	-----	90	-----	243	108	-----
Total	787	749	719	642	523	542	623	1,710	7,020	8,102	4,489	2,648
Mean	25.4	25.0	23.2	20.7	18.7	17.5	20.8	55.2	234	261	145	88.3
Ac-ft	1,560	1,490	1,430	1,270	1,040	1,080	1,240	3,390	13,920	16,070	8,900	5,250

Calendar year 1964: Max 202 Min 16 Mean 42.3 Ac-ft 30,730  
Water year 1964-65: Max 410 Min 17 Mean 78.2 Ac-ft 56,640

Peak discharge (base, 300 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-20	0545	3.36	495	8-1	0100	2.88	314
7-2	2315	3.17	386				

\* Discharge measurement made on this day.  
a No gage-height record.

7-912. Arkansas River near Nathrop, Colo.

Location.--Lat 38°39'10", long 106°03'00", in SE¼SW¼ sec.23, T.51 N., R.8 E., on right bank 300 ft upstream from end of Chaffee County road 60, in Browns Canyon, 3.7 miles downstream from Browns Creek, 6.7 miles south of Nathrop, and 9 miles north of Salida.

Drainage area.--1,060 sq mi.

Records available.--October 1964 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,350 ft (from topographic map).

Extremes.--Maximum discharge during year, 4,480 cfs July 13 (gage height, 7.79 ft), from rating curve extended above 3,100 cfs; minimum daily, 150 cfs Mar. 4.

Remarks.--Records good except those for periods of ice effect, which are poor. Natural flow of stream affected by transmountain diversions (see elsewhere in this report), storage reservoirs, power developments, diversions for irrigation of about 15,000 acres, and return flow from irrigated areas.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 29 to Apr. 24)

2.9	137	6.0	2,090
3.4	290	7.0	3,330
4.0	560	7.8	4,500
5.0	1,190		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	240	223	272	253	217	193	306	935	1,220	* 3.120	2,950	991
2	236	233	279	230	202	179	306	984	* 1.310	3,430	2,670	942
3	243	230	268	246	214	b160	268	1,070	1,370	4.170	* 2.000	942
4	243	220	253	b250	217	b150	290	1,210	1,490	4.260	1,870	956
5	227	* 223	250	b250	220	b160	306	1,280	1,530	4.080	1,700	956
6	230	220	b240	* 246	230	b170	* 310	* 1.170	1,450	3.980	1,620	1,020
7	220	214	b230	236	230	182	275	1,050	1,370	3.930	1,410	1,000
8	* 223	211	b240	236	236	182	230	970	1,520	3.650	1,290	942
9	* 220	211	b250	233	* 268	* 184	220	894	1,760	3.430	1,230	928
10	223	217	b260	227	260	184	211	882	2,020	3.130	1,370	882
11	260	227	b260	233	250	184	205	882	2,190	3.110	1,320	858
12	298	214	264	233	257	187	202	1,040	2,390	3.330	1,250	786
13	236	227	272	227	264	182	170	* 1,070	2,240	3.920	1,210	810
14	227	240	280	220	b270	182	* 182	828	1,970	2.970	1,330	762
15	223	253	b270	233	b280	182	170	708	1,890	* 2.620	1,410	750
16	220	275	b250	233	264	182	176	650	* 2.810	2,520	1,370	720
17	217	279	b250	223	250	182	187	750	2,600	2,390	1,480	* 702
18	223	294	260	220	196	173	205	816	2,770	2,410	1,670	744
19	223	279	250	227	196	165	227	* 876	2,720	2,500	1,580	774
20	227	260	268	223	196	184	253	921	2,780	2,640	1,410	738
21	230	272	233	214	193	173	334	1,050	2,770	2,500	1,190	720
22	240	272	236	217	196	187	352	1,360	2,600	2,410	1,150	650
23	240	264	314	217	199	199	375	1,700	2,670	2,480	1,060	625
24	246	268	286	b200	193	190	506	1,760	2,850	2,680	991	600
25	243	286	246	b220	190	184	702	1,680	2,800	2,630	921	595
26	243	283	243	b210	196	182	726	1,480	2,560	2,740	864	580
27	243	286	240	b210	187	193	708	1,150	2,300	2,570	870	595
28	243	275	243	b210	193	227	702	949	2,110	2,520	828	580
29	236	286	230	220	-	214	786	816	1,950	2,240	840	595
30	223	275	217	227	-----	223	864	852	2,490	2,010	942	630
31	227	-----	240	227	-----	250	-----	977	-----	2,530	977	-----
Total	7,273	7,517	7,894	7,051	6,264	5,779	10,754	32,760	64,500	92,900	42,773	23,373
Mean	235	251	255	227	224	186	358	1,057	2,150	2,997	1,380	779
Ac-ft	14,430	14,910	15,660	13,990	12,420	11,460	21,330	64,980	127,900	184,300	84,840	46,360

Calendar year 1964: Max - Min - Mean - Ac-ft -  
Water year 1964-65: Max 4,260 Min 150 Mean 846 Ac-ft 612,600

\* Discharge measurement made on this day.  
b Stage-discharge relation affected by ice.

## 7-915. Arkansas River at Salida, Colo.

Location.--Lat 38°32'45", long 106°00'36", in NE¼ sec.31, T.50 N., R.9 E., on right bank at Salida, 450 ft upstream from bridge (relocated) on State Highway 291 and 2.7 miles upstream from South Arkansas River.

Drainage area.--1,218 sq mi.

Records available.--April to October 1895, May to December 1897, August 1898 to September 1899, April to October 1900, April 1901 to October 1903, October 1909 to September 1965. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 7,050.45 ft above mean sea level, datum of 1929. Apr. 11, 1895, to Nov. 18, 1903, staff gage and Nov. 3, 1909, to Dec. 2, 1936, water-stage recorder, at site 1½ miles downstream at different datum. Dec. 3, 1936, to Dec. 5, 1957, water-stage recorder at same site at datum 1.00 ft higher.

Average discharge.--59 years (1898-99, 1901-3, 1909-65), 626 cfs (453,200 acre-ft per year).

Extremes.--Maximum discharge during year, 5,410 cfs July 13 (gage height, 4.95 ft), from rating curve extended above 3,100 cfs; minimum daily, 221 cfs Mar. 19, 21, 26, Apr. 15.  
1895-1903, 1909-65: Maximum discharge, 9,220 cfs June 29, 1957 (gage height, 7.82 ft, present datum); minimum observed, 100 cfs Oct. 4, 6, 7, 1898.

Remarks.--Records good. Discharge measurements generally made twice a month. Natural flow of stream affected by transmountain diversions (see elsewhere in this report), storage reservoirs (combined capacity, 81,890 acre-ft), diversions for irrigation of about 18,000 acres above station, and return flow from irrigated areas.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used May 13, 14, Aug. 19, 20, Sept. 6-11, 29, 30)

Oct. 1 to May 14, Aug. 20 to Sept. 30				May 15 to Aug. 20			
0.2	175	2.0	1,240	1.1	675	4.0	3,850
.5	265	3.0	2,120	2.0	1,410	5.0	5,500
1.0	530	4.0	3,430	3.0	2,490		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	274	258	321	274	292	237	283	884	1,230	3,540	3,420	1,040
2	278	258	321	274	270	230	296	940	1,340	4,000	2,980	1,020
3	288	254	306	258	283	227	270	996	1,400	4,590	2,180	1,020
4	274	251	296	278	283	227	274	1,160	1,520	4,620	2,050	1,050
5	296	251	292	288	283	224	292	1,220	1,600	4,370	1,880	1,020
6	296	251	288	283	288	230	288	1,130	1,530	4,270	1,780	1,040
7	288	248	278	288	288	227	274	1,000	1,400	4,340	1,570	1,060
8	288	244	283	288	288	224	244	940	1,540	4,050	1,440	1,040
9	288	244	283	288	310	224	240	856	1,830	3,800	1,360	1,040
10	296	240	283	283	316	230	237	849	2,140	3,400	1,490	996
11	343	248	283	288	310	230	234	835	2,330	3,330	1,450	975
12	321	248	283	288	296	230	234	975	2,570	3,480	1,370	905
13	292	258	270	288	288	227	227	1,080	2,420	4,450	1,340	912
14	292	265	262	288	292	227	224	891	2,170	3,160	1,470	877
15	292	292	270	288	301	224	221	780	1,950	2,760	1,520	856
16	292	306	274	288	251	224	224	682	3,300	2,650	1,460	821
17	288	316	296	283	251	224	234	705	3,020	2,540	1,560	807
18	292	326	258	283	251	224	248	832	3,180	2,540	1,720	828
19	288	326	270	283	251	221	270	908	3,180	2,650	1,700	870
20	283	316	278	283	248	224	288	956	3,250	2,780	1,450	814
21	278	316	274	278	244	221	338	1,090	3,290	2,670	1,220	807
22	278	332	283	283	244	227	360	1,390	3,070	2,560	1,170	736
23	278	326	343	270	248	230	382	1,820	3,080	2,620	1,090	688
24	278	316	343	278	244	227	453	1,890	3,340	2,820	1,040	667
25	278	326	296	283	240	227	667	1,780	3,260	2,820	982	646
26	274	332	288	274	240	221	716	1,580	2,990	2,920	912	639
27	270	326	288	274	237	227	688	1,210	2,630	2,760	912	639
28	270	321	292	283	237	240	674	996	2,360	2,690	870	632
29	258	326	278	292	-	258	744	840	2,120	2,410	898	632
30	248	332	262	296	-----	248	821	870	2,720	2,140	982	660
31	254	-----	262	296	-----	254	-----	1,000	-----	2,720	1,010	-----
Total	8,813	8,653	8,904	8,769	7,574	7,115	10,945	33,085	71,760	100,450	46,276	25,737
Mean	284	288	287	283	270	230	365	1,067	2,392	3,240	1,493	858
Ac-ft	17,480	17,160	17,660	17,390	15,020	14,110	21,710	65,620	142,300	199,200	91,790	51,050

Calendar year 1964: Max 2,440 Min 158 Mean 530 Ac-ft 384,900  
Water year 1964-65: Max 4,620 Min 221 Mean 926 Ac-ft 670,500



7-937. Arkansas River near Wellsville, Colo.

Location.--Lat 38°30'10", long 105°56'21", in NE¼ sec.14, T.49 N., R.9 E., on right bank 50 ft upstream from Chaffee-Fremont County line, 2 miles northwest of Wellsville, 2.8 miles downstream from South Arkansas River, and 3.5 miles southeast of Salida.

Drainage area.--1,485 sq mi.

Records available.--April 1961 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 6,883.4 ft above mean sea level (river-profile survey).

Extremes.--Maximum discharge during year, 4,390 cfs July 13 (gage height, 7.36 ft); minimum daily, 198 cfs Mar. 19. 1961-65: Maximum discharge, that of July 13, 1965; minimum daily, 110 cfs Jan. 12, 1963.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Natural flow of stream affected by trans-mountain diversions, storage reservoirs, power developments, diversions for irrigation of about 26,000 acres, and return flow from irrigated areas.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Stage-discharge relation affected by ice Feb. 15)

2.8	195	4.5	980
3.0	250	5.0	1,410
3.5	440	6.0	2,380
4.0	650	7.2	4,120

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	264	264	376	313	306	278	364	890	1,280	* 3,370	3,340	1,000
2	250	257	384	296	274	244	380	950	* 1,370	3,750	3,000	1,050
3	254	257	380	278	288	218	348	1,020	1,460	4,120	* 2,240	1,050
4	271	244	356	313	292	223	340	1,160	1,560	4,070	2,190	1,000
5	250	* 244	336	332	288	241	360	1,240	1,620	3,880	1,980	1,000
6	292	247	320	* 324	302	268	* 352	1,170	1,530	3,780	1,890	1,000
7	* 296	241	299	336	302	260	336	1,050	1,460	3,820	1,640	1,050
8	292	241	316	328	302	260	282	972	1,640	3,610	1,480	1,050
9	292	238	328	320	340	* 260	274	890	1,940	3,370	1,360	1,050
10	296	232	332	320	* 333	271	260	860	2,140	3,100	1,500	1,000
11	320	241	324	313	320	268	250	852	2,270	3,040	1,450	950
12	380	235	324	316	296	271	254	950	2,460	3,180	1,360	900
13	332	241	268	310	296	264	235	1,060	2,340	3,850	1,300	850
14	306	257	274	306	290	260	235	816	2,250	2,890	1,460	800
15	299	288	292	316	290	257	220	706	2,150	* 2,540	1,570	750
16	296	336	302	316	268	260	218	632	3,260	2,430	1,540	* 730
17	292	376	306	310	274	257	223	646	* 3,190	2,320	1,790	718
18	296	388	264	302	278	244	241	748	3,370	2,340	1,910	748
19	296	376	299	310	278	198	268	* 845	3,310	2,440	2,040	830
20	292	352	306	306	278	220	278	942	3,340	2,560	1,800	802
21	285	356	310	292	274	247	332	1,100	3,400	2,450	1,550	809
22	282	368	324	292	278	264	360	1,460	3,180	2,370	1,470	742
23	285	364	412	264	282	268	380	1,860	3,130	2,440	1,360	700
24	285	360	416	282	260	260	439	1,890	3,360	2,630	1,230	675
25	292	384	352	288	260	247	670	1,760	3,200	2,640	1,060	660
26	285	388	336	254	274	247	718	1,580	2,870	2,750	1,000	650
27	278	384	332	271	274	260	685	1,240	2,510	2,590	940	650
28	278	372	340	285	274	282	675	1,020	2,370	2,580	920	641
29	260	388	320	306	-	316	742	845	2,250	2,310	900	641
30	244	380	271	306	-----	302	809	875	2,640	2,120	960	680
31	257	-----	299	310	-----	320	-----	1,000	-----	2,720	1,000	-----
Total	8,897	9,299	10,098	9,415	8,071	8,035	11,528	33,029	72,850	92,060	49,230	25,176
Mean	287	310	326	304	288	259	384	1,065	2,428	2,970	1,588	839
Ac-ft	17,650	18,440	20,030	18,670	16,010	15,940	22,870	65,510	144,500	182,600	97,650	49,940

Calendar year 1964: Max 2,600 Min 164 Mean 555 Ac-ft 402,800  
Water year 1964-65: Max 4,120 Min 198 Mean 925 Ac-ft 669,800

\* Discharge measurement made on this day.

Note.--No gage-height record Aug. 26 to Sept. 16.

## ARKANSAS RIVER BASIN

7-945. Arkansas River at Parkdale, Colo.

Location.--Lat 38°29'14", long 105°22'23", in NE¼ sec.18, T.18 S., R.71 W., on left bank at Parkdale, 100 ft upstream from Bumback Gulch, 300 ft upstream from bridge on U. S. Highway 50, and 0.9 mile upstream from Copper Gulch.

Drainage area.--2,548 sq mi.

Records available.--October 1945 to September 1955, October 1964 to September 1965. Monthly discharge only for October 1945 to May 1946, published in WSP 1311.

Gage.--Water-stage recorder. Altitude of gage is 5,720 ft (from topographic map). Prior to Oct. 1, 1964, at site 600 ft downstream at different datum.

Average discharge.--11 years, 795 cfs (575,600 acre-ft per year).

Extremes.--Maximum discharge during year, 4,880 cfs July 13 (gage height, 7.13 ft); minimum daily, 275 cfs Oct. 2.

1945-55, 1964-65: Maximum discharge, 5,880 cfs June 22, 1947 (gage height, 9.02 ft, site and datum then in use), from rating curve extended above 3,000 cfs; minimum daily, 224 cfs Apr. 5, 1954.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Natural flow of stream affected by trans-mountain diversions, storage reservoirs, diversions for irrigation of about 35,000 acres above station, and return flow from irrigated areas.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used July 13-21)

3.0	265	5.0	1,900
3.5	485	6.0	3,150
4.0	820	7.0	4,500

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	280	300	420	368	348	340	524	1,070	1,000	*3,250	3,660	1,220
2	275	300	420	344	324	304	588	1,120	*1,200	3,710	3,320	1,220
3	279	300	430	316	340	282	529	1,200	1,450	4,190	*2,550	1,180
4	286	300	352	348	328	276	480	1,330	1,530	4,360	2,320	1,180
5	279	*296	364	380	332	308	458	*1,500	1,670	4,180	2,120	1,190
6	296	320	356	*385	336	324	*452	1,430	1,600	4,120	2,010	1,140
7	*328	304	332	376	348	320	458	1,280	1,450	4,190	1,820	1,030
8	328	296	*344	372	344	*312	395	1,190	1,600	4,020	1,640	1,150
9	328	300	376	356	348	308	330	1,070	1,940	3,810	1,530	1,120
10	328	293	400	364	*385	316	360	990	2,250	3,450	1,580	1,090
11	336	296	380	364	360	324	340	990	2,380	3,370	1,550	1,060
12	380	296	400	376	320	324	330	*1,020	2,680	3,450	1,470	1,020
13	390	293	324	352	300	320	300	1,230	2,560	4,380	1,410	950
14	344	308	308	352	332	312	*310	1,000	2,590	*3,570	1,480	910
15	336	336	348	352	385	312	308	852	2,240	2,940	1,640	900
16	328	376	356	356	352	312	293	725	3,270	2,800	1,580	*884
17	324	405	320	352	328	316	293	688	*3,550	2,680	1,730	868
18	328	441	340	344	332	304	308	756	3,570	2,620	2,050	900
19	336	436	364	344	360	282	328	*900	3,620	2,710	2,150	1,060
20	332	415	364	344	356	282	340	1,000	3,620	2,770	1,940	1,180
21	332	385	372	340	336	316	372	1,100	3,640	2,800	1,740	1,140
22	320	390	380	336	324	312	420	1,400	3,500	2,560	1,580	1,000
23	316	405	468	308	344	332	441	1,800	3,310	2,600	1,520	930
24	324	395	546	332	320	324	468	2,100	3,590	2,810	1,420	900
25	332	420	441	336	324	296	652	2,100	3,540	2,880	1,320	860
26	328	436	400	304	324	332	884	1,900	3,250	2,920	1,230	844
27	320	425	385	304	324	320	884	1,700	2,930	2,850	1,190	844
28	320	415	390	328	324	344	868	1,300	2,680	2,840	1,150	844
29	316	415	380	348	-	400	910	1,100	2,450	2,590	1,130	844
30	290	415	328	352	-----	395	980	920	2,660	2,320	1,130	876
31	290	-----	332	352	-----	452	-----	980	-----	2,530	1,120	-----
Total	9,929	10,712	11,720	10,785	9,478	10,001	14,603	37,741	77,320	100,270	54,080	30,334
Mean	320	357	378	348	338	323	487	1,217	2,577	3,235	1,745	1,011
Ac-ft	19,690	21,250	23,250	21,390	18,800	19,840	28,960	74,860	153,400	198,900	107,300	60,170

Calendar year 1964: Max - Min - Mean - Ac-ft -  
Water year 1964-65: Max 4,380 Min 275 Mean 1,033 Ac-ft 747,800

\* Discharge measurement made on this day.

Note.--No gage-height record Apr. 9-14, May 19 to June 2.

7-950. Grape Creek near Westcliffe, Colo.

Location.--Lat 38°11'10", long 105°28'59", in NW¼ sec.31, T.21 S., R.72 W., on left bank 0.5 mile upstream from water line of De Weese Reservoir at elevation 7,665 ft, 0.5 mile downstream from Swift Creek, and 3.6 miles northwest of Westcliffe.

Drainage area.--320 sq mi.

Records available.--October 1924 to September 1961, October 1962 to September 1965. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,690 ft (from topographic map). Prior to Mar. 17, 1939, at site 30 ft upstream at same datum.

Average discharge.--40 years, 31.7 cfs (22,950 acre-ft per year).

Extremes.--Maximum discharge during year, 940 cfs Aug. 1 (gage height, 3.57 ft), from rating curve extended above 320 cfs; minimum daily, 4.7 cfs Oct. 1.

1924-61, 1962-65: Maximum discharge, 1,960 cfs Apr. 23, 1942 (gage height, 5.26 ft), from rating curve extended above 830 cfs; minimum daily, 0.1 cfs June 19-22, 1936.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for irrigation of about 15,000 acres.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 26 to July 16)

0.3	0	1.3	110
.4	2.5	1.8	232
.5	8.0	2.5	460
.6	17	3.5	890
.9	51		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.7	6.4					30	34	19	139	845	24
2	5.2	6.4					* 243	24	19	137	386	21
3	5.2	8.0					88	21	20	134	238	* 24
4	5.2	8.9					54	20	18	134	190	21
5	6.4	11					43	18	125	134	151	20
6	* 6.9	* 11					36	* 15	128	125	121	26
7	6.9	9.8					36	14	55	123	99	25
8	6.9	9.8					31	12	47	* 123	88	30
9	5.8	8.9					30	13	* 46	121	78	32
10	5.8	8.9					* 25	12	58	123	75	32
11	6.4	8.0					22	14	59	121	60	31
12	5.8	b 8.0					25	15	65	123	* 52	29
13	5.8	b 9.8					34	16	60	121	45	26
14	6.4	9.8					32	14	60	117	43	24
15	6.4	b 9.8					* 27	13	74	105	49	21
16	6.4		8.5	8.5	10	30	25	13	132	99	51	20
17	6.4						24	9.8	269	96	45	24
18	6.9						24	* 9.8	287	91	123	44
19	6.9						22	12	512	85	219	59
20	6.4						* 21	16	516	81	137	130
21	6.4						21	21	442	74	77	* 123
22	* 5.8						20	18	352	* 70	65	78
23	6.4	b 9.5					18	22	308	70	59	60
24	6.4						19	45	* 308	130	50	56
25	6.4						36	45	293	108	44	51
26	6.4						81	35	272	82	* 37	49
27	5.8						88	32	216	77	35	49
28	5.8						91	22	178	91	29	55
29	6.4						89	18	149	103	28	68
30	6.9						58	18	139	317	32	64
31	6.4							19		308	27	
Total	191.9	277.0	263.5	263.5	280	930	1,393	610.6	5,226	3,762	3,578	1,316
Mean	6.19	9.23	8.5	8.5	10	30	46.4	19.7	174	121	115	43.9
Ac-ft	381	549	523	523	555	1,840	2,760	1,210	10,370	7,460	7,100	2,610

Calendar year 1964: Max 214 Min 2.0 Mean 12.4 Ac-ft 9,010  
Water year 1964-65: Max 845 Min 4.7 Mean 49.6 Ac-ft 35,880

Peak discharge (base, 250 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4- 2	1630	2.01	287	8- 1	0715	3.57	940
6-19	2000	2.75	572	8-18	1930	2.76	564

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 25 to Apr. 2 (stage-discharge relation affected by ice during most of period).

## ARKANSAS RIVER BASIN

7-960. Arkansas River at Canon City, Colo.

Location.--Lat 38°26'02", long 105°15'24", in SE¼SE¼ sec.31, T.18 S., R.70 W., on right bank 800 ft upstream from Sand Creek, 0.7 mile downstream from Grape Creek, and 0.7 mile upstream from First Street Bridge in Canon City.

Drainage area.--3,117 sq mi.

Records available.--January 1888 to September 1965. Monthly discharge only for some periods, published in WSP 1311. Published as "near Canyon" 1900-1906.

Gage.--Water-stage recorder. Datum of gage is 5,342.13 ft above mean sea level, datum of 1929, supplementary adjustment of 1960. Prior to Mar. 27, 1922, staff gage, chain gage, or water-stage recorder at sites about a quarter of a mile upstream at various datums. Mar. 27, 1922, to Sept. 30, 1957, water-stage recorder at present site at datum 2.49 ft higher. Oct. 1, 1957, to Nov. 15, 1962, water-stage recorder at present site at datum 1.49 ft higher.

Average discharge.--77 years, 721 cfs (522,000 acre-ft per year).

Extremes.--Maximum discharge during year, 7,950 cfs July 24 (gage height, 8.28 ft), from rating curve extended above 3,200 cfs; minimum daily discharge, 154 cfs Oct. 3, Nov. 10.  
1888-1965: Maximum discharge, 19,000 cfs Aug. 2, 1921 (gage height, 10.7 ft, site and datum then in use, from floodmark), from rating curve extended above 5,000 cfs; minimum daily, 69 cfs May 13, 1959.

Remarks.--Records good. Discharge measurements generally made once a week. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions for irrigation of about 56,000 acres, and return flow from irrigated areas. Records of chemical analysis for the water year 1965 are published in Part 2 of this report.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Stage-discharge relation affected by ice Mar. 5)  
(Shifting-control method used Apr. 9-25, June 5-9, 16-25, July 6-31, Aug. 5 to Sept. 30)

1.9	100	5.0	2,090
2.4	220	6.0	3,260
3.0	460	7.0	5,090
4.0	1,150	8.0	7,770

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	168	182	374	361	293	268	490	934	1,120	3,540	5,320	1,200
2	160	182	374	337	268	241	577	1,070	1,350	4,230	4,270	1,140
3	154	180	388	305	264	190	510	1,170	1,360	5,170	3,270	1,120
4	163	172	365	325	268	210	470	1,290	1,420	5,740	2,800	1,130
5	170	163	325	353	274	220	465	1,440	1,590	5,380	2,520	1,110
6	172	158	325	361	271	260	440	1,400	1,500	5,070	2,280	1,090
7	199	175	280	361	285	264	450	1,250	1,390	5,120	2,020	1,100
8	205	170	300	341	289	257	392	1,130	1,450	4,870	1,780	1,120
9	202	160	341	305	282	257	365	1,020	1,820	4,570	1,630	1,090
10	205	154	374	305	333	268	406	934	2,170	4,030	1,550	1,050
11	211	163	345	301	317	274	353	886	2,570	3,800	1,570	1,010
12	247	165	353	329	282	274	365	894	2,900	3,820	1,490	974
13	247	168	293	325	250	274	329	1,090	2,720	5,040	1,410	830
14	214	190	309	309	285	264	293	974	2,710	4,160	1,450	816
15	211	220	333	309	374	257	274	760	2,210	3,180	1,650	795
16	211	264	337	321	333	260	264	638	3,400	3,030	1,590	760
17	205	305	301	313	301	264	247	613	3,900	2,920	1,760	774
18	205	361	317	297	301	247	264	638	3,720	2,810	2,440	816
19	211	378	361	305	305	235	268	816	3,920	2,880	2,680	974
20	202	341	357	301	293	229	260	926	3,960	2,990	2,350	1,180
21	199	345	378	297	282	278	260	1,060	3,960	3,040	2,150	1,270
22	193	345	374	289	274	274	293	1,290	3,800	2,750	1,820	1,120
23	199	353	445	250	285	285	293	1,780	3,660	2,760	1,720	1,010
24	205	349	538	268	268	274	293	2,020	4,250	2,990	1,530	1,040
25	211	365	425	274	264	240	514	1,910	4,230	3,260	1,420	966
26	205	378	374	250	260	270	767	1,810	3,850	3,230	1,300	910
27	205	370	361	250	264	260	760	1,310	3,390	3,200	1,210	862
28	205	361	370	293	250	305	746	1,130	3,030	3,270	1,130	830
29	199	365	353	305	-	365	802	886	2,700	3,130	1,090	816
30	185	374	305	297	-----	353	846	802	2,860	2,970	1,120	838
31	175	-----	313	293	-----	410	-----	870	-----	3,430	1,170	-----
Total	6,143	7,856	10,988	9,530	8,015	8,327	13,056	34,741	82,910	116,380	61,490	29,741
Mean	198	262	354	307	286	269	435	1,121	2,764	3,754	1,984	991
Ac-ft	12,180	15,580	21,790	18,900	15,900	16,520	25,900	68,910	164,400	230,800	122,000	58,990

Calendar year 1964: Max 2,960 Min 76 Mean 536 Ac-ft 389,100  
Water year 1964-65: Max 5,740 Min 154 Mean 1,066 Ac-ft 771,900

## 7-992. Arkansas River near Portland, Colo.

Location.--Lat 38°20'19", long 104°56'27", in SE 1/4 sec. 1, T.20 S., R.68 W., on left bank 1.0 mile downstream from Willow Spring Creek and 5.3 miles southeast of Portland.

Drainage area.--4,280 sq mi.

Records available.--October 1964 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 4,950 ft (from topographic map).

Extremes.--Maximum discharge during year, 23,900 cfs Aug. 21 (gage height, 11.85 ft), from rating curve extended above 7,400 cfs on basis of slope-area measurement of peak flow; minimum daily, 160 cfs Oct. 2-4.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Natural flow of stream affected by trans-mountain diversions, storage reservoirs, power developments, diversions for irrigation of about 68,000 acres, and return flow from irrigated areas. Records of chemical analyses and suspended sediment loads for the water year 1965 are published in Part 2 of this report.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used June 23 to July 4, July 21 to Aug. 4  
Aug. 14-18, Sept. 26-30)

2.9	150	5.0	1,500
3.4	358	6.0	2,570
4.0	685	7.0	3,960
4.5	1,030	8.0	6,440

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a 170	195	372	340	283	236	494	912	967	3,260	4,600	1,080
2	a 160	199	363	344	257	223	*521	1,060	*1,240	3,740	*4,210	a 1,100
3	a 160	207	372	283	231	176	579	1,220	1,320	4,240	3,050	a 1,050
4	a 160	211	372	292	257	180	504	*1,350	1,470	5,470	2,590	a 1,050
5	a 170	*187	326	*340	248	187	*460	1,490	1,680	5,020	2,470	a 1,000
6	a 180	180	309	363	248	253	435	1,500	1,670	4,470	2,280	a 1,000
7	a 190	203	*283	367	266	248	430	1,320	1,480	4,340	2,020	a 1,050
8	*a 200	203	296	344	266	*240	400	1,180	1,590	4,260	1,670	a 1,050
9	207	187	309	300	261	244	336	1,090	1,930	*4,020	1,510	a 1,000
10	207	183	331	296	*313	244	363	967	2,340	3,590	1,430	a 1,000
11	219	180	322	292	279	253	354	940	2,770	3,530	1,460	a 950
12	253	176	340	304	287	248	344	*912	3,040	3,600	1,300	a 900
13	287	176	296	300	257	253	313	1,050	2,950	*4,280	1,160	a 850
14	236	172	244	292	253	240	*257	*958	*2,830	*3,740	1,440	a 800
15	207	240	283	296	322	231	*257	745	2,400	3,190	1,780	*a 750
16	*199	287	340	313	322	236	227	649	3,710	2,870	1,720	733
17	203	331	313	309	266	240	203	596	*5,680	2,710	1,780	721
18	203	377	309	296	257	223	211	596	4,420	2,680	*2,320	733
19	215	405	344	292	261	183	219	*739	3,640	*2,760	3,280	831
20	215	372	367	292	274	176	199	818	3,460	2,890	2,770	1,050
21	223	354	354	287	270	215	199	905	3,330	2,890	*5,300	1,090
22	215	354	349	274	253	253	240	1,130	3,180	2,750	2,070	1,070
23	219	358	400	248	266	391	274	1,700	3,190	*2,750	1,570	1,000
24	223	363	533	244	231	386	283	2,050	3,430	2,990	1,470	976
25	227	372	460	279	223	336	420	2,030	3,530	3,400	1,340	926
26	223	386	377	240	240	354	824	1,900	3,400	2,610	1,240	864
27	215	391	358	207	240	304	864	*1,540	3,150	2,650	1,160	844
28	219	367	363	253	236	296	799	1,180	*2,880	2,500	1,090	831
29	211	358	354	283	-	527	824	912	2,570	3,230	1,060	793
30	195	372	304	292	-	494	857	793	*2,640	2,730	1,060	805
31	180	-	270	279	-	494	-	818	-	3,640	1,040	-
Total	6,391	8,346	10,613	9,141	7,367	8,564	12,690	35,050	81,887	106,800	63,240	27,897
Mean	206	278	342	295	263	276	423	1,131	2,730	3,445	2,040	930
Ac-ft	12,680	16,550	21,050	18,130	14,610	16,990	25,170	69,520	162,400	211,800	125,400	55,330

Calendar year 1964: Max - Min - Mean - Ac-ft -  
Water year 1964-65: Max 5,680 Min 160 Mean 1,036 Ac-ft 749,600

\* Discharge measurement made on this day.  
a No gage-height record.

## ARKANSAS RIVER BASIN

7-995. Arkansas River near Pueblo, Colo.

Location.--Lat 38°16'02", long 104°39'26", in SE¼NW¼ sec.34, T.20 S., R.65 W., on right bank at intake of south-side waterworks, 1.6 miles upstream from Dry Creek and 2.5 miles west of city hall in Pueblo.

Drainage area.--4,686 sq mi.

Records available.--May to June 1885, January 1886 to December 1887, May to August 1889, September 1894 to September 1965. Monthly discharge only for some periods, published in WSP 1311. Published as "at Rock Canyon" 1889 and as "at Pueblo" 1885-87, 1894-1924.

Gage.--Water-stage recorder and concrete control on river; water-stage recorder and Parshall flume at north-side waterworks intake. Datum of river gage is 4,689.74 ft above mean sea level, datum of 1929, supplementary adjustment of 1960. May 16, 1885, to Sept. 12, 1886, staff gage at site 2½ miles downstream, at different datum; June 1, 1887, to Aug. 31, 1889, staff gage at site 6½ miles upstream, at different datum. Sept. 19, 1894, to May 25, 1925, staff gage, chain gage, or water-stage recorder about 2½ miles downstream at various sites and datums.

Average discharge.--72 years (1886-87, 1894-1965), 713 cfs (516,200 acre-ft per year).

Extremes.--Maximum discharge during year, 23,500 cfs Aug. 22 (gage height, 8.10 ft), from rating curve extended above 4,600 cfs on basis of contracted-opening measurement of peak flow; minimum daily, 56 cfs Oct. 4.

1885-87, 1889, 1894-1965: Maximum discharge, 103,000 cfs June 3, 1921 (gage height, 24.66 ft, site and datum then in use), from rating curve extended above 6,800 cfs on basis of float measurement at gage height 11.2 ft and slope-area measurement of peak flow; minimum daily, 18 cfs (including 13 cfs diverted into intake of north-side waterworks) Apr. 7, 1935.

Remarks.--Records good except those above 8,000 cfs and those for periods of ice effect or no gage-height record, which are fair. Discharge measurements made at least twice a month during winter and once a week during summer. Records include water diverted above station into intake of north-side waterworks for municipal supply of Pueblo, but not water diverted by south-side waterworks. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, diversions above station for irrigation of about 88,000 acres, and return flow from irrigated areas. Records of chemical analyses and suspended sediment loads for the water year 1965 are published in Part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	95	131	174	239	212	a 190	409	926	964	3,060	4,900	1,360
2	81	137	166	239	234	a 187	414	1,020	1,160	3,690	5,260	1,320
3	74	134	164	244	232	a 184	448	1,200	1,300	4,280	3,680	1,210
4	56	137	164	231	239	a 179	409	1,240	1,450	5,000	2,870	1,190
5	81	133	154	228	251	172	389	1,460	1,590	5,000	2,590	1,260
6	105	122	139	232	251	188	372	1,400	1,590	4,640	2,270	1,210
7	111	121	138	243	262	175	347	1,260	1,640	4,360	1,990	1,200
8	138	125	159	239	270	182	332	1,120	1,540	4,300	1,590	1,190
9	122	119	204	225	270	170	291	1,030	1,720	3,820	1,430	1,160
10	105	113	279	222	287	167	302	954	1,940	3,460	1,260	1,070
11	116	112	284	223	306	164	300	881	2,290	3,320	1,310	991
12	139	110	255	218	a 280	172	290	823	2,720	3,080	1,260	961
13	174	101	257	223	a 273	170	264	830	2,800	3,560	1,200	878
14	140	113	235	209	a 274	167	223	881	2,480	3,960	1,350	843
15	100	138	222	201	a 274	162	196	692	2,090	3,490	1,430	810
16	99	192	238	208	a 284	162	171	622	2,700	2,640	1,360	786
17	96	232	b 187	201	302	160	150	568	5,460	2,440	1,360	802
18	110	252	b 228	198	271	a 159	143	541	5,020	2,280	3,210	826
19	116	275	b 243	195	245	a 158	144	625	4,120	2,320	3,850	940
20	127	275	222	198	252	a 160	132	712	3,950	3,400	2,960	1,200
21	121	263	197	195	248	157	149	799	3,980	2,670	5,490	1,370
22	127	267	201	195	233	167	175	929	3,780	2,350	9,960	1,190
23	131	267	256	189	225	236	205	1,370	3,600	2,250	3,770	1,040
24	143	277	303	168	218	260	246	1,810	3,920	2,550	2,270	1,030
25	149	275	246	186	215	276	323	1,720	4,040	3,350	2,030	974
26	142	271	233	201	211	310	646	1,620	3,560	2,830	1,820	899
27	137	263	230	183	207	292	821	1,480	3,110	3,010	1,590	855
28	131	252	227	172	194	255	747	1,320	2,650	2,890	1,440	815
29	135	232	236	187	-	360	782	1,090	2,370	2,990	1,330	794
30	138	189	231	196	-----	385	846	899	2,300	2,470	1,350	742
31	110	-----	205	196	-----	389	-----	872	-----	3,470	1,370	-----
Total	3,649	5,628	6,677	6,484	7,020	6,515	10,673	32,694	81,834	102,930	79,550	30,916
Mean	118	188	215	209	251	210	356	1,055	2,728	3,320	2,566	1,031
Ac-ft	7,240	11,160	13,240	12,860	13,920	12,920	21,170	64,850	162,300	204,200	157,800	61,320

Calendar year 1964: Max 2,640 Min 46 Mean 447 Ac-ft 324,600  
 Water year 1964-65: Max 9,960 Min 56 Mean 1,026 Ac-ft 743,000

a No gage-height record.

b Stage-discharge relation affected by ice.

7-1037. Fountain Creek near Colorado Springs, Colo.

**Location.**--Lat 38°51'17", long 104°52'39", in SE¼SW¼ sec.3, T.14 S., R.67 W., on left bank 200 ft upstream from diversion to city of Colorado Springs, half a mile east of bridge on U. S. Highway 24 near west city limits of Colorado Springs, and 1 mile downstream from Sutherland Creek.

**Drainage area.**--102 sq mi.

**Records available.**--April 1958 to September 1965.

**Gage.**--Water-stage recorder and Parshall flume with overflow weirs. Altitude of gage is 6,110 ft (from topographic map).

**Average discharge.**--7 years, 11.8 cfs (8,540 acre-ft per year).

**Extremes.**--Maximum discharge during year, 359 cfs June 17 (gage height, 3.82 ft), from rating curve extended above 190 cfs as explained below; minimum daily, 2.3 cfs Mar. 25.

1958-65: Maximum discharge, 2,630 cfs Aug. 4, 1964 (gage height, 5.27 ft), from rating curve extended above 190 cfs on basis of slope-area measurements at gage heights 3.87, 4.52, and 5.27 ft; minimum daily, that of Mar. 25, 1965.

**Remarks.**--Records fair. Natural flow of stream affected by storage reservoirs, power developments, diversions for irrigation and municipal use, and at times, transbasin diversion from Beaver Creek drainage and transmountain diversions from Colorado River basin.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1 to Feb. 24, Mar. 27 to Apr. 21,  
June 18-21, June 28 to July 2)

0.3	1.8	2.5	60
.5	4.0	2.7	89
.8	8.5	3.0	145
1.5	23	3.5	280
2.3	44		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.5	4.6	6.7	7.3	5.0	4.7	10	25	*10	32	105	46
2	7.3	b4.9	6.6	7.3	4.7	3.3	9.5	24	9.3	43	*84	37
3	7.5	b5.0	6.1	7.3	5.1	3.3	8.5	25	9.3	65	78	35
4	8.1	*5.1	6.3	7.0	6.3	3.3	13	26	12	39	75	37
5	8.6	5.1	6.3	*6.6	6.6	3.9	*11	24	24	37	61	38
6	*7.2	5.2	6.3	6.0	5.8	5.2	10	22	19	29	45	40
7	6.0	5.1	*5.8	6.1	5.5	5.4	9.5	22	13	22	40	35
8	5.7	4.8	5.8	5.8	5.2	*6.0	9.8	21	9.5	28	37	38
9	5.2	4.7	6.0	5.8	b4.5	6.0	11	20	10	37	32	36
10	5.4	4.8	6.3	5.8	b4.0	6.0	11	19	13	37	45	28
11	6.4	4.4	6.3	5.8	*3.9	5.5	9.6	19	28	34	41	24
12	6.3	4.0	5.7	6.4	3.9	5.8	9.8	18	29	*19	19	28
13	6.3	4.8	5.4	5.0	3.9	4.7	10	18	28	14	14	25
14	6.4	4.7	5.5	5.8	3.8	5.1	9.5	17	29	18	23	*15
15	6.6	4.7	5.8	5.8	3.9	5.7	8.5	16	26	23	46	12
16	6.6	4.7	5.5	5.7	3.9	5.1	9.1	16	*94	16	38	14
17	6.0	4.6	4.7	5.8	3.9	5.1	8.1	14	233	12	57	26
18	6.4	4.6	4.7	5.5	5.0	3.0	8.5	*14	*168	12	81	39
19	6.6	5.0	4.7	5.8	6.6	3.0	9.1	15	152	18	121	48
20	6.6	5.1	5.0	5.4	6.4	3.0	11	15	131	12	118	41
21	6.4	4.3	6.3	5.5	5.7	3.0	14	15	118	11	102	30
22	6.6	b4.2	6.4	5.4	5.4	3.2	9.1	15	100	6.9	103	29
23	6.9	5.8	7.3	5.0	4.7	3.2	8.8	17	91	12	83	29
24	6.7	5.5	7.3	5.8	4.8	3.7	10	23	66	46	75	29
25	6.4	6.1	6.9	5.8	4.7	2.3	13	20	51	36	70	28
26	5.8	5.7	b5.5	4.7	5.1	2.5	18	21	66	26	54	26
27	5.8	5.2	b5.0	4.7	5.7	6.1	15	22	51	47	46	24
28	6.6	4.6	b4.5	6.6	5.2	9.5	12	20	39	57	44	21
29	6.6	6.1	b4.3	8.5	-	7.6	17	17	37	40	53	19
30	5.5	6.0	4.3	7.0	-----	8.6	22	14	*33	44	51	18
31	5.2	-----	4.8	6.3	-----	9.5	-----	11	-----	109	48	-----
Total	201.2	149.4	178.1	187.3	139.2	152.3	335.4	585	1,699.1	981.9	1,889	895
Mean	6.49	4.98	5.75	6.04	4.97	4.91	11.2	18.9	56.6	31.7	60.9	29.8
Ac-ft	399	296	353	372	276	302	665	1,160	3,370	1,950	3,750	1,780

Calendar year 1964: Max 77 Min 3.3 Mean 7.61 Ac-ft 5,520  
Water year 1964-65: Max 233 Min 2.3 Mean 20.3 Ac-ft 14,670

Peak discharge (base, 150 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-13	2300	2.99	150	7-27	1500	3.29	218
6-17	1700	3.82	359	7-30	2330	3.09	158
7-2	1900	3.58	310	8-18	2300	3.18	205

\* Discharge measurement made on this day.  
b Stage-discharge relation affected by ice.

## ARKANSAS RIVER BASIN

7-1039. West Monument Creek near Pikeview, Colo.

Location.--Lat 38°58'17", long 104°53'56", in SW¼ sec.28, T.12 S., R.67 W., on right bank in Air Force Academy Reservation, 4 miles upstream from mouth and 11½ miles northwest of Pikeview.

Drainage area.--15.4 sq mi.

Records available.--October 1957 to September 1965.

Gage.--Water-stage recorder and Parshall flume. Datum of gage is 7,080.78 ft (City of Colorado Springs bench mark).

Average discharge.--8 years, 0.72 cfs (521 acre-ft per year).

Extremes.--Maximum discharge during year, about 400 cfs June 17 (gage height, 4.80 ft, from floodmark), estimated on basis of slope-area measurement of peak flow at point 1.6 miles downstream; no flow for many days.

1957-65: Maximum discharge, that of June 17, 1965; no flow for many days in each year.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Natural flow of stream affected by storage reservoirs (combined capacity, 1,520 acre-ft) and diversions for municipal use.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used June 17 to July 4)

0.0	0
.1	.4
.2	1.0
.3	1.8
.5	4.0

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0					0	2.1	*1.0	5.0	2.5	1.6
2	.1	0					*0	2.8	1.0	4.4	*2.2	1.8
3	0	0					0	2.6	.8	4.4	2.5	1.9
4	.3	*0					0	2.3	1.4	3.6	2.2	1.5
5	*1.6	0		(*)			*0	2.0	2.1	3.2	2.0	1.4
6	*1.6	0					0	1.8	2.1	3.0	1.7	1.6
7	.4	0	(*)				0	1.8	4.2	2.6	1.6	1.8
8	.1	0				(*)	0	1.6	2.0	2.8	1.6	1.8
9	0	0					0	1.5	2.1	2.4	1.2	1.6
10	0	0					.3	1.3	1.6	2.1	1.0	1.6
11	0	0			(*)		.6	*1.1	3.6	1.6	.9	1.6
12	0	.1					1.7	1.3	4.6	*1.8	1.0	1.6
13	0	.2					1.4	1.4	4.3	1.9	1.2	2.5
14	0	.3					.4	1.3	6.1	1.7	1.3	*1.3
15	0	.3					.3	1.0	4.4	1.6	1.7	2.9
16	0	.1					.2	.9	1.6	1.8	1.7	1.6
17	0	0					.2	1.0	a1.30	1.9	1.7	.8
18	0	0					.3	1.0	*a.90	1.7	2.2	1.0
19	0	0					.4	.9	a.50	2.4	2.6	1.0
20	0	0					.3	.8	a.28	1.9	2.9	1.4
21	0	0					.5	.7	a.25	1.7	2.9	1.1
22	0	0					.5	.8	2.0	1.7	2.8	.8
23	0	0					.5	1.2	1.4	1.6	2.8	1.2
24	0	0					.7	1.1	1.1	2.1	2.5	1.0
25	0	0					.1	.8	9.5	1.6	2.4	1.0
26	.1	0					.6	.9	8.0	3.9	2.5	.6
27	.1	0					.4	.9	6.9	2.0	2.2	.7
28	0	0					.7	.9	4.6	2.2	2.0	.7
29	0	0			-		.9	.7	4.3	1.8	1.9	.7
30	0	0			-----		1.6	.8	*4.6	1.6	1.8	.8
31	0	-----			-----		-----	.9	-----	2.6	1.6	-----
Total	4.3	1.0	0	0	0	0	12.6	40.2	463.2	74.6	61.1	40.9
Mean	0.14	0.03	0	0	0	0	0.42	1.30	15.4	2.41	1.97	1.36
Ac-ft	8.5	2.0	0	0	0	0	25	80	919	148	121	81

Calendar year 1964: Max 36 Min 0 Mean 0.19 Ac-ft 134  
Water year 1964-65: Max 130 Min 0 Mean 1.91 Ac-ft 1,380

\* Discharge measurement or observation of no flow made on this day.  
a No gage-height record.



7-1045. Templeton Gap Floodway at Colorado Springs, Colo.

Location.--Lat 38°53'17", long 104°49'01", in SE¼ sec.30, T.13 S., R.66 W., on left bank 75 ft upstream from head of concrete flume, 400 ft upstream from bridge on U. S. Highways 85 and 87, and three-quarters of a mile north of Colorado Springs.

Drainage area.--8.46 sq mi.

Records available.--July 1951 to September 1965.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 6,200 ft (from topographic map).

Average discharge.--14 years, 0.12 cfs (87 acre-ft per year).

Extremes.--Maximum discharge during year, 572 cfs June 17 (gage height, 2.84 ft), from rating curve based on computation of flow at critical depth at gage heights, 1.3, 1.4, 1.8, and 3.0 ft; no flow for most of year.  
1951-65: Maximum discharge, that of June 17, 1965; no flow for most of time.

Remarks.--Records good. Observation of no flow generally made once a month. This is an artificial channel constructed to divert flood flows from normally dry channels around Colorado Springs during periods of heavy rainfall.

Discharge, in cubic feet per second, water year October 1964 to September 1965

June 11.....	3.6	July 3.....	7.4
17.....	103	27.....	12
18.....	12	28.....	5.5
July 2.....	4.5	30.....	.4

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
June.....	118.6	103	0	3.95	235
July.....	29.8	12	0	.96	59
Calendar year 1964....	—	6	0	.02	12
Water year 1964-65....	—	103	0	.41	294

Note.--Flow occurred only on days listed above.

7-1058. Fountain Creek at Security, Colo.

Location.--Lat 38°43'46", long 104°44'00", in SW¼ sec.24, T.15 S., R.66 W., on right bank 60 ft upstream from Carson Road bridge, half a mile southwest of south end of Security, 3½ miles northeast of Fountain, and 5½ miles upstream from Jimmy Camp Creek.

Drainage area.--488 sq mi.

Records available.--October 1964 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 5,640 ft (from topographic map).

Extremes.--Maximum discharge during year, 25,000 cfs July 24 (gage height, 11.30 ft, from floodmarks), from rating curve extended above 2,900 cfs on basis of slope-area measurement of peak flow; minimum daily, 1.9 cfs Mar. 1.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by storage reservoirs, power developments, diversions for irrigation of about 5,100 acres, municipal use, and return flow from irrigated areas.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 29 to June 28, July 29 to Sept. 30)

1.7	0.8	2.3	28	4.0	730
1.8	2.0	2.4	41	5.0	1,330
1.9	3.8	2.5	63	6.0	2,190
2.0	6.6	2.7	140	7.0	3,620
2.1	12	3.0	265	8.0	6,180

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	13	21	29	33	19	22	52	*33	148	440	75
2	12	16	22	28	27	4.1	21	61	31	290	*350	70
3	12	32	24	24	29	4.4	19	*82	27	156	300	60
4	13	*15	25	31	33	9.8	25	82	38	54	280	65
5	16	13	24	*33	32	9.3	*45	74	104	36	250	70
6	12	9.8	24	33	28	12	24	63	67	32	200	75
7	10	9.3	*23	33	26	13	18	61	59	50	170	70
8	10	7.7	15	26	26	*20	19	61	56	60	140	75
9	8	11	13	24	25	11	22	61	54	54	110	80
10	12	11	11	25	26	10	19	48	85	54	150	90
11	12	11	10	23	*24	17	23	36	269	60	140	85
12	12	9.3	9.8	22	25	16	25	34	*176	54	100	80
13	12	9.8	6.0	21	27	17	24	31	82	*41	70	90
14	12	7.7	8.8	21	29	19	27	24	*578	35	50	*75
15	14	8.8	*15	22	29	21	*38	22	*340	*30	120	50
16	13	13	11	21	19	23	36	23	676	23	100	60
17	12	13	b8	20	18	19	38	22	*5650	24	120	70
18	14	15	b12	18	12	26	36	*21	*1610	24	140	90
19	14	16	b20	16	9.8	25	34	33	874	*33	160	120
20	14	16	b28	16	7.7	24	24	29	645	93	150	110
21	14	16	b34	14	4.4	29	21	23	571	41	140	100
22	*15	20	43	16	3.6	31	20	171	490	31	140	95
23	16	21	43	11	10	24	19	134	422	33	120	93
24	15	21	38	15	11	24	31	70	342	*2070	110	108
25	15	22	37	15	7.7	11	40	50	265	712	100	67
26	14	22	31	11	6.0	11	192	63	212	144	90	61
27	8.8	20	28	15	3.1	6.7	204	165	229	370	85	59
28	9.3	18	38	27	2.5	45	43	40	256	400	80	52
29	11	17	38	33	-	41	29	41	192	220	90	40
30	10	18	25	41	-----	33	37	48	*172	176	85	52
31	13	-----	28	41	-----	41	-----	34	-----	517	80	-----
Total	389.1	452.4	713.6	725	533.8	659.5	1,175	1,759	14,605	6,065	4,660	2,287
Mean	12.6	15.1	23.0	23.4	19.1	21.3	39.2	56.7	487	196	150	76.2
Ac-ft	772	897	1,420	1,440	1,060	1,310	2,330	3,490	28,970	12,030	9,240	4,540

Calendar year 1964: Max - Min - Mean - Ac-ft -  
Water year 1964-65: Max 5,650 Min 1.9 Mean 93.2 Ac-ft 67,500

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 1-26, Nov. 23 to Dec. 6, Jan. 11-19, July 8-16, Aug. 2 to Sept. 22.

7-1065. Fountain Creek at Pueblo, Colo.

Location.--Lat 38°16'33", long 104°39'09", in SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec.30, T.20 S., R.64 W., on right bank about 800 ft upstream from Eighth Street Bridge in Pueblo, 1.8 miles upstream from mouth. Prior to Apr. 7, 1965, at site 800 ft downstream.

Drainage area.--926 sq mi.

Records available.--January 1922 to September 1925, October 1940 to September 1965 (discontinued). Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 4,668.45 ft above mean sea level, datum of 1929. Prior to Feb. 13, 1923, staff gage at site one-third mile upstream at different datum. Feb. 13 to July 11, 1923, staff gage and July 12, 1923, to Sept. 30, 1925, water-stage recorder, within 200 ft of Eighth Street Bridge at various datums. Oct. 1, 1940, to Apr. 6, 1965, water-stage recorder 800 ft downstream at datum 5.00 ft lower.

Average discharge.--28 years, 53.0 cfs (38,370 acre-ft per year).

Extremes.--Maximum discharge during year, 47,000 cfs June 17 (gage height, 19.0 ft, from floodmark), from rating curve extended above 400 cfs on basis of contracted-opening measurement of peak flow; no flow June 30.

1922-25, 1940-65: Maximum discharge, that of June 17, 1965; no flow at times.

Flood of June 4, 1921, discharge, 34,000 cfs, by slope-area measurement of peak flow. Flood of May 30, 1935, discharge, 35,000 cfs, by slope-area measurement of peak flow.

Remarks.--Records poor. Diversions above station for irrigation of about 14,000 acres. Records of chemical analyses for the water year 1965 are published in Part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.8	1.0	2.2	2.8	* 5.8	9.2	* 22	6	2.8		(*)	
2	.8	1.0	2.6	2.8	6.5	* 9.2	18	6	2.7			
3	.8	* 1.0	2.6	2.6	6.2	8.8	15	6	2.8			
4	.9	1.1	2.6	* 2.6	6.0	8.5	11	* 6	7.6			
5	.9	1.0	2.6	2.6	5.8	8.3	9.6	6	23.3			
6	1.0	1.0	2.6	2.6	5.8	7.8	7.8	6	15		(*)	(*)
7	* 1.0	1.0	* 2.6	2.6	5.8	7.8	7.8	6	11			
8	1.0	1.0	2.6	2.6	5.8	8.3	* 7.8	6	* 7.8			
9	1.0	1.0	2.6	2.6	5.8	8.3	7.0	5	6.5			
10	1.0	1.1	2.6	2.2	5.8	7.8	6.0	4	5.8			
11	1.0	1.1	2.6	2.0	6.2	7.8	5.2	4	* 160	80	650	150
12	1.1	1.2	2.6	2.0	6.5	7.8	5.0	3	* 210			
13	1.1	1.3	2.6	2.0	6.5	8.3	4.8	2	98			
14	1.1	1.3	2.6	2.0	6.2	8.3	4.6	2	92			
15	1.0	1.3	2.6	2.0	6.2	8.3	4.4	2	* 1,500			
16	1.0	* 1.4	2.6	2.0	6.2	8.8	4.2	1	* 448		(*)	(*)
17	1.0	1.4	2.6	2.2	6.2	8.8	4.0	1	* 7,330			
18	1.0	1.7	2.2	2.2	7.0	8.8	3.8	* 1.4	10,000			
19	1.0	2.2	2.2	2.2	7.4	8.3	* 3.4	1.0	2,500			
20	1.0	2.6	2.2	2.2	8.3	8.3	3	.9	600			
21	1.0	2.6	2.2	* 2.2	8.3	7.8	3	6	900	(*)	(*)	(*)
22	1.0	2.6	2.8	2.6	8.3	8.8	3	94	400			
23	1.0	2.6	2.8	2.6	7.8	10	5	11	200			
24	1.0	2.6	3.2	2.6	7.8	9.6	6	7.8	250			
25	1.0	2.6	3.0	2.4	8.8	9.2	7	5.2	100			
26	1.0	2.6	3.0	1.9	8.8	10	20	4.2	250		(*)	
27	1.0	2.4	3.0	1.4	8.8	14	8	4.6	200			
28	1.0	2.4	3.0	* 1.0	9.2	17	7	6.8	150			
29	1.0	2.4	3.0	1.3	-	20	7	4.6	30			
30	1.0	2.4	2.8	1.8	-----	22	6	3.4	0			
31	1.0	-----	2.8	2.6	-----	24	-----	3.0	-----			
Total	30.5	50.9	82.0	69.2	193.8	319.7	226.4	220.5	25,781.4	2,480	20,150	4,500
Mean	0.98	1.70	2.65	2.23	6.92	10.3	7.55	7.11	859	80	650	150
Ac-ft	60	101	163	137	384	634	449	437	51,140	4,920	39,970	8,930

Calendar year 1964: Max 520 Min 0.6 Mean 12.5 Ac-ft 9,100  
 Water year 1964-65: Max 10,000 Min 0 Mean 148 Ac-ft 107,300

\* Discharge measurement made on this day.

\*\* Field estimate made on this day.

Note.--No gage-height record Apr. 7, Apr. 20 to May 17, June 18 to Sept. 30.

## ARKANSAS RIVER BASIN

7-1095. Arkansas River near Avondale, Colo.

Location.--Lat 38°14'53", long 104°23'55", in NE¼SW¼ sec.1, T.21 S., R.63 W., on right bank 15 ft downstream from bridge on Sixmile Road, 0.3 mile upstream from Sixmile Creek, and 2.6 miles west of Avondale.

Drainage area.--6,327 sq mi.

Records available.--May 1939 to September 1951, February to September 1965.

Gage.--Water-stage recorder. Datum of gage is 4,509.53 ft above mean sea level, datum of 1929. Prior to February 1965 at site 550 ft downstream at datum 1.37 ft lower.

Average discharge.--12 years (1939-51), 892 cfs (645,800 acre-ft per year).

Extremes.--Maximum discharge during water year, about 50,000 cfs June 18 (gage height, 9.77 ft), from rating curve extended above 6,700 cfs on basis of records for station near Pueblo and indirect measurements of peak flow on Fountain Creek at Pueblo, Chico Creek near North Avondale, and Arkansas River near North Avondale; minimum daily during period February to September, 191 cfs Apr. 21, 1939-51, 1965: Maximum discharge, that of June 18, 1965; minimum daily, 50 cfs Apr. 2, 1940.

Remarks.--Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals, diversions for irrigation of about 123,000 acres and municipal use, and return flow from irrigated areas.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 30 to May 6, June 11-18,  
June 21 to Aug. 21, Sept. 13-22)

2.5	155	7.0	6,800
3.0	415	7.5	9,700
4.0	1,200	8.0	14,500
5.0	2,380	8.5	20,700
6.0	4,050	9.0	30,000
6.5	5,180		

Discharge, in cubic feet per second, February to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1					a373	385	*582	1,040	210	2,770	5,370	a1,710
2					a391	379	582	1,160	1,230	3,250	4,850	a1,640
3					a409	*361	650	*1,480	1,460	3,760	3,760	a1,570
4					*429	344	575	1,420	1,690	4,240	*3,230	a1,500
5					422	355	575	1,540	2,280	4,450	2,780	a1,430
6					415	361	545	1,550	1,680	4,240	2,500	a1,360
7					409	350	*485	1,420	*1,660	4,130	2,200	a1,290
8					429	373	450	1,250	1,600	4,030	1,850	a1,210
9					436	350	*443	1,160	1,840	3,920	1,680	*1,130
10					443	*338	429	1,080	3,750	*3,710	1,510	1,070
11					471	333	422	998	2,600	3,360	1,550	990
12					391	344	373	950	2,960	3,230	1,490	934
13					367	322	385	998	2,960	3,530	1,400	894
14					350	333	338	1,130	2,990	3,800	1,460	774
15					415	322	306	870	*4,080	3,350	1,790	734
16					464	306	280	750	*3,150	2,740	1,680	665
17					485	300	250	*672	6,640	2,470	1,580	628
18					471	311	220	658	13,500	2,300	2,670	590
19					471	300	250	710	*6,740	2,300	6,100	688
20					450	290	215	830	4,590	2,930	3,940	*1,110
21					436	295	191	886	4,870	2,530	5,510	2,270
22					450	322	205	1,120	4,200	2,320	23,200	2,310
23					450	338	245	1,430	3,780	2,200	9,640	1,990
24					436	450	280	1,920	4,160	*2,540	3,150	1,800
25					*391	464	333	1,880	4,050	3,690	3,120	1,610
26					385	457	798	1,790	3,800	3,040	2,500	1,370
27					397	522	1,150	1,680	3,290	3,120	a2,140	1,160
28					385	429	*1,160	1,420	2,760	3,200	a2,040	1,050
29					-	457	1,040	1,090	2,370	2,960	a1,950	966
30					-----	605	1,040	830	2,230	3,750	a1,860	902
31					-----	530	-----	806	-----	8,360	a1,750	-----
Total					11,821	11,626	14,797	36,518	108,820	106,220	110,250	37,345
Mean					422	375	493	1,178	3,627	3,426	3,556	1,245
Ac-ft					23,450	23,060	29,350	72,430	215,800	210,700	218,700	74,070

Calendar year 1964: Max - Min - Mean - Ac-ft -  
Water year 1964-65: Max 23,200 Min - Mean - Ac-ft -

\* Discharge measurement made on this day.  
a No gage-height record.

7-1110. Huerfano River at Manzanares Crossing, near Redwing, Colo.

Location.--Lat 37°43'40", long 105°21'00", in sec.5, T.27 S., R.71 W., on left bank at Manzanares Crossing, 500 ft downstream from private bridge, a quarter of a mile downstream from Manzanares Creek, and 3½ miles southwest of Redwing.

Drainage area.--73 sq mi.

Records available.--July 1923 to September 1965. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Altitude of gage is 8,270 ft (from topographic map). Prior to Sept. 8, 1934, at sites about 500 ft upstream at different datums. Sept. 8, 1934, to Mar. 15, 1937, at datum 1.36 ft higher, Mar. 16, 1937, to Sept. 30, 1945, at datum 0.86 ft higher, and Oct. 1, 1945, to Apr. 25, 1946, at datum 0.36 ft higher than present datum.

Average discharge.--42 years, 32.5 cfs (23,530 acre-ft per year).

Extremes.--Maximum discharge during year, 228 cfs June 18 (gage height, 1.65 ft), from rating curve extended above 150 cfs; minimum not determined.

1923-65: Maximum discharge, 10,200 cfs Aug. 2, 1951 (gage height, 8.14 ft), from rating curve extended above 270 cfs on basis of slope-area measurement of peak flow; minimum daily determined, 4 cfs Jan. 22, 1937.

Revisions.--The maximum discharge for the water year 1964 has been revised to 62 cfs May 27, 1964 (gage height, 1.09 ft), superseding figure previously published.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Discharge measurements generally made twice a month. Diversions above station for irrigation of about 1,800 acres.

Note.--Records for June to August 1957 are in error. Revised records for this period are on file in District Office and will be published in a later water supply paper.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.4	7.0	1.1	63
.6	16	1.3	106
.9	38	1.6	200

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	10	11				16	32	76	96	140	32
2	14	10	11				16	34	76	99	131	30
3	12	12	11				15	36	76	99	106	30
4	12	11	11				16	37	74	92	92	31
5	12	12			11		13	40	74	89	80	30
6	12	12		11			13	41	65	82	67	34
7	12	12					14	41	62	82	59	38
8	12	12					12	41	63	92	55	50
9	12	11					14	40	71	84	49	71
10	12	11				9.0	14	39	71	78	47	59
11	13	11					14	39	74	80	45	49
12	12	16					12	37	72	80	41	42
13	12	12					14	42	71	72	37	37
14	12	12					14	40	89	63	36	34
15	12	12			10		12	39	101	59	36	32
16	12	12					14	39	114	65	35	31
17	12	11	11	10			16	41	120	59	35	30
18	12	12					19	46	143	69	38	36
19	12	13				10	20	53	182	65	48	42
20	11	16					22	69	165	71	49	48
21	11	12					24	80	150	63	42	55
22	11	24				10	27	99	137	59	37	55
23	11	18				9.4	28	92	131	52	34	52
24	11	22				9.0	29	82	146	48	31	50
25	11	16			9.7	11	29	72	143	49	29	50
26	11	16				14	29	63	123	50	29	52
27	11	14		11		15	26	59	101	49	27	50
28	11	21				14	27	56	99	101	26	53
29	11	15				9.8	30	52	101	76	27	59
30	12	13				12	30	60	101	74	33	52
31	12					16		65		123	34	
Total	368	411	341	328	286.6	314.2	579	1,606	3,071	2,320	1,575	1,314
Mean	11.9	13.7	11.0	10.6	10.2	10.1	19.3	51.8	102	74.8	50.8	43.8
Ac-ft	730	815	676	651	568	623	1,150	3,190	6,090	4,600	3,120	2,610

Calendar year 1964: Max 49 Min 4.6 Mean 14.2 Ac-ft 10,320  
 Water year 1964-65: Max 182 Min - Mean 14.3 Ac-ft 24,820

Peak discharge (base, 200 cfs).--June 18 (2245) 228 cfs (1.65 ft).

Note.--No gage-height record Dec. 5 to Mar. 21 (stage-discharge relation affected by ice during most of period), Sept. 18-20.

## ARKANSAS RIVER BASIN

7-1140. Cucharas River at Boyd Ranch, near La Veta, Colo.

Location.--Lat 37°27'12", long 105°03'08", in SE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.24, T.30 S., R.69 W., on left bank at Boyd Ranch, 29 ft downstream from private bridge, 1.4 miles downstream from Chaparral Creek, and 6.5 miles southwest of La Veta.

Drainage area.--56 sq mi.

Records available.--October 1934 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,781 ft (from topographic map).

Average discharge.--31 years, 24.5 cfs (17,740 acre-ft per year).

Extremes.--Maximum discharge during year, 122 cfs June 18 (gage height, 2.27 ft); minimum daily, 3.9 cfs Mar. 5.

1934-65: Maximum discharge, 444 cfs May 23, 1955 (gage height, 4.05 ft); minimum daily, 2 cfs for several days November 1934 to January 1935, Sept. 29, 1950.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Discharge measurements generally made twice a month. Diversions for irrigation of about 500 acres above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 5-22, Aug. 2-8)

1.0	4.0	1.7	44
1.2	10	2.1	89
1.4	20	2.5	139

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.			
1	5.8	6.1			6.6	5.2	13	25	47	55	48	13			
2	6.1	6.4					14	29	49	53	46	14			
3	5.8	6.7					14	28	50	50	43	13			
4	6.1	7.0					12	30	50	48	43	13			
5	6.7	6.7					3.9	10	30	57	45	43	14		
6	6.7	6.4		7.6		4.3	10	29	50	42	40	14			
7	6.7	6.1					11	29	49	47	38	16			
8	6.7	6.4					10	29	48	45	33	18			
9	7.0	6.4					12	26	52	41	32	15			
10	7.0	6.1					12	27	55	39	30	15			
11	7.4	5.8				4.6	10	26	58	39	28	15			
12	7.0	7.0					12	25	56	37	25	15			
13	7.4	9.4					11	31	56	37	25	13			
14	7.0	7.7					11	34	58	39	25	12			
15	7.0	6.7					10	35	66	32	25	11			
16	7.0	7.7			7.3	6.1	12	33	83	31	25	11			
17	7.0	7.0					14	35	90	29	24	14			
18	7.0	6.4					16	42	97	28	25	14			
19	7.0	6.4					16	43	107	27	28	13			
20	7.4						19	47	102	25	23	16			
21	7.4					6.1	21	48	94	25	21	14			
22	7.4						21	55	87	25	18	13			
23	7.4						5.5	22	64	78	25	18	12		
24	7.4						8.0	23	63	75	25	18	11		
25	6.7						9.0	21	55	76	23	17	11		
26	7.0	7.2	7.6		6.6		10	26	48	67	25	17	11		
27	6.7						12	16	41	62	27	16	11		
28	6.1						13	16	40	58	25	16	11		
29	6.1							-	9.4	18	40	54	24	16	12
30	6.1								11	20	42	57	27	16	12
31	6.1	-----	-----	-----	-----	14	-----	43	-----	40	15	-----			
Total	210.2	206.0	249.6	243.2	201.7	206.5	453	1,172	1,988	1,080	837	397			
Mean	6.78	6.87	8.05	7.85	7.2	6.66	15.1	37.8	66.3	34.8	27.0	13.2			
Ac-ft	417	409	495	482	400	410	899	2,320	3,940	2,140	1,660	787			

Calendar year 1964: Max 72 Min - Mean 14.6 Ac-ft 10,610

Water year 1964-65: Max 107 Min 3.9 Mean 19.8 Ac-ft 14,360

Peak discharge (base, 150 cfs).--No peak above base.

Note.--No gage-height record Nov. 19 to Mar. 21, Mar. 25-27 (stage-discharge relation affected by ice during most of period).

7-1160. Huerfano River below Huerfano Valley Dam, near Undercliffe, Colo.

Location.--Lat 38°00', long 104°28', in S½ sec.32, T.23 S., R.63 W., at left end of diversion dam for Huerfano Valley ditch, 8 miles southwest of Undercliffe.

Drainage area.--1,673 sq mi.

Records available.--October 1939 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 4,886.29 ft above mean sea level, datum of 1929. Prior to July 26, 1950, at site 0.3 mile downstream at datum 14.27 ft lower and July 26, 1950, to Dec. 15, 1954, at site 0.3 mile downstream at datum 16.27 ft lower.

Average discharge.--26 years, 36.3 cfs (26,280 acre-ft per year).

Extremes.--Maximum discharge during year, 4,380 cfs July 30 (gage height, 6.17 ft), from rating curve extended above 380 cfs as explained below; no flow for many days.

1939-65: Maximum discharge, 16,800 cfs July 5, 1958 (gage height, 14.5 ft), from rating curve extended above 380 cfs on basis of computation of flow over dam at gage heights 11.04 and 14.5 ft; no flow at times in nearly every year.

Maximum stage and discharge known since at least 1900, that of July 5, 1958, from information by local residents.

Remarks.--Records poor. Diversions above station for irrigation of about 43,000 acres.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1					*0	1.3	8.1	0	0	8	2.3	2.4
2					0	*0	18	0	0	1	10	1.9
3		(*)			0	0	18	0	0	0	20	1.3
4				(*)	0	3.2	10	*1.2	0	8.2	*2.3	.8
5	(*)				0	4.4	8.1	.1	.6	11	1.0	.8
6					0	6.9	2.4	0	16	3	.5	1.3
7			(*)		0	11	*0	0	10	3.6	0	.5
8					0	9.4	0	0	*1.1	1.2	0	.7
9					0	4.1	0	0	.7	*.7	0	*.6
10					0	.1	0	0	.4	.1	0	.6
11					0	0	0	0	3.2	0	0	3.0
12					0	.2	0	0	1.7	0	0	6.9
13					0	6.4	0	0	130	0	0	4.0
14					0	3.2	0	0	2.7	0	0	0
15					0	.1	0	0	0	0	0	0
16		(*)			0	0	0	0	66	0	0	0
17					0	0	0	0	63	0	3	0
18					0	0	0	*0	3	0	3.5	0
19				(*)	0	0	0	0	3	0	13	0
20					0	.9	0	0	3	0	4.7	0
21					0	6.6	0	0	5.9	0	94	*21
22					0	8.7	0	0	0	0	374	4.8
23					0	.4	0	0	0	51	26	12
24					0	0	0	0	3.3	*7.2	25	8.1
25					0	0	0	0	20	11	18	6.9
26					8.0	6.6	10	0	20	3	*13	6.6
27					8.7	31	40	.4	33	1	7.2	6.9
28					6.2	4.7	7	1.2	5	14	5.4	6.9
29					-	27	1	.6	5	5	2.5	11
30					-	15	0	0	12	409	4.3	13
31					-	11	-	0	-	227	3.8	-
Total	0	0	0	0	22.9	204.5	122.6	3.5	408.6	765.0	633.5	149.0
Mean	0	0	0	0	0.82	6.60	4.09	0.11	13.6	24.7	20.4	4.97
Ac-ft	0	0	0	0	45	406	243	6.9	810	1,520	1,260	296

Calendar year 1964: Max 118 Min 0 Mean 1.96 Ac-ft 1,420

Water year 1964-65: Max 409 Min 0 Mean 6.33 Ac-ft 4,590

Peak discharge (base, 3,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-13	2210	5.18	3,220	8-22	1930	5.65	3,760
7-30	1900	6.17	4,380				

\* Discharge measurement or observation of no flow made on this day.

Note.--Discharge estimated Apr. 27 to May 3, June 7, 9, 14-16, 18-20, June 24 to July 8, July 25-30, Aug. 2-18, 20-24, Sept. 21.

## ARKANSAS RIVER BASIN

7-1170. Arkansas River near Nepesta, Colo.

Location.--Lat 38°10'54", long 104°09'40", in NW¼ sec.31, T.21 S., R.60 W., on right bank 185 ft downstream from diversion dam of Oxford Farmers Co. canal, 1.3 miles northwest of Nepesta, and 7.3 miles downstream from Huerfano River.

Drainage area.--9,345 sq mi, of which 54 sq mi is probably noncontributing.

Records available.--April to October 1903, April to November 1912, October 1913 to September 1965. Monthly discharge only for some periods, published in WSP 1311. Records originally published for October 1933 to June 1936 did not include diversion to Oxford Farmers Co. canal, but monthly figures only for this period have been adjusted for diversion and published in WSP 1311.

Records for river below Oxford Farmers Co. canal (diversion to canal not included), published as "at Nepesta," September 1897 to October 1902 (irrigation seasons only), April to October 1904, June 1906 to September 1908 (irrigation seasons only), September 1909 to December 1910, February to September 1911 (gage heights and discharge measurements only), October 1911 to November 1912, March to August 1913 (discharge measurements only), October 1913 to September 1936. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorders on river and on Oxford Farmers Co. canal. Datum of river gage is 4,378.68 ft above mean sea level, datum of 1929. Prior to June 5, 1921, staff gages or water-stage recorders at various sites within 5 miles upstream and 2 miles downstream at different datums. June 5, 1921, to Oct. 1, 1952, water-stage recorders at sites on river or river and canal within 300 ft at approximately present datum.

Average discharge.--52 years (1913-65), 694 cfs (502,400 acre-ft per year).

Extremes.--Maximum discharge during year, 43,100 cfs June 18 (gage height, 9.80 ft, from floodmarks), from rating curve extended above 8,600 cfs on basis of contracted-opening and flow-over-road measurement of peak flow; minimum daily, 67 cfs Oct. 5.

1897-1904, 1906-12, 1913-65: Maximum discharge, 180,000 cfs June 4, 1921 (gage height not determined), by slope-area measurement of peak flow at point 9 miles upstream; no flow at times in 1902, 1910, 1931, 1934.

Remarks.--Records fair except those for periods of no gage-height record on river, which are poor. Discharge measurements generally made three or more times a month. Discharge computed by combining discharge of river below canal with that of Oxford Farmers Co. canal. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation of about 230,000 acres, and return flow from irrigated areas. Records of chemical analyses for the water year 1965 are published in Part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	131	131	368	255	292	304	431	617	764	2,050	4,670	887
2	108	186	340	297	311	286	432	683	1,040	2,840	4,670	827
3	86	217	313	338	303	242	482	884	1,220	3,880	3,570	766
4	75	223	325	274	284	207	491	865	1,260	5,700	3,200	758
5	67	210	314	290	291	222	459	915	1,860	4,140	2,710	795
6	83	159	255	329	286	232	428	978	1,520	4,110	2,320	872
7	98	125	240	357	280	255	394	932	1,560	3,660	1,910	807
8	104	128	269	363	279	272	401	786	1,440	3,720	1,520	836
9	124	148	267	346	283	293	395	696	1,630	3,850	1,350	875
10	122	154	261	310	283	276	335	576	1,490	3,310	1,040	766
11	114	140	271	324	258	293	342	474	1,940	2,690	940	715
12	129	146	245	359	256	286	336	444	1,990	2,530	991	701
13	151	150	233	354	257	292	322	481	2,130	2,930	1,120	707
14	190	143	363	368	257	278	282	675	2,410	3,760	1,140	596
15	170	148	369	357	257	322	229	518	2,640	3,070	1,280	569
16	125	185	360	318	358	344	192	636	2,060	2,060	1,460	518
17	102	257	350	287	361	319	165	495	4,570	1,650	1,030	533
18	109	312	340	277	359	224	142	455	18,700	1,430	1,150	524
19	121	354	340	270	453	260	146	522	11,900	1,350	10,100	586
20	145	393	330	246	394	228	168	713	5,200	2,460	3,340	996
21	139	343	330	270	387	231	152	772	6,270	1,600	2,860	1,200
22	136	308	391	285	393	219	153	1,050	4,530	1,440	2,840	830
23	146	303	370	258	414	226	170	1,130	3,660	1,080	3,210	680
24	158	322	372	203	353	360	203	1,550	4,460	2,400	2,220	672
25	152	314	432	177	372	404	258	1,510	3,790	3,440	1,500	732
26	158	326	374	243	341	393	492	1,630	3,430	2,520	1,140	538
27	174	346	291	226	325	415	754	1,570	2,950	2,470	940	487
28	156	360	302	220	338	323	764	1,330	2,430	2,960	769	580
29	157	323	313	254	-	283	508	1,060	1,980	3,070	674	742
30	148	320	312	268	-	486	568	755	1,460	2,580	647	824
31	154	-----	313	272	-----	428	-----	672	-----	4,530	667	-----
Total	4,032	7,174	9,953	8,995	9,025	9,203	10,594	26,374	102,284	89,280	66,978	21,919
Mean	130	239	321	290	322	297	353	851	3,409	2,880	2,161	731
Ac-ft	8,000	14,230	19,740	17,840	17,900	18,250	21,010	52,310	202,900	177,100	132,800	43,480

Calendar year 1964: Max 2,260 Min 55 Mean 427 Ac-ft 310,200  
 Water year 1964-65: Max 18,700 Min 67 Mean 1,002 Ac-ft 725,600

Note.--No gage-height record on river Oct. 5, 6, Dec. 17-21, Feb. 12-18, 24, 25 (stage-discharge relation affected by ice during part of periods), June 18 and on canal Dec. 16-21, June 18. Discharge on canal computed from twice-daily staff-gage readings June 18 to Sept. 30.



7-1195. Apishapa River near Fowler, Colo.

Location.--Lat 38°05'28", long 103°58'52", in SE 1/4 sec. 35, T. 22 S., R. 59 W., near right bank on downstream side of county highway bridge, 4 miles southeast of Fowler and 5.4 miles upstream from mouth.

Drainage area.--1,125 sq mi.

Records available.--April 1922 to September 1925, May 1939 to September 1965. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 4,317.05 ft above mean sea level, datum of 1929. Prior to Aug. 29, 1923, at site 3 miles downstream at different datum. Aug. 29, 1923, to Sept. 30, 1925, at present site at different datum.

Average discharge.--29 years, 34.9 cfs (25,270 acre-ft per year).

Extremes.--Maximum discharge during year, 11,400 cfs June 17 (gage height, 16.45 ft), from rating curve extended above 270 cfs on basis of slope-area measurement of peak flow at gage height 8.48 ft and contracted-opening measurement at site 2 miles downstream; minimum daily, 0.5 cfs Feb. 12.

1922-25, 1939-65: Maximum discharge, 83,000 cfs Aug. 22, 1923, by slope-area measurement 2 miles upstream from present station, caused by failure of Apishapa Dam 31 miles upstream; no flow Feb. 5, 1951.

Remarks.--Records fair except those above 500 cfs and those for periods of ice effect or no gage-height record, which are poor. Waste water from Oxford Farmers Co. and Rocky Ford Highline canals enters river above station. Diversions above station for irrigation of about 4,700 acres. Records of chemical analyses for the water year 1965 are published in Part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.8	2.0	4.1	22	* 20	8.1	5.0	1.3	5	886	277	25
2	.7	5.3	4.1	22	21	8.5	3.2	1.3	5	187	90	27
3	.7	* 8.1	5.0	25	21	* 11	3.2	* 1.2	5	259	* 75	27
4	.7	6.8	7.6	* 17	17	7.6	2.6	1.5	5	69	117	24
5	* .8	2.3	7.6	23	12	1.6	2.9	1.3	74	372	126	8.1
6	.9	3.2	6.8	18	11	7.6	3.8	1.2	57	16	105	8.1
7	.8	8.5	* 5.0	20	16	4.4	* 2.9	1.2	* 8.5	14	77	12
8	.8	4.7	b 5	22	15	2.0	2.9	1.0	7.6	21	55	15
9	.8	2.9	b 5	18	8.9	2.0	3.5	.9	13	15	37	9.7
10	1.3	1.8	4	18	b 8	.8	3.5	1.0	82	* 10	22	* 9.7
11	1.2	5.6	4	18	2	.6	2.0	1.3	41	11	21	15
12	1.0	7.6	b 3	13	5	1.2	2.1	1.6	49	8.6	15	42
13	.9	3.5	3	13	1	1.2	1.6	1.3	39	15	14	15
14	.9	2.1	2	15	3	1.2	1.3	1.2	580	1,000	14	7.6
15	.9	5.0	1.5	7.2	4	1.2	1.3	1.3	168	9.0	15	5.0
16	.9	* 5.0	2	6.8	4	2.0	1.0	1.3	* 470	23	19	6.8
17	.8	5.0	3	7.2	5	4.1	1.0	* 1.2	* 5100	36	16	15
18	1.0	4.7	4	6.0	6	7	1.0	1.2	140	15	19	21
19	1.0	5.0	5	* 3.2	8	5	* 1.3	1.6	37	16	233	6.8
20	1.0	9.7	6	2.9	14	b 1	1.2	1.5	37	9.0	237	* 19
21	1.2	8.5	7	2.9	13	1.5	1.2	1.2	21	153	250	23
22	1.2	6.0	6.8	6.0	9.7	10	1.2	1.0	54	8.1	175	24
23	* 1.8	7.2	3.2	24	b 13	b 15	1.3	1.6	73	8.1	220	30
24	1.5	9.7	5.0	33	10	b 15	1.8	1.86	117	* 1,350	175	33
25	2.0	8.5	6.8	35	7	b 16	1.3	11	100	12	102	36
26	2.0	8.5	9.7	24	9	b 15	1.6	10	100	4.0	* 47	43
27	1.2	9.7	15	19	10	b 4	1.5	20	77	24	15	43
28	1.0	9.7	14	20	9	b 5	1.3	10	54	559	27	34
29	1.0	6.8	14	15	-	b 5	1.3	8	34	54	47	37
30	1.0	5.6	16	8.1	-	4.4	1.3	6	20	42	48	27
31	1.0	-	19	9.3	-	6.0	-	5	-	199	33	-
Total	32.8	179.0	204.2	493.6	278.1	175.0	61.1	285.2	7573.1	5,404.8	2,723	648.8
Mean	1.06	5.97	6.59	15.9	9.93	5.65	2.04	9.20	252	174	87.8	21.6
Ac-ft	65	355	405	979	552	347	121	566	15,020	10,720	5,400	1,290

Calendar year 1964: Max 359 Min 0.6 Mean 5.39 Ac-ft 3,910  
 Water year 1964-65: Max 5,100 Min 0.5 Mean 49.5 Ac-ft 35,820

Peak discharge (base, 3,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-17	0230	16.45	11,400	7-14	0200	6.82	3,720
7-1	0600	6.36	3,330	7-24	0230	6.86	3,760

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 9-11, 13-21, Dec. 30 to Jan. 1, Feb. 11-19, 24-28, Mar. 18, 19 (stage-discharge relation affected by ice during most of periods), May 25 to June 4, June 27-30, July 4, 6-9, 22, 23, Aug. 5-9.

## ARKANSAS RIVER BASIN

7-1197. Arkansas River at Catlin Dam, near Fowler, Colo.

Location.--Lat 38°07'35", long 103°56'40", in NE1/4 sec.19, T.22 S., R.58 W., on right bank at diversion dam for Catlin Canal, 1,470 ft downstream from Apishapa River and 4 miles east of Fowler.

Drainage area.--10,901 sq mi.

Records available.--October 1964 to September 1965.

Gage.--Water-stage recorders on river and on Catlin Canal. Datum of river gage is 4,270.00 ft above mean sea level, datum of 1929, supplementary adjustment of 1960.

Extremes.--Maximum discharge during year, 43,200 cfs June 18 (gage height, 7.95 ft), from rating curve extended above 13,000 cfs on basis of flow-over-dam computation of peak flow; minimum daily, 67 cfs Dec. 8.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Discharge computed by combining discharge of river below canal with that of Catlin Canal. Natural flow of stream affected by transmountain diversions, storage reservoirs, ground-water withdrawals, diversions for irrigation, and return flow from irrigated areas.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	107	135	266	260	263	293	*409	487	744	2,670	5,000	960
2	107	135	297	231	314	273	426	520	1,060	2,490	4,930	943
3	100	*203	287	282	306	*262	422	*645	1,230	3,810	*3,840	734
4	85	195	298	*243	*286	256	450	731	1,330	3,840	3,060	733
5	*80	226	311	248	280	225	389	777	1,800	6,390	2,140	824
6	85	222	236	246	277	230	402	886	1,640	4,190	1,890	940
7	90	172	*115	258	265	236	*402	810	*1,800	3,640	1,880	749
8	90	140	67	274	276	223	381	673	1,460	3,570	1,420	780
9	100	105	110	267	290	257	404	598	1,730	3,430	1,310	845
10	110	93	89	266	290	262	400	502	1,750	3,060	929	*751
11	110	92	105	247	360	261	337	413	1,900	2,760	729	694
12	105	106	116	255	337	269	311	448	2,350	2,420	700	876
13	115	112	136	262	256	280	306	442	2,000	2,290	768	711
14	144	119	260	285	276	272	302	474	2,680	3,850	742	528
15	142	127	220	270	246	257	262	565	2,250	2,650	990	484
16	131	*136	198	271	239	297	197	485	2,320	1,880	975	450
17	116	164	166	263	235	270	180	*505	10,100	1,520	919	439
18	104	192	250	253	164	289	162	460	*18,300	1,370	1,080	478
19	126	244	350	*272	180	270	*141	437	11,300	1,130	10,200	516
20	129	246	430	261	243	254	146	542	4,940	1,510	5,250	*755
21	141	238	570	265	210	212	149	614	4,620	1,560	3,690	1,080
22	137	219	480	293	222	215	135	735	3,910	1,160	13,200	845
23	*136	208	268	305	320	207	129	1,210	3,060	911	10,900	655
24	142	230	256	308	*198	259	145	2,020	3,020	3,100	3,910	654
25	145	246	322	268	190	368	179	1,620	3,650	2,680	2,430	752
26	141	240	350	282	302	425	263	1,720	3,570	2,160	1,750	583
27	144	251	300	267	309	399	524	1,570	2,820	2,030	1,310	514
28	148	263	257	243	304	381	692	1,410	2,120	*3,540	1,020	553
29	*137	245	241	255	-	289	501	1,110	1,590	2,380	956	791
30	137	238	239	257	-----	355	434	806	1,320	2,000	831	869
31	135	-----	304	265	-----	438	-----	696	-----	8,370	737	-----
Total	3,719	5,542	7,894	8,222	7,438	8,784	9,580	24,911	102,364	88,361	89,486	21,486
Mean	120	185	255	265	266	283	319	804	3,412	2,850	2,887	716
Ac-ft	7,380	10,990	15,660	16,310	14,750	17,420	19,000	49,410	203,000	175,300	177,500	42,620

Calendar year 1964: Max - Min - Mean - Ac-ft -  
 Water year 1964-65: Max 18,300 Min 67 Mean 1,035 Ac-ft 749,300

\* Discharge measurement made on this day.

Note.--No gage-height record on river May 24 to June 6 and on canal Oct. 1-15, Dec. 7-22, Dec. 30 to Jan. 3, Feb. 12-16, Aug. 18-25. Stage-discharge relation affected by ice on river Dec. 6-22.

7-1230. Arkansas River at La Junta, Colo.

**Location.**--Lat 37°59', long 103°32', in NE¼ sec.2, T.24 S., R.55 W., on downstream side near middle of bridge on State Highway 109 in La Junta, 500 ft upstream from King Arroyo.

**Drainage area.**--12,210 sq mi, of which 115 sq mi is probably noncontributing.

**Records available.**--May to August 1889, September 1893 to December 1895 (gage heights, discharge measurements, and flood data only), April to October 1903, June to November 1908 (gage heights and discharge measurements only), April 1912 to September 1965. Monthly discharge only for some periods, published in WSP 1311. Published as "near La Junta" in 1903.

**Gage.**--Water-stage recorder, and chain gage read twice daily. Datum of gage is 4,039.60 ft above mean sea level, datum of 1929. Prior to Apr. 11, 1912, staff gages at several sites within 2 miles at various datums. Apr. 11, 1912, to June 12, 1940, water-stage recorder and staff or chain gages at several sites within 1 mile at various datums.

**Average discharge.**--53 years (1912-65), 260 cfs (188,200 acre-ft per year).

**Extremes.**--Maximum discharge during year, 31,700 cfs June 19 (gage height, 12.90 ft), from rating curve extended above 15,000 cfs on basis of contracted-opening measurement of peak flow; minimum daily, 0.6 cfs Dec. 16, 17, 19.

1889, 1893-95, 1903, 1908, 1912-65: Maximum discharge, 200,000 cfs June 4, 1921 (gage height, 18.4 ft, at present site, datum then in use), from rating curve extended above 15,000 cfs on basis of slope-area measurement of peak flow; no flow Jan. 20-23, Mar. 20-22, 1915.

**Remarks.**--Records fair except those for December to March, which are poor. Discharge measurements generally made two to five times a month. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation of about 400,000 acres, and return flow from irrigated areas. Records of chemical analyses for the water year 1965 are published in Part 2 of this report.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Jan. 15-21, Apr. 23-28, Mar. 14, 15, May 30 to June 14, June 21 to July 4,  
Aug. 5-18, Aug. 24 to Sept. 1, Sept. 16-25)  
(Stage-discharge relation affected by ice Feb. 17, 18)

Oct. 1 to June 14 (1500)

June 14 (1500) to Sept. 30

3.5	0	3.9	32	4.5	290	3.3	24	4.5	430	7.0	3,700
3.6	3.0	4.0	50	4.9	590	3.4	35	5.0	780	8.0	6,820
3.7	10	4.1	79	5.2	880	3.6	68	6.0	1,800	9.0	10,600
3.8	19	4.2	116			3.8	115	6.5	2,600	11.0	20,300
						4.1	210				

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	50	22	50	43	15	20	64	28	384	1,570	4,130	a115
2	56	22	53	29	93	23	182	112	260	169	3,120	121
3	59	22	67	26	15	20	182	121	406	1,660	1,800	110
4	56	23	64	22	18	16	154	338	563	1,660	1,190	102
5	53	23	56	18	20	8.6	230	399	843	2,370	623	105
6	56	26	64	20	27	12	165	484	599	1,230	299	127
7	56	26	59	29	43	19	138	527	572	665	68	100
8	53	23	37	39	56	29	109	484	436	609	142	102
9	64	22	19	32	50	34	45	371	545	478	98	105
10	59	22	93	26	67	34	98	272	690	232	92	95
11	62	22	3.7	a30	73	39	73	182	653	172	81	86
12	62	23	1.3	a34	53	36	48	109	1,100	112	98	88
13	50	24	5.8	37	53	41	22	148	671	108	90	92
14	43	23	10	29	36	43	14	79	3,140	3,450	90	88
15	45	23	5.1	15	14	39	31	148	a255	206	110	70
16	53	23	.6	14	29	28	22	242	1,310	588	100	241
17	56	23	.6	19	20	36	15	194	18,400	192	100	157
18	46	32	.9	22	13	83	23	109	11,100	59	100	151
19	41	56	.6	15	7.2	20	28	46	20,000	50	9,060	145
20	43	76	1.2	13	17	19	41	22	6,650	59	6,820	130
21	39	90	1.8	11	16	10	46	94	3,980	130	3,580	186
22	39	83	2.7	19	22	7.9	41	218	4,580	160	10,200	166
23	39	83	7.2	37	50	18	36	545	2,250	100	16,600	90
24	37	62	2.7	45	62	22	36	856	2,090	1,940	6,080	79
25	34	62	2.4	36	20	20	34	420	1,800	145	2,760	118
26	29	79	2.1	26	5.8	11	39	428	1,670	282	1,670	57
27	27	76	20	14	14	6.5	45	563	1,040	1,220	1,430	42
28	28	83	43	93	18	18	138	554	560	1,800	a693	34
29	31	73	59	14	-	24	212	626	424	855	a250	41
30	28	70	62	15	-	26	70	545	424	466	a150	44
31	23	-----	53	20	-----	37	-----	460	-----	6,910	a100	-----
Total	1,417	1,317	764.0	758.3	843.3	800.0	2,381	9,724	87,395	29,647	71,724	3,187
Mean	45.7	43.9	24.6	24.5	30.1	25.8	79.4	314	2,913	956	2,314	106
Ac-ft	2,810	2,610	1,520	1,500	1,670	1,590	4,720	19,290	173,300	58,800	142,300	6,320

Calendar year 1964: Max 1,020 Min 0.6 Mean 79.6 Ac-ft 57,760  
Water year 1964-65: Max 20,000 Min 0.6 Mean 575 Ac-ft 416,400

a No gage-height record.

## 7-1240. Arkansas River at Las Animas, Colo.

Location.--Lat 38°05'08", long 103°12'50", in SW¼ sec.35, T.22 S., R.52 W., on left bank 0.4 mile downstream from bridge on U. S. Highway 50, 1.5 miles north of courthouse in Las Animas, and 3½ miles upstream from Purgatoire River.

Drainage area.--14,417 sq mi, of which 441 sq mi is probably noncontributing.

Records available.--May to November 1898 (gage heights only), August to November 1909 (gage heights and discharge measurements only), May 1939 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 3,874.97 ft above mean sea level, datum of 1929. May 13 to Nov. 12, 1898, and Aug. 1 to Nov. 10, 1909, staff gage within half a mile of present site at different datum.

Average discharge.--26 years, 232 cfs (168,000 acre-ft per year).

Extremes.--Maximum discharge during year, 22,100 cfs June 19 (gage height, 14.72 ft), from rating curve extended above 13,000 cfs on basis of contracted-opening measurement of peak flow; minimum daily, 1.5 cfs May 2.

1939-65: Maximum discharge, 44,000 cfs May 20, 1955 (gage height, 15.03 ft), from rating curve extended above 24,000 cfs on basis of slope-area measurement of peak flow; minimum daily, 0.9 cfs July 31, Aug. 1, 3, 1964.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Discharge measurements generally made once a week. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation of about 412,000 acres, and return flow from irrigated areas. Records of chemical analysis for the water year 1965 are published in Part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	4.0	10	28	10	11	13	14	262	806	6,630	272
2	10	5.0	6.0	24	6.0	10	26	1.5	199	925	3,080	199
3	14	5.0	6.0	18	14	11	105	30	204	1,980	2,320	222
4	18	5.0	8.0	12	19	8.0	105	35	415	1,710	1,450	190
5	19	4.0	8.0	13	20	11	123	166	474	1,910	875	151
6	20	4.0	8.0	8.0	19	9.0	72	186	584	1,830	440	133
7	22	4.0	6.0	6.0	11	10	28	235	441	1,070	376	121
8	18	6.0	7.0	6.0	10	10	40	258	350	712	300	90
9	16	5.0	8.0	6.0	10	8.0	26	276	345	712	226	86
10	24	4.0	16	6.0	4.0	8.0	12	199	496	367	163	88
11	25	4.0	12	6.0	24	8.0	12	127	446	218	109	84
12	24	4.0	8.0	5.0	3.0	9.0	6.0	138	512	140	78	86
13	24	5.0	6.0	7.0	b9.0	9.0	8.0	86	529	115	70	78
14	22	5.0	5.0	10	b19	7.0	6.0	63	1,720	1,010	68	84
15	24	5.0	6.0	10	b6.0	7.0	6.0	28	595	806	54	88
16	22	7.0	4.0	14	b86	6.0	6.0	96	758	410	40	107
17	19	7.0	4.0	12	b80	8.0	6.0	86	4,990	559	32	157
18	20	8.0	6.0	13	b89	3.0	7.0	89	12,200	137	30	78
19	19	7.0	9.0	13	b52	10	7.0	52	15,100	82	2,500	98
20	10	5.0	7.0	9.0	b18	10	7.0	16	8,360	61	8,140	115
21	8.0	5.0	8.0	9.0	14	10	11	7.0	3,240	50	2,790	74
22	7.0	5.0	8.0	8.0	18	9.0	24	35	2,900	50	3,020	68
23	8.0	5.0	6.0	4.0	14	13	16	127	1,880	53	11,000	109
24	9.0	6.0	6.0	3.0	b19	24	7.0	430	1,780	1,280	8,310	78
25	10	7.0	6.0	9.0	b30	10	7.0	365	1,690	768	2,160	62
26	8.0	8.0	6.0	10	b42	13	8.0	186	1,740	470	1,450	76
27	5.0	8.0	6.0	19	12	12	8.0	425	1,300	1,300	1,120	76
28	4.0	2.0	11	14	9.0	9.0	13	474	825	1,530	702	60
29	4.0	6.0	11	7.0	-	7.0	77	405	395	1,580	409	49
30	5.0	5.0	11	7.0	-----	6.0	69	375	218	559	540	49
31	5.0	-----	20	6.0	-----	11	-----	390	-----	2,240	438	-----
Total	453.0	167.0	249.0	322.0	699.4	297.0	861.0	5,400.5	64,948	25,440	58,920	3,228
Mean	14.6	5.7	8.03	10.4	25.0	9.58	28.7	174	2,165	821	1,901	108
Ac-ft	899	331	494	639	1,390	589	1,710	10,710	128,800	50,460	116,900	6,400

Calendar year 1964: Max 740 Min 0.9 Mean 38.3 Ac-ft 27,810

Water year 1964-65: Max 15,100 Min 1.5 Mean 441 Ac-ft 319,300

b Stage-discharge relation affected by ice.

7-1245. Purgatoire River at Trinidad, Colo.

Note.--Records for the 1965 water year are being withheld pending further study of base data. They will be published in a subsequent annual report.

## ARKANSAS RIVER BASIN

7-1250. Purgatoire River near Hoehne, Colo.

Location.--Lat 37°14'50", long 104°23'50", in sec.13, T.32 S., R.63 W., on left bank 5 ft downstream from bridge on county road, 40 ft upstream from diversion dam for Hoehne ditch, 2½ miles southwest of Hoehne, and 8 miles northeast of city hall in Trinidad.

Drainage area.--857 sq mi.

Records available.--September 1954 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 5,740.99 ft above mean sea level, datum of 1929.

Average discharge.--11 years, 28.7 cfs (20,780 acre-ft per year).

Extremes.--Maximum discharge during year, 20,000 cfs June 16 (gage height, 11.65 ft), from rating curve extended above 1,100 cfs on basis of contracted-opening measurement of peak flow at U. S. Highway 350, 5½ miles downstream; no flow for many days.

1954-65: Maximum discharge, 35,000 cfs May 19, 1955 (gage height, 13.97 ft), from rating curve extended above 180 cfs by logarithmic plotting on basis of flow-over-dam computations at gage heights, 3.2, 4.5, and 7.34 ft; no flow for many days in each year.

Greatest flood known since at least 1859 occurred Sept. 30, 1904.

Remarks.--Records poor. Flow partly regulated by off-stream reservoirs and a flood control dam on unnamed creek in Pinon Canyon.

Diversions above station for irrigation of about 10,500 acres. Diversion by Hoehne ditch 40 ft below gage is not included in these records.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		0	0			(*)	0	0	13	70	11	0.4
2		0	0		(*)		0	.4	14	20	7.7	.6
3		0	0				0	.4	15	15	190	1.6
4		*0	0				0	.7	30	10	182	1.3
5		0	0	(*)			0	*.5	50	8.3	*172	.8
6		0	0				0	.2	40	6.1	123	2.2
7		0	0				*0	.5	35	281	120	1.6
8	(*)	0	*.2				0	1.5	35	150	107	*.46
9		0	0				0	2.5	*47	*76	134	2.7
10		0	0				0	2.7	23	19	77	.3
11		0	0				0	2.5	*14	15	36	25
12		.4	0				0	.3	30	13	18	2.7
13		0	0				0	1.6	19	11	9.7	2.2
14		0	0				0	6.2	15	69	6.0	2.2
15		0	0				0	7.1	*18	93	8.9	2.8
16		0	0				0	4.7	2,440	3.0	15	3.0
17		*0	0				0	2.3	*3,310	.5	102	6.4
18		0	0				0	0	1,310	51	1,040	5.2
19		0	0				0	*11	873	270	1,270	2.8
20		0	0				*0	14	700	51	350	1.6
21		0	0				0	30	330	2.4	300	*1.0
22		0	0	(*)			0	5.3	230	.5	290	1.0
23		0	0				0	437	330	*5	100	1.8
24		0	0				0	836	240	182	70	2.2
25		0	0				0	94	480	72	*70	2.5
26		0	0				.2	40	100	5.7	72	3.4
27		0	0				.6	20	20	46	133	4.2
28		0	0				.6	15	12	3.5	121	3.4
29		0	0				0	10	10	.7	134	4.2
30		0	0				.5	10	372	.7	16	3.8
31		-----	0		-----		-----	12	-----	.2	2.9	-----
Total	0	0.4	0.2	0	0	0	1.9	1,568.4	11,155	1,546.1	5,288.2	138.9
Mean	0	0.01	0.006	0	0	0	0.06	50.6	372	49.9	171	4.63
Ac-ft	0	0.8	0.4	0	0	0	3.8	3,110	22,130	3,070	10,490	276

Calendar year 1964: Max 1,540 Min 0 Mean 9.40 Ac-ft 6,830

Water year 1964-65: Max 3,310 Min 0 Mean 54.0 Ac-ft 39,080

Peak discharge (base, 2,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-23	2230	6.22	4,510	6-25	2100	5.09	2,540	7-24	2300	5.05	2,480	8-19	1700	6.45	4,960
6-16	2300	11.65	20,000	6-30	1800	5.06	2,500	8-18	1730	7.97	8,320	8-22	1645	4.90	2,250
6-17	2030	11.30	18,600	7-19	1645	4.94	2,310								

\* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record Dec. 2 to Jan. 2, Jan. 9 to Mar. 5, May 26 to June 8, June 20 to July 8, July 15-23, July 25 to Aug. 4, Aug. 19-25.

7-1251. Frijole Creek near Alfalfa, Colo.

Location.--Lat 37°12'00", long 104°11'40", in NW¼ sec.2, T.33 S., R.61 W., on right bank at downstream side of bridge on U. S. Highway 160, 1 mile upstream from mouth, 4 miles west of Alfalfa, and 16 miles east of city limits of Trinidad.

Drainage area.--80 sq mi.

Records available.--March 1957 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 5,400 ft (from topographic map).

Average discharge.--8 years, 4.09 cfs (2,960 acre-ft per year).

Extremes.--Maximum discharge during year, 10,600 cfs June 17 (gage height, 17.25 ft), from rating curve extended above 180 cfs on basis of slope-area measurement at gage height 8.81 ft and contracted-opening measurement at gage height 17.25 ft; no flow for many days. 1957-65: Maximum discharge, that of June 17, 1965; no flow for many days in each year. Flood of June 22, 1954, reached a stage of 17.23 ft, from floodmarks (discharge, 13,500 cfs, from rating curve extended above 8,800 cfs on basis of contracted-opening measurements of peak flow).

Remarks.--Records poor. Minor diversions above station for irrigation.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						(*)		0	0	268	11	4
2					(*)			0	0	54	6	2
3								0	0	25	1	1
4								0	0	15	18	0
5		(*)		(*)				* 0	0	10	* 21	0
6								0	0	17	11	0
7							(*)	0	0	6.4	10	40
8	(*)		(*)					0	0	* 4.7	8.9	* 82
9								0	* 0	7.5	7.2	30
10								0	0	1.1	5.8	17
11								0	0	.8	4.0	9
12								0	0	1.1	2.9	5
13								.4	0	.8	1.7	3
14								.3	0	1.3	.8	1
15								.1	* 2.1	6.9	.2	0
16								0	748	2.5	0	0
17		(*)						0	* 1,440	1.7	22	0
18								0	418	1.5	43	0
19								* 0	264	1.0	253	0
20							(*)	0	130	.7	87	66
21								0	32	.4	114	4.7
22				(*)				0	29	.2	222	* 3.3
23								.8	20	* .1	23	3.0
24								6.9	53	.1	4.3	2.5
25								1.8	547	.1	* 3.6	2.0
26								.7	153	.1	3.4	1.5
27								.2	50	261	2	1.0
28								.1	25	48	1	.5
29								0	10	27	46	0
30								0	285	43	16	0
31								0		297	8	
Total	0	0	0	0	0	0	0	11.3	4,206.1	1,104.0	957.8	278.5
Mean	0	0	0	0	0	0	0	0.36	140	35.6	30.9	9.28
Ac-ft	0	0	0	0	0	0	0	22	8,340	2,190	1,900	552

Calendar year 1964: Max 159 Min 0 Mean 1.70 Ac-ft 1,230

Water year 1964-65: Max 1,440 Min 0 Mean 18.0 Ac-ft 13,000

Peak discharge (base, 700 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-16	2000	13.98	6,680	6-25	2030	12.30	5,070	7- 1	1900	8.75	2,220	8-19	1615	8.00	1,700
6-17	2030	17.25	10,600	6-30	1830	8.41	1,990	7-27	1715	9.08	2,460	8-22	1730	8.00	1,700
6-19	2200	8.54	2,080												

\* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record May 14-22, May 27 to June 14, June 21-24, 27-29, July 2-5, 17-26, Aug. 2, 3, 11-16, 23-28, Aug. 30 to Sept. 6, Sept. 10-19, 21-30.

## ARKANSAS RIVER BASIN

7-1255. San Francisco Creek near Alfalfa, Colo.

Location.--Lat 37°11'10", long 104°07'50", in sec.8, T.33 S., R.60 W., on downstream side of right abutment of bridge on U. S. Highway 160, half a mile upstream from mouth, 1½ miles south of Alfalfa, and 20 miles east of Trinidad.

Drainage area.--160 sq mi.

Records available.--October 1954 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 5,320 ft (from topographic map).

Average discharge.--11 years, 9.77 cfs (7,070 acre-ft per year).

Extremes.--Maximum discharge during year, about 14,000 cfs June 18 (gage height, 13.24 ft, from highwater mark in gage well), from rating curve extended above 430 cfs on basis of slope-area measurements at gage heights 6.34 and 9.25 ft; no flow for many days. 1954-65: Maximum discharge, 15,500 cfs May 19, 1955, from rating curve extended above 250 cfs on basis of slope-area measurement of peak flow; maximum gage height, that of June 18, 1965; no flow for many days in each year. Flood of July 22, 1954, reached a stage of 14.40 ft, from floodmarks (discharge, 26,300 cfs, by contracted-opening measurement of peak flow).

Remarks.--Records good except those below 10 cfs, which are fair, and those for periods of no gage-height record, which are poor. Diversions above station for irrigation of about 500 acres.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						*0	20		0	210	22	1.6
2					(*)	0	15		0	50	17	1.4
3						0	5.5		0	10	13	1.2
4		(*)				0	1.4		0	0	10	1.0
5				(*)		0	.5	(*)	0	0	*6.1	.8
6						0	.3		0	0	2.4	.7
7						0	*.1		0	0	2.2	43
8	(*)		(*)			0	.1		0	*1.2	1.6	*86
9						0	.1		*0	2.4	1.4	3.4
10						0	0		0	2.6	1.2	1.2
11						0	0		0	1.2	1.2	18
12						0	0		0	.8	1.0	43
13						0	0		0	.9	1.0	1.5
14						0	0		0	.4	1.0	.9
15						0	0		*130	.3	1.0	.7
16						0	0		1.110	.2	1.0	.5
17		(*)				0	0		*993	.2	1.6	.4
18						0	0		*2,200	.1	160	.3
19						0	0	(*)	94	.1	40	.4
20						0	*0		50	.1	20	17
21						0	0		20	0	196	13
22				(*)		0	0		10	0	90	*2.4
23						0	0		15	*0	32	1.4
24						0	0		20	0	12	1.2
25						0	0		35	0	*4.9	1.0
26						0	0		41	0	2.6	.9
27						0	0		25	141	1.6	.7
28						3.4	0		10	17	1.4	.5
29						15	0		10	2.0	9.0	.4
30						104	0		1,090	104	17	.3
31						62	0		---	88	2.6	---
Total	0	0	0	0	0	184.4	43.0	0	5,853	632.5	673.8	206.1
Mean	0	0	0	0	0	5.95	1.43	0	195	20.4	21.7	6.87
Ac-ft	0	0	0	0	0	366	85	0	11,610	1,250	1,340	409

Calendar year 1964: Max 455 Min 0 Mean 5.53 Ac-ft 4,020  
 Water year 1964-65: Max 2,200 Min 0 Mean 20.8 Ac-ft 15,060

Peak discharge (base, 1,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-16	0115	9.90	7,720	7-30	2245	5.28	1,990
6-18	0030	13.24	†14,000	8-18	1915	5.00	1,800
6-30	1845	12.10	11,700	8-21	2000	3.92	1,190
7-27	1815	3.69	1,060				

† About.

\* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record Dec. 3 to Mar. 27, June 20-25, 27-29, July 1-7.



7-1260. Purgatoire River near Alfalfa, Colo.

Location.--Lat 37°11'30", long 104°07'30", in NW¼ sec.9, T.33 S., R.60 W., on right bank 700 ft downstream from San Francisco Creek, 1½ miles southeast of Alfalfa, and 20 miles east of Trinidad.

Drainage area.--1,320 sq mi.

Records available.--March 1905 to September 1907 (published as "Purgatory River"), March 1924 to September 1928, October 1951 to September 1965. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Altitude of gage is 5,280 ft (from topographic map). Mar. 22, 1905, to Sept. 30, 1907, staff gage 650 ft downstream at different datum. Feb. 27, 1924, to Sept. 30, 1928, water-stage recorder 1 mile downstream at different datum. Oct. 1, 1951, to July 5, 1955, water-stage recorder at site 150 ft upstream at datum 3.0 ft higher.

Average discharge.--20 years, 57.9 cfs (41,920 acre-ft per year).

Extremes.--Maximum discharge during year, 27,300 cfs June 18 (gage height, 27.30 ft), from rating curve extended above 2,700 cfs as explained below; minimum daily, 0.6 cfs Oct. 4.

1905-7, 1924-28, 1951-65: Maximum discharge, 41,900 cfs May 19, 1955 (gage height, 31.9 ft, from floodmarks, present site and datum), from rating curve extended above 2,700 cfs on basis of slope-area measurements at gage heights 9.79, 13.35, 15.75, 27.30, 30.60, and 31.9 ft; no flow at times in most years.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Diversions above station for irrigation of about 29,000 acres.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.2	1.5	4.8	4	11	*1.2	11	3.1	60	1,420	461	30
2	.9	1.5	4.6	5	*1.2	12	97	2.8	59	527	319	25
3	.7	2.5	4.6	5	12	12	15	2.6	58	239	407	20
4	.6	*2.0	6.0	6	12	11	7.2	3.0	57	188	426	15
5	1.0	2.2	5	*7.0	12	11	5.1	*3.4	56	165	*302	12
6	1.0	3.0	5	5.3	11	11	3.2	3.6	56	118	204	10
7	.9	3.0	7	6.5	10	11	*1.7	3.4	55	248	200	57
8	*.8	3.0	*8	6.5	9.2	11	1.6	2.6	54	*722	180	*418
9	.9	3.9	8	5.5	8.6	11	1.5	2.8	*54	227	150	49
10	1.5	3.9	7	6.0	8.3	11	1.5	3.6	45	107	100	24
11	2.1	3.9	9	5.8	8	11	1.5	3.7	29	82	50	93
12	.9	4.6	6	6.2	9	11	1.8	3.1	36	65	40	40
13	1.0	4.2	8	6.0	9	8.6	1.8	5.3	31	48	30	26
14	1.0	4.2	9	6.2	9	8.6	1.8	4.1	27	84	20	21
15	.9	4.6	10	7.0	9	8.6	2.0	4.2	*203	165	20	18
16	1.4	4.8	9	8.9	9	8.0	2.5	3.7	2,900	75	15	16
17	2.0	*5.5	6	9.2	9	7.2	2.5	3.6	7,620	36	150	19
18	1.6	6.8	6	8.9	10	7.2	2.2	3.6	*5,320	30	1,080	24
19	1.2	6.2	9	4	10	7.0	2.2	*3.7	1,820	261	1,800	26
20	1.5	7.5	10	4	10	7.0	*3.4	4.8	1,580	214	998	130
21	3.1	6.8	10	4	10	7.0	3.4	7.0	833	87	941	57
22	2.1	6.8	6	*5.8	10	7.0	3.6	11	548	38	930	*35
23	1.7	6.8	11	8.3	11	7.2	3.1	7.8	415	*17	587	30
24	1.5	6.5	11	9	11	7.0	3.2	1,050	636	14	396	24
25	1.4	6.5	9.5	9	11	7.0	3.6	138	907	534	*179	23
26	1.2	6.0	9.8	9	11	7.0	4.6	80	1,340	74	92	21
27	1.4	5.1	9.8	10	11	7.0	4.8	76	355	892	114	20
28	1.2	5.3	8.6	10	12	7.2	6.8	72	233	499	88	20
29	1.4	4.6	3.7	10	-	5.8	5.3	68	70	84	141	18
30	1.2	5.1	5.0	11	-----	3.7	3.6	66	1,570	426	118	14
31	1.4	-----	3.6	11	-----	4.6	-----	62	-----	957	70	-----
Total	40.7	138.3	230.0	220.1	285.1	267.7	208.5	1,708.5	27,027	9,643	10,608	1,335
Mean	1.31	4.61	7.42	7.10	10.2	8.64	6.95	55.1	901	279	342	44.5
Ac-ft	81	274	456	437	565	531	414	3,390	53,610	17,140	21,040	2,650

Calendar year 1964: Max 705 Min 0.1 Mean 14.5 Ac-ft 10,540  
 Water year 1964-65: Max 7,620 Min 0.6 Mean 139 Ac-ft 100,600

Peak discharge (base, 2,500 cfs, revised)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-24	0330	10.22	3,880	6-18	0015	27.30	27,300	6-30	1915	18.57	12,000	8-18	2215	13.07	6,210
6-16	0100	16.54	9,540	6-19	2215	11.60	4,980	7-27	1545	10.00	3,700	8-19	2115	11.16	4,630
6-17	0300	20.70	15,000	6-25	2130	13.00	6,150	7-30	1915	9.37	3,200	8-22	2130	8.82	2,800

\* Discharge measurement made on this day.

Note.--No gage-height record Dec. 5-22, Jan. 1-4, 19-21, Jan. 24 to Feb. 1, Feb. 11-28 (stage-discharge relation affected by ice during part of periods), May 25 to June 8, June 29, July 11-13, 21, 22, 26, 29, Aug. 7-17, Sept. 1-7.

## ARKANSAS RIVER BASIN

7-1265. Purgatoire River at Ninemile Dam, near Higbee, Colo.

Location.--Lat 37°44', long 103°29', in NW¼ sec.7, T.27 S., R.54 W., on left bank 850 ft upstream from Ninemile Dam, 4 miles southwest of Higbee, and 5½ miles upstream from Smith Canyon.

Drainage area.--2,900 sq mi.

Records available.--October 1924 to September 1965. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 4,240.59 ft above mean sea level, datum of 1929. Prior to Oct. 28, 1934, water-stage recorder at site 550 ft downstream at datum 0.60 ft higher. Oct. 28, 1934, to May 19, 1955, water-stage recorder (destroyed by flood) at present site and datum. May 25, 1955, to June 13, 1956, staff or chain gages at nearby sites at different datums. June 14 to Dec. 5, 1956, chain gage at present site and datum.

Average discharge.--41 years, 103 cfs (74,570 acre-ft per year).

Extremes.--Maximum discharge during year, 105,000 cfs (estimated) June 18 (gage height, 19.6 ft, from floodmarks); no flow Oct. 1 to Dec. 1, May 16-23.

1924-65: Maximum discharge, that of June 18, 1965; no flow at times.

Remarks.--Records fair except those for June 14 to Sept. 6, which are poor. Diversions for irrigation of about 32,000 acres above station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			0	12	4.3	11	9.7	1.5	28	1,200	1,000	250
2			1.9	7.0	5.5	11	12	2.2	*18	1,000	636	125
3			1.5	6.4	8.2	11	15	3.0	14	800	*700	100
4			1.7	8.2	11	12	61	2.4	22	600	500	75
5			1.5	6.1	10	15	*54	*1.5	32	500	1,000	50
6	(*)		1.2	5.2	11	11	20	1.0	37	300	500	30
7			1.0	3.6	11	9.1	9.4	.6	47	250	350	*33
8			*1.0	2.6	*12	9.4	6.7	.3	*54	400	300	124
9			1.1	1.7	11	9.4	5.5	.3	56	500	250	406
10			2.4	1.3	12	9.7	4.6	.3	42	3,000	100	186
11			2.8	1.0	9.7	9.4	3.8	.3	31	600	100	102
12		(*)	2.0	1.0	7.9	9.7	3.8	.2	86	150	75	68
13			1.3	*.9	7.6	9.7	3.6	.4	52	125	60	98
14			1.3	.9	9.7	8.8	*3.2	.7	3,000	1,000	40	*70
15			*1.3	1.3	8.8	7.9	3.0	.1	72	150	250	54
16			1.9	1.2	9.7	7.9	2.4	0	47	150	125	44
17			.8	1.2	9.7	7.9	2.2	0	920	200	*30	41
18			.4	1.3	11	7.6	2.0	*0	18,000	125	25	33
19			1.2	1.7	11	8.5	1.6	0	4,500	100	100	29
20			2.6	1.7	11	11	1.5	0	1,800	60	1,500	30
21			6.1	1.8	10	10	1.4	0	*1,100	80	1,200	*37
22			12	1.8	9.5	8.2	1.2	0	600	350	5,000	105
23	(*)		15	2.2	8.8	6.7	1.2	0	600	*74	1,200	70
24			11	5.2	8.2	6.1	1.1	310	500	677	1,100	50
25		(*)	12	8.5	8.2	8.2	1.2	*470	400	74	1,000	43
26			12	6.7	9.5	13	1.6	172	1,000	296	600	38
27			14	6.7	11	10	2.0	107	3,000	290	500	*31
28			13	8.5	11	8.5	1.9	93	1,000	1,570	300	28
29			11	9.1	-	7.6	1.5	72	400	*374	400	26
30			8.5	6.7	-----	*7.3	1.5	52	250	260	250	24
31			*8.2	5.2	-----	7.0	-----	37	-----	438	175	-----
Total	0	0	151.7	128.7	268.3	289.6	239.6	1,327.8	37,708	15,693	19,366	2,400
Mean	0	0	4.89	4.15	9.58	9.34	7.99	42.8	1,257	506	625	80.0
Ac-ft	0	0	301	255	532	574	475	2,630	74,790	31,130	38,410	4,760

Calendar year 1964: Max 1,990 Min 0 Mean 30.1 Ac-ft 21,860

Water year 1964-65: Max 18,000 Min 0 Mean 212 Ac-ft 153,900

\* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record Feb. 18 to Mar. 1, June 14, June 18 to July 22, Aug. 2 to Sept. 6.

7-1285. Purgatoire River near Las Animas, Colo.

**Location.**--Lat 38°02'02", long 103°12'00", in sec.23, T.23 S., R.52 W., near left bank on downstream side of pier of bridge on State Highway 101, 2.3 miles southwest of courthouse in Las Animas and 4.5 miles upstream from mouth.

**Drainage area.**--3,503 sq mi.

**Records available.**--May to September 1889, July to October 1909 (gage heights and discharge measurements only), January 1922 to September 1931, July 1948 to September 1965. Monthly discharge only for some periods, published in WSP 1311. Published as Purgatoire Creek at Las Animas in 1889 and as Purgatory River near Las Animas in 1909.

**Gage.**--Water-stage recorder. Datum of gage is 3,877.94 ft above mean sea level, datum of 1929. May 22 to Sept. 30, 1889, staff gage, July 31 to Oct. 9, 1909, chain gage, and Apr. 1, 1922, to June 30, 1924, water-stage recorder, at railroad bridge 4 miles downstream at various datums. July 1, 1924, to Sept. 30, 1931, water-stage recorder at present site at various datums and July 23, 1948, to Sept. 30, 1955, at datum 2.00 ft higher.

**Average discharge.**--26 years (1922-31, 1948-65), 139 cfs (100,600 acre-ft per year).

**Extremes.**--Maximum discharge during year, 62,500 cfs June 18 (gage height, 15.94 ft, from floodmark), from rating curve extended above 14,000 cfs; minimum daily, 0.8 cfs Oct. 3, 16, 17.

1889, 1922-31, 1948-65: Maximum discharge, 70,000 cfs May 20, 1955 (gage height, 17.00 ft, present datum), from rating curve extended above 38,000 cfs by logarithmic plotting; no flow at times in 1924-25, 1927, 1949.

Greatest flood known occurred Oct. 1, 1904.

**Remarks.**--Records good except those for periods of ice effect, which are fair and those for periods of no gage-height record, which are poor. Discharge measurements generally made once a week. Diversions for irrigation of about 36,000 acres above station.

Records of chemical analyses for the water year 1965 are published in Part 2 of this report.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1-20, May 25-28, June 18 to July 10,  
Aug. 8-19, Sept. 3-30)

Oct. 1 to June 18				June 18 to Sept. 30			
0.3	0.8	1.5	190	-0.6	26	1.0	525
.4	3.0	2.0	365	-.5	36	1.5	970
.5	7.0	2.5	600	-.3	66	2.0	1,550
.6	13	3.0	910	0.0	126	3.0	3,250
.7	21	4.0	1,720	.5	285	4.0	5,500
.9	47	5.0	2,930				
1.2	107	6.0	4,700				

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.0	1.5	2.1	2.8	4.6	7.0	3.8	3.4	4.2	1,500	1,150	297
2	1.0	1.5	1.9	2.7	5.8	7.6	4.6	2.6	4.6	1,000	770	254
3	.8	1.5	1.7	4.5	4.2	7.0	5.4	3.4	4.6	700	460	156
4	1.0	1.5	1.5	7.0	2.6	5.8	5.4	3.0	5.0	600	1,120	92
5	1.0	1.9	1.2	5.0	2.1	5.8	5.8	2.1	6.6	500	2,020	60
6	1.0	1.9	2.5	7.6	1.9	5.0	1.7	2.6	8.8	309	960	35
7	1.0	1.7	1.6	6.2	2.6	5.0	1.5	4.2	8.2	250	716	29
8	1.0	1.7	3.0	3.8	5.0	7.6	7.0	2.6	11	200	392	52
9	1.0	1.5	5.4	6.2	5.4	4.2	5.8	5.0	6.2	500	165	1,200
10	1.2	1.2	4.2	5.0	3.4	3.8	15	3.0	7.6	2,000	103	1,000
11	1.2	1.0	3.0	5.0	2	3.8	6.2	2.8	6.6	400	60	289
12	1.0	1.2	2.2	3.8	1	5.4	4.6	2.6	5.4	268	56	121
13	1.2	1.2	2.2	3.8	7	5.4	4.6	4.6	11	700	43	79
14	1.0	1.2	2.3	3.4	2.0	5.4	3.8	3.0	3,400	1,000	31	92
15	1.0	1.5	2.5	2.6	8	4.6	4.2	3.0	196	201	26	80
16	.8	1.9	2.9	2.6	9	5.4	3.8	2.8	166	119	32	63
17	.8	2.1	3.5	2.3	10	6.6	3.4	2.6	3,280	97	33	61
18	1.5	3.8	3.2	2.1	11	6.2	3.4	4.6	35,700	108	30	58
19	1.2	2.6	3.0	1.7	8.2	9	3.0	3.0	20,000	63	512	56
20	1.2	4.2	2.9	1.5	3.4	13	3.0	2.3	7,000	43	2,400	53
21	1.2	4.6	2.8	1.5	5.0	14	3.0	3.0	5,000	34	3,000	63
22	1.2	2.6	3.4	2.1	3.8	19	3.0	3.0	3,500	77	4,000	86
23	1.5	2.1	4.2	2.6	15	17	3.4	4.2	2,000	121	2,500	153
24	1.7	4.6	3.4	5.0	5	15	3.4	376	600	711	1,500	101
25	1.5	1.7	3.0	1.2	6	9.4	3.4	522	200	264	700	80
26	1.5	1.7	3.4	1.2	6	15	3.8	224	300	140	400	82
27	1.5	1.7	3.4	8.2	2.6	12	3.4	110	2,000	946	300	61
28	1.5	1.9	2.8	4.6	6.2	7.0	3.4	73	616	1,270	250	52
29	1.5	6.2	2.6	1.2	-	4.6	3.4	37	500	896	500	53
30	1.2	1.7	2.8	5.0	-----	3.8	2.8	15	40	388	700	49
31	1.5	-----	4.5	3.8	-----	3.8	-----	8.2	-----	1,020	1,100	-----
Total	36.7	65.4	89.1	148.4	166.8	244.2	157.8	1,438.6	84,587.8	16,425	26,029	4,907
Mean	1.18	2.18	2.87	4.79	5.96	7.88	5.26	46.4	2,820	530	840	164
Ac-ft	73	130	177	294	331	484	313	2,850	167,800	32,580	51,630	9,730

Calendar year 1964: Max 1,300 Min 0.3 Mean 16.7 Ac-ft 12,100  
Water year 1964-65: Max 35,700 Min 0.8 Mean 368 Ac-ft 266,400

**Note.**--Stage-discharge relation affected by ice Dec. 5-16, 21, Dec. 31 to Jan. 4, Feb. 15-18, 23, 25, 26, Mar. 1-5, 19-21, 25-27. No gage-height record Dec. 17-20, Feb. 11-14, 24 (stage-discharge relation affected by ice during most of periods), June 19-27, June 29 to July 5, July 7-11, 13, 14, Aug. 21-31.

## ARKANSAS RIVER BASIN

7-1300. John Martin Reservoir at Caddoa, Colo.

Location.--Lat 38°04'05", long 102°56'13", in NE¼NW¼ sec.8, T.23 S., R.49 W., at dam on Arkansas River at Caddoa, 3.2 miles southeast of Hasty and 58 miles upstream from Colorado-Kansas State line.

Drainage area.--18,915 sq mi, of which 785 sq mi is probably noncontributing.

Records available.--January 1943 to September 1965.

Gage.--Water-stage recorder for elevations above about 3,785 ft and reference point and tape gage read once daily for those below. Datum of gage is 3,760.00 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark); gage readings have been reduced to elevations above mean sea level. Prior to 1953 water-stage recorder and staff gage at same datum.

Extremes.--Maximum contents during year, 429,600 acre-ft Aug. 25 (elevation, 3,856.16 ft); no contents Oct. 1 to Dec. 14, Apr. 3 to June 13.

1943-65: Maximum contents, that of Aug. 25, 1965; no contents at times in 1943, 1945-47, 1952-57, 1959-65.

Remarks.--Reservoir is formed by concrete and earth-fill dam. Storage began while dam was under construction prior to 1943, and record of contents began Jan. 1, 1943. Capacity, 642,400 acre-ft at elevation 3,870.00 ft (top of spillway gates), of which 364,400 acre-ft, corrected (between elevations 3,766.8 ft, elevation of no contents, and 3,851.00 ft, corrected), is for conservation and 278,000 acre-ft (between elevations 3,851.00, corrected, and 3,870.00 ft) is reserved for flood control. No dead storage. Figures given herein represent total contents.

Cooperation.--Record of contents furnished by Corps of Engineers.

Month-end elevation and contents, water year October 1964 to September 1965

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	-	0	-
Oct. 31.....	-	0	0
Nov. 30.....	-	0	0
Dec. 31.....	3,780.11	362	+362
Calendar year 1964.....	-	-	-1,050
Jan. 31.....	3,783.33	1,320	+958
Feb. 28.....	3,785.44	2,920	+1,600
Mar. 31.....	3,786.30	3,790	+870
Apr. 30.....	-	0	-3,790
May 31.....	-	0	0
June 30.....	3,848.50	335,400	+335,400
July 31.....	3,852.13	378,100	+42,700
Aug. 31.....	3,854.78	411,500	+33,400
Sept. 30.....	3,851.38	369,000	-42,500
Water year 1964-65.....	-	-	+369,000

† Elevation at 2400.

## 7-1305. Arkansas River below John Martin Reservoir, Colo.

Location.--Lat 38°05'02", long 102°55'10", in NW¼ sec.4, T.23 S., R.49 W., on left bank 1.1 miles upstream from Caddoa Creek, 1.7 miles downstream from John Martin Dam, and 2.9 miles southeast of Hasty.

Drainage area.--18,917 sq mi, of which 785 sq mi is probably noncontributing.

Records available.--March 1938 to September 1965. Published as "at Caddoa" prior to October 1947.

Gage.--Water-stage recorder. Datum of gage is 3,737.40 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark). Prior to Feb. 22, 1940, at site 3 miles upstream at datum 22.83 ft higher. Feb. 22, 1940, to Feb. 4, 1943, at site 700 ft upstream at datum 3.64 ft higher than present datum.

Average discharge.--27 years, 357 cfs (258,500 acre-ft per year), adjusted for storage in John Martin Reservoir.

Extremes.--Maximum discharge during year, 4,100 cfs Aug. 25 (gage height, 5.75 ft); maximum gage height, 10.62 ft June 18 (backwater from Caddoa Creek); minimum daily discharge, 1.5 cfs Jan. 16-24, 31.  
1938-65: Maximum discharge, 40,000 cfs Apr. 24, 1942 (gage height, 10.46 ft, site and datum then in use), from rating curve extended above 12,000 cfs on basis of flow-over-dam and critical-depth measurement of peak flow; no flow at times in 1945-47; minimum daily prior to construction of John Martin Reservoir, 5 cfs July 16, 1939.

Remarks.--Records excellent. Discharge measurements generally made twice a month during winter and once a week during summer. Storage and diversions above station for irrigation of about 438,000 acres and for flood control. Flow regulated by John Martin Reservoir (see preceding page). Records of chemical analyses and water temperatures for the water year 1965 are published in Part 2 of this report.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used July 15-24, Aug. 1-4, Sept. 6, 7)

Oct. 1 to May 22					May 23 to Sept. 30			
0.2	0.2	0.8	.43		0.4	4.3	1.9	340
.3	1.8	1.1	100		.5	9.0	2.5	660
.4	4.3	1.5	220		.6	18	3.0	970
.5	9.0	2.0	440		.9	59	4.0	1,880
.6	18	3.0	1,110		1.4	172	5.8	4,170

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	31	28	1.8	1.6	15	604	81	354	4.3	2,320	3,250
2	30	29	28	1.8	1.6	14	982	46	246	5.7	2,560	2,660
3	26	23	26	1.8	3.6	14	515	38	221	5.2	3,160	2,580
4	31	28	25	1.8	1.6	15	136	59	331	5.7	3,080	2,520
5	35	29	26	1.8	14	14	144	128	516	52	3,170	2,430
6	33	28	26	1.8	14	14	165	252	696	147	2,990	2,370
7	31	24	26	1.8	14	15	149	318	577	474	3,090	1,680
8	31	23	24	1.8	14	14	120	372	433	756	1,460	527
9	31	25	29	1.8	14	15	81	345	310	1,070	994	543
10	34	26	33	1.8	15	14	65	268	423	1,230	1,240	1,410
11	38	25	33	1.8	14	15	43	216	490	1,430	1,280	543
12	39	24	33	1.8	16	15	51	175	464	1,480	1,270	538
13	40	26	17	1.8	1.9	15	45	138	660	1,270	1,230	538
14	36	24	19	1.8	1.6	16	48	108	438	469	1,180	501
15	34	22	17	1.8	1.6	16	45	81	678	979	1,180	485
16	29	25	9.0	1.5	17	16	38	69	900	1,050	1,160	527
17	28	28	7.6	1.5	17	16	35	133	307	1,050	1,150	454
18	31	29	2.6	1.5	16	22	36	102	17	1,060	1,070	428
19	30	31	2.8	1.5	16	16	35	112	17	1,030	956	428
20	28	30	2.3	1.5	16	16	34	69	16	1,030	846	230
21	24	28	2.3	1.5	16	16	33	40	17	1,070	738	132
22	28	25	2.3	1.5	16	14	40	30	6.2	1,060	1,820	124
23	30	30	2.3	1.5	18	15	43	75	6.6	1,060	3,250	127
24	35	26	2.3	1.5	17	22	34	408	7.6	525	3,320	113
25	35	30	2.0	1.6	15	16	30	935	5.2	712	3,830	107
26	35	28	2.0	1.6	15	16	30	618	4.8	858	2,730	104
27	35	29	2.0	1.6	15	15	31	538	4.8	652	1,640	102
28	31	28	2.0	1.6	15	15	36	600	4.8	521	2,810	100
29	30	28	1.8	1.6	-	16	46	549	4.3	1,380	3,680	98
30	26	28	1.8	1.6	-----	16	112	501	4.3	2,140	3,210	63
31	29	-----	1.8	1.5	-----	15	-----	459	-----	2,010	3,520	-----
Total	987	810	436.9	51.6	397.8	483	3,806	7,863	8,159.6	26,585.9	65,934	25,712
Mean	31.8	27.0	14.1	1.66	14.2	15.6	127	254	272	858	2,127	857
Ac-ft	1,960	1,610	867	102	789	958	7,550	15,600	16,180	52,730	130,800	51,000

Calendar year 1964: Max 1,010 Min 1.6 Mean 81.3 Ac-ft 59,050  
Water year 1964-65: Max 3,830 Min 1.5 Mean 387 Ac-ft 280,100

7-1330. Arkansas River at Lamar, Colo.

Location.--Lat 38°06'15", long 102°37'08", in SE¼ sec.30, T.22 S., R.46 W., on right bank 450 ft upstream from bridge on U. S. Highways 50 and 287 and 1.2 miles north of city hall in Lamar.

Drainage area.--19,780 sq mi, of which 950 sq mi is probably noncontributing.

Records available.--May 1913 to September 1955, April 1959 to September 1965. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 3,599.81 ft above mean sea level, datum of 1929. Prior to June 4, 1941, at site 450 ft downstream on highway bridge at datum 5.07 ft higher. June 4, 1941, to Apr. 3, 1946, at site 1,250 ft downstream and Apr. 4, 1946, to Sept. 30, 1955, at site 600 ft downstream, both at datum 4.07 ft higher.

Average discharge.--48 years, 231 cfs (167,200 acre-ft per year).

Extremes.--Maximum discharge during year, 73,800 cfs June 18 (gage height, 18.90 ft, from floodmark); minimum daily, 0.1 cfs Jan. 12. 1913-55, 1959-65: Maximum discharge, 130,000 cfs June 5, 1921 (gage height, 17.0 ft, present datum), from rating curve extended above 10,000 cfs by logarithmic plotting and confirmed by relationship of discharges at La Junta 60 miles upstream and Syracuse 52 miles downstream; maximum gage height, that of June 18, 1965; no flow at times in 1913-15, 1953.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Discharge measurements made two or more times a month. Flow regulated by John Martin Reservoir (see elsewhere in this report). Natural flow of stream affected by trans-mountain diversions, storage reservoirs, power developments, ground-water withdrawals and diversions for irrigation of about 487,000 acres, and return flow from irrigated areas. Records of chemical analysis for the water year 1965 are published in Part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.0	4.0	2.1	0.5	0.7	0.7	18	52	31	127	1,780	2,940
2	1.0	4.3	2.1	.5	.9	.5	330	40	15	117	1,930	2,510
3	1.0	2.9	1.4	.5	.9	.5	323	24	14	1,190	2,440	2,230
4	1.2	2.1	1.4	.5	.9	.7	33	22	22	290	2,510	2,160
5	1.2	3.2	2.3	.6	.9	.6	63	31	313	160	2,460	2,140
6	1.0	4.3	2.6	.5	.7	.7	a 65	53	117	131	2,320	2,120
7	.8	2.1	1.6	.5	.9	.7	73	59	106	131	2,330	2,200
8	.8	1.6	1.1	.5	.9	.7	53	55	50	247	1,680	698
9	.8	1.6	2.0	.4	.9	.9	41	41	32	328	504	328
10	.8	1.4	3.5	.3	.7	1.1	38	36	20	752	639	750
11	2.0	2.6	6.6	.2	.9	1.3	34	36	32	991	674	427
12	7.8	1.8	17	.1	1.1	1.3	25	38	22	1,060	656	244
13	9.0	1.6	4.0	.2	1.1	1.1	24	53	34	1,180	644	211
14	9.4	1.6	2.0	.2	1.1	.9	22	40	215	272	590	190
15	9.4	1.6	5.2	.2	.6	.9	20	41	63	253	570	158
16	9.0	1.6	5.7	.3	.7	1.3	17	32	381	570	560	148
17	7.4	1.4	1.1	.4	.6	1.1	13	41	598	518	560	154
18	8.2	1.6	.8	.5	.5	.9	8.1	42	a 25,000	473	550	108
19	11	1.6	.8	.5	.4	1.3	6.6	36	a 5,990	464	460	112
20	13	2.0	.7	.5	.4	1.3	7.1	42	383	443	419	198
21	12	1.6	.7	.6	.5	1.3	5.7	31	220	423	262	127
22	10	2.9	.7	.7	.6	1.4	4.6	20	160	411	681	93
23	10	3.2	.5	.7	.5	1.3	9.5	16	129	387	2,350	65
24	10	3.2	.4	.7	1.1	1.3	11	975	3,700	324	2,820	59
25	14	2.1	.5	.7	.5	1.4	8.6	420	1,210	81	2,860	54
26	14	2.6	.6	.7	.3	1.3	7.1	277	969	307	2,940	54
27	13	1.6	.6	.7	.4	1.6	6.2	50	415	167	1,350	53
28	11	.7	.6	.7	.6	1.6	4.0	37	220	125	1,680	48
29	9.8	2.3	.6	.9	-	1.6	7.1	46	162	300	3,030	48
30	8.5	4.0	.7	.7	-	1.6	16	18	137	1,230	2,710	50
31	5.7	-----	.6	.7	-----	1.4	-----	25	-----	1,430	3,010	-----
Total	213.8	69.1	70.5	15.7	20.3	34.3	1,293.6	2,729	40,760	14,882	47,969	20,677
Mean	6.90	2.30	2.27	0.51	0.72	1.11	43.1	88.0	1,359	480	1,547	689
Ac-ft	424	137	140	31	40	68	2,570	5,410	80,850	29,520	95,150	41,010

Calendar year 1964: Max 3,840 Min 0.4 Mean 33.9 Ac-ft 24,580  
 Water year 1964-65: Max 25,000 Min 0.1 Mean 353 Ac-ft 255,400

a No gage-height record.

7-1370. Frontier ditch near Coolidge, Kans.

Location.--Lat 38°02'18", long 102°02'19", in NE¼ sec.21, T.23 S., R.43 W., on left bank 0.3 mile east of Colorado-Kansas State line, 0.5 mile downstream from Holly drain diversion, 1.5 miles west of Coolidge, and 2.3 miles downstream from diversion from Arkansas River.

Records available.--October 1950 to September 1965.

Gage.--Water-stage recorders and Parshall flume. Datum of gage is 3.353.14 ft above mean sea level, datum of 1929.

Extremes.--1950-65: Maximum daily discharge, 70 cfs May 7, 1959; no flow for many days.

Remarks.--Records good. This ditch diverts water from Arkansas River in Colorado for use in Kansas. These records and records for Arkansas River near Coolidge represent total flow of Arkansas River at the Colorado-Kansas State line.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	15					0	18	*15		0	9.2
2	14	14					0	20	8.4		0	7.9
3	14	18					4.5	20	7.2		0	5.6
4	14	19					25	19	3.2		0	11
5	16	0					6.8	19	3.7		0	18
6	15	0					23	18	9.2		7.6	11
7	16	0					20	17	7.9		25	10
8	16	0					21	16	5.6		24	8.2
9	16	0					19	18	5.0		23	4.2
10	15	0					20	19	5.0		20	9.2
11	16	0					22	18	5.8		16	14
12	16	0					24	9.1	10		16	16
13	16	0					23	19	9.2		15	20
14	16	0					23	19	26		12	24
15	15	0					21	20	27		15	24
16	15	0					22	23	15		14	15
17	14	0					21	22	0		21	25
18	16	0					20	9.8	0		19	29
19	18	0					20	9.2	0		23	0
20	18	0					19	18	0		22	5.7
21	16	0					20	14	0		29	3.2
22	15	0					20	16	0		19	0
23	15	0					20	16	0		.5	0
24	15	0					20	11	.9		24	.2
25	15	0					20	41	0		15	1.5
26	15	0					20	46	0		16	0
27	14	0					17	30	0		8.9	0
28	15	0					17	12	0		17	0
29	15	0					18	18	0		18	0
30	15	0					20	27	0		11	0
31	16	-----			-----		-----	22	-----		6.1	-----
Total	478	66	0	0	0	0	546.3	604.1	164.1	0	447.1	271.9
Mean	15.4	2.20	0	0	0	0	18.2	19.5	5.47	0	14.4	9.06
Ac-ft	948	131	0	0	0	0	1,080	1,200	325	0	887	539

Calendar year 1964: Max 58 Min 0 Mean 10.6 Ac-ft 7,690  
 Water year 1964-65: Max 46 Min 0 Mean 7.06 Ac-ft 5,110

\* Discharge measurement made on this day.

## ARKANSAS RIVER BASIN

7-1375. Arkansas River near Coolidge, Kans.

Location.--Lat 38°01'33", long 102°01'00", in NW¼ sec.26, T.23 S., R.43 W., on right bank 1,560 ft upstream from highway bridge, 1 mile south of Coolidge, and 1½ miles downstream from Colorado-Kansas State line.

Drainage area.--25,410 sq mi, of which 1,708 sq mi is probably noncontributing.

Records available.--May to October 1903, March to May 1921, October 1950 to September 1965. Monthly discharge only for some periods, published in WSP 1311.

Gage.--Water-stage recorder. Datum of gage is 3,333.84 ft above mean sea level, datum of 1929. May 5 to Oct. 31, 1903, staff gage on upstream side of bridge 1,560 ft downstream at different datum. Mar. 1 to May 31, 1921, water-stage recorder at bridge 1,560 ft downstream at different datum.

Average discharge.--15 years, 229 cfs (165,800 acre-ft per year).

Extremes.--Maximum discharge during year, 158,000 cfs June 17 (gage height, 13.20 ft, from floodmarks), from rating curve extended above 13,000 cfs as explained below; minimum daily, 1.7 cfs Oct. 2.

1903, 1921, 1950-65: Maximum discharge, that of June 17, 1965, from rating curve extended above 13,000 cfs on basis of slope-area measurement of peak flow; no flow for many days in 1903, 1954, 1960.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements generally made twice a week. Combined flow of river and Frontier ditch (see preceding page) represents entire flow that enters Kansas. Flow regulated by John Martin Reservoir (see elsewhere in this report). Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, ground-water withdrawals and diversion for irrigation of about 500,000 acres, and return flow from irrigated areas. Records of chemical analyses and water temperatures for the water year 1965 are published in Part 2 of this report.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.8	4.5	20	18	28	27	26	6.0	56	415	1,150	3,270
2	1.7	5.0	18	19	30	25	26	5.0	26	378	1,430	3,580
3	1.8	6.5	18	20	36	24	82	5.5	33	347	1,800	3,040
4	2.0	10	20	19	34	25	151	5.5	30	3,090	2,300	2,520
5	2.0	18	20	19	34	28	58	4.5	33	850	2,650	2,370
6	2.5	20	23	18	32	36	22	4.0	28	445	2,650	2,240
7	2.0	19	23	17	30	32	18	4.5	60	369	2,360	2,130
8	2.0	19	23	18	29	33	17	4.5	74	335	2,170	1,990
9	2.5	21	20	18	30	32	15	4.5	42	567	1,120	1,080
10	3.0	21	19	18	30	29	13	4.0	39	805	701	805
11	3.5	19	20	18	b30	28	11	5.0	46	1,080	730	962
12	3.0	18	21	18	b28	29	7.5	9.5	39	1,140	730	745
13	3.0	19	b23	19	b26	30	7.5	5.0	39	1,150	722	606
14	3.0	18	b23	18	b24	29	7.5	4.5	48	1,140	701	497
15	3.0	18	b20	18	23	26	7.0	4.5	50	534	638	450
16	3.0	20	b21	20	23	27	7.5	4.5	142	440	638	435
17	3.0	19	b23	21	24	32	6.5	4.5	65,000	606	612	405
18	4.0	18	b25	20	29	26	7.0	7.5	101,000	560	586	435
19	4.0	18	b23	19	30	25	6.5	7.5	50,000	503	548	467
20	3.5	19	b20	18	29	30	6.5	4.0	8,000	503	2,060	574
21	3.5	18	19	18	27	37	6.5	4.0	2,000	491	2,610	730
22	4.5	19	19	19	27	36	6.5	4.5	1,500	509	4,540	491
23	4.0	20	19	22	b80	30	6.5	5.0	1,000	485	2,270	396
24	4.5	19	20	24	b15	26	6.5	28	1,500	479	5,000	360
25	4.5	18	19	28	b24	24	6.5	628	6,600	445	5,280	378
26	4.5	18	19	22	26	24	6.5	410	4,700	554	3,820	343
27	4.5	19	18	22	30	28	6.5	270	2,700	1,010	2,760	310
28	4.5	20	18	21	28	32	6.5	139	790	1,860	1,440	267
29	4.0	21	19	21	-	30	6.5	104	612	522	1,850	255
30	4.0	22	18	29	-----	29	6.5	84	445	430	2,990	244
31	4.0	-----	18	28	-----	30	-----	70	-----	940	2,500	-----
Total	100.8	524.0	629	627	764.0	899	567.5	1,851.0	246,632	22,982	61,356	32,375
Mean	3.25	17.5	20.3	20.2	27.3	29.0	18.9	59.7	8,221	741	1,979	1,079
Ac-ft	200	1,040	1,250	1,240	1,520	1,780	1,130	3,670	489,200	45,580	121,700	64,210

Calendar year 1964: Max 11,900 Min 0.1 Mean 98.8 Ac-ft 71,700  
 Water year 1964-65: Max 101,000 Min 1.7 Mean 1,012 Ac-ft 732,500

b Stage-discharge relation affected by ice.

Note.--No gage-height record June 17-22, 24, 26, 27.



8-2135. Rio Grande at Thirtymile Bridge, near Creede, Colo.

Location.--Lat 37°43'30", long 107°15'20", in NE¼ sec.13, T.40 N., R.4 W., on right bank 70 ft below bridge, 500 ft upstream from Squaw Creek, three-quarters of a mile downstream from Rio Grande Reservoir, and 20 miles southwest of Creede.

Drainage area.--163 sq mi.

Records available.--June 1909 to September 1923, May 1925 to September 1965. No winter records 1910, 1926. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 9,300 ft (from topographic map). June 1, 1909, to Apr. 7, 1912, chain gage at site about a quarter of a mile downstream at different datum. Apr. 8, 1912, to Sept. 30, 1923, staff or chain gage 500 ft upstream at different datum. May 16, 1925, to Sept. 30, 1934, water-stage recorder at present site at datum 0.40 ft higher.

Average discharge.--52 years (1910-23, 1926-65), 216 cfs (156,400 acre-ft per year).

Extremes.--Maximum discharge during year, 1,900 cfs June 24 (gage height, 4.00 ft); minimum not determined. 1909-23, 1925-65: Maximum discharge, 7,500 cfs June 28, 1927 (gage height, 7.03 ft, present datum), from rating curve extended above 1,200 cfs; minimum daily, 0.1 cfs Nov. 2-4, 1960.

Corrections.--In 1964 Surface Water Records of Colorado, the maximum discharge was listed in error; it should be 1,880 cfs.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Flow regulated by Rio Grande Reservoir (capacity, 51,110 acre-ft) since 1912. Natural flow of stream affected by transmountain diversions from Colorado River basin to drainage area above station through Raber-Lohr and Fuchs ditches (see elsewhere in this report). No known diversion above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Aug. 1-28)

0.6	13	1.8	270
.9	30	2.2	440
1.0	40	2.6	650
1.1	54	3.0	925
1.4	133	4.0	1,900

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	64	39						342	843	1,010	408	190
2	59	40						342	910	1,170	422	154
3	54	40						346	1,110	1,250	505	145
4	53	35						346	1,220	1,160	490	163
5	51	37						270	941	1,130	408	163
6	50	38						359	895	1,090	286	173
7	47	37						562	745	1,060	413	211
8	46	37						400	759	989	525	225
9	46	38						318	449	925	540	*197
10	46	43						318	925	872	535	163
11	46	40						318	622	843	573	151
12	44	39						318	515	965	573	133
13	44	43						318	158	933	546	121
14	44	21						318	13	773	520	101
15	43	1.8						318	14	622	540	101
16	43		1.8	2.2	2.6	3.0	5.0	318	14	634	*535	121
17	43							408	16	634	490	127
18	41							530	703	843	404	154
19	*41							568	*1,380	1,100	510	221
20	44							184	1,410	*1,170	395	274
21	44							22	1,630	918	236	255
22	40							23	1,660	1,070	214	177
23	46	1.5						24	1,620	1,050	286	163
24	40							474	1,720	910	326	177
25	38						68	622	*1,620	1,290	318	222
26	39							266	573	895	1,390	282
27	44							525	465	724	1,370	218
28	43							704	*418	933	965	194
29	46							*584	418	1,380	895	218
30	46							431	418	1,240	981	338
31	39							465		808	290	160
Total	1,414	551.3	55.8	68.2	72.8	93.0	2,698.0	11,123	27,064	30,820	12,538	5,508
Mean	45.6	18.4	1.8	2.2	2.6	3.0	89.9	359	902	994	404	184
Ac-ft	2,800	1,090	111	135	144	184	5,350	22,060	53,680	61,130	24,870	10,920

Calendar year 1964: Max 1,410 Min - Mean 127 Ac-ft 92,460  
Water year 1964-65: Max 1,720 Min - Mean 252 Ac-ft 182,500

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 15 to Apr. 24.

## RIO GRANDE BASIN

8-2145. North Clear Creek below Continental Reservoir, Colo.

Location.--Lat 37°53'18", long 107°12'10", in NE¼SW¼ sec.21, T.42 N., R.3 W., on left bank 100 ft below bridge, 1,000 ft downstream from Continental Reservoir, and 15 miles west of Creede.

Drainage area.--51.7 sq mi.

Records available.--May 1929 to September 1965. Monthly discharge only for some periods, published in WSP 1312. Prior to October 1960, published as Clear Creek below Continental Reservoir.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 10,200 ft (from topographic map). Prior to Oct. 2, 1951, at site 150 ft upstream at different datum.

Average discharge.--36 years, 31.1 cfs (22,520 acre-ft per year).

Extremes.--Maximum discharge during year, 294 cfs May 26 (gage height, 3.01 ft); minimum not determined.

1929-65: Maximum discharge, 362 cfs May 8, 1952 (gage height, 3.66 ft), from rating curve extended above 120 cfs; no flow June 22, 23, 1935.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Flow regulated by Continental Reservoir (capacity, 26,720 acre-ft). No diversion above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Aug. 1-18, Sept. 19-30)

0.6	0	1.8	52
.8	1.0	2.1	93
.9	2.0	2.3	130
1.0	3.5	2.7	220
1.2	9.5	3.1	316
1.5	26		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	9.5						225	142	1.0	48	87
2	11	9.5						230	154	1.0	48	107
3	10	11						230	196	1.0	1.2	106
4	10	8.0						163	203	1.0	1.0	74
5	10	8.3						161	172	1.0	1.0	60
6	10	8.9						*225	157	1.0	3.0	31
7	10	8.6						246	157	1.0	25	24
8	10	8.3						179	83	1.0	25	29
9	10	8.3						95	51	1.0	65	*30
10	10	11						62	102	1.0	102	30
11	10	8.9					2.2	47	144	1.0	186	30
12	9.2	10						45	106	1.0	261	21
13	9.5	8.9						45	88	1.0	251	17
14	10	4.4						46	88	1.0	249	17
15	20	1.5	1.5	1.7	1.9	2.0		46	50	26	254	17
16	14							77	33	43	*275	14
17	12							132	34	46	273	12
18	10							177	35	48	246	12
19	*9.2							189	20	48	242	2.0
20	10							142	.9	*48	220	.8
21	9.5						2.4	85	.9	46	177	.8
22	8.9						9.5	85	.9	47	165	.8
23	9.5	.8					19	87	1.0	102	163	.8
24	8.0						28	113	1.0	98	157	.8
25	7.4						41	198	*1.0	142	136	.8
26	8.9						41	270	1.0	191	122	.8
27	18						43	186	1.0	220	104	.8
28	13						65	*91	1.0	234	102	.8
29	16						132	69	1.0	246	104	.8
30	14						184	69	1.0	251	115	.8
31	11							107		138	115	
Total	341.1	137.1	46.5	52.7	53.2	62.0	608.9	4,122	2,025.7	1,988.0	4,236.2	728.8
Mean	11.0	4.57	1.5	1.7	1.9	2.0	20.3	133	67.5	64.1	137	24.3
Ac-ft	677	272	92	105	106	123	1,210	8,180	4,020	3,940	8,400	1,450

Calendar year 1964: Max 299 Min - Mean 21.1 Ac-ft 15,350  
Water year 1964-65: Max 275 Min - Mean 39.5 Ac-ft 28,580

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 14 to Apr. 22 (stage-discharge relation affected by ice during most of period), Aug. 6, 7.

8-2165. Willow Creek at Creede, Colo.

Location.--Lat 37°51'20", long 106°55'40", in SE¼ sec.25, T.42 N., R.1 W., on left bank at north city limits of Creede, 8 ft upstream from entrance to paved channel just downstream from Windy Gulch, half a mile downstream from confluence of East and West Willow Creeks, and 2½ miles upstream from mouth.

Drainage area.--35.3 sq mi.

Records available.--May 1951 to September 1965.

Gage.--Water-stage recorder and concrete control., Altitude of gage is 8,880 ft (from topographic map). Prior to Sept. 2, 1953, at site 17 ft upstream at same datum.

Average discharge.--14 years, 22.0 cfs (15,930 acre-ft per year).

Extremes.--Maximum discharge during year, 315 cfs May 21 (gage height, 3.93 ft); minimum not determined.

1951-65: Maximum discharge, 430 cfs June 5, 1957; maximum gage height, 4.16 ft May 23, 1958; minimum daily discharge, 0.2 cfs Mar. 25, 1956, probably caused by snowslide upstream.

Remarks.--Records good except those for period of no gage-height record, which are poor. Diversions above station for municipal supply of Creede.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 24-30)

Oct. 1 to Apr. 30 July 1 to Sept. 30				May 1 to June 30			
1.3	3.5	1.8	27	2.1	50	3.0	138
1.4	6.5	2.0	42	2.5	81	3.7	264
1.6	16	2.5	95				

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	8.3	(*)		(*)		6.5	89	* 160	93	54	18
2	10	8.3					5.9	125	172	90	60	* 20
3	9.6	* 7.8				(*)	5.9	148	168	90	* 51	18
4	9.6	6.2		(*)			5.6	135	144	90	52	18
5	9.6	6.5					5	110	125	84	53	18
6	9.2	7.0					5	* 92	148	80	46	20
7	9.2	7.0					5.0	84	188	* 83	43	18
8	9.2	6.5					3.5	78	195	91	43	17
9	9.2	6.5					5.6	70	144	84	40	16
10	9.2	7.4					5	67	117	82	38	16
11	9.2	6.5					5.0	62	113	83	35	16
12	8.8	5.0					5	60	108	84	33	15
13	* 8.3	7.4					4.7	58	130	73	31	14
14	8.3	7.0					4.7	57	165	66	31	14
15	8.3	7.0					* 5.6	56	* 195	61	30	14
16	7.8	7.4	5.5	5	5	5	7.8	62	177	60	29	14
17	8.3	7.4					12	79	184	62	29	14
18	7.8	7.8					16	106	184	59	36	16
19	7.4	7.0					18	135	183	55	29	18
20	7.4	7					28	184	195	* 56	27	18
21	7.4						42	230	* 168	54	25	16
22	7.0						54	264	144	49	25	16
23	7.4						71	230	125	46	23	17
24	7.4						83	174	134	45	22	18
25	6.5						84	131	124	42	21	20
26	7.0	7					71	106	105	40	20	21
27	7.4						55	92	96	41	18	22
28	7.4						46	81	102	37	18	24
29	8.3					(*)	44	86	97	38	20	22
30	8.3					5.6	61	104	92	44	22	20
31	7.8					6.2		118		42	19	
Total	259.3	211.0	170.5	155	140	156.8	770.8	3,473	4,382	2,004	1,023	528
Mean	8.36	7.03	5.5	5	5	5.06	25.7	112	146	64.6	33.0	17.6
Ac-ft	514	419	338	307	278	311	1,530	6,890	8,690	3,970	2,030	1,050

Calendar year 1964: Max 124 Min - Mean 16.2 Ac-ft 11,740  
Water year 1964-65: Max 264 Min - Mean 36.4 Ac-ft 26,330

Peak discharge (base, 120 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-3	1545	3.14	168	6-2	1930	3.40	206
5-21	2100	3.93	315	6-17	2030	3.74	275
6-7	1900	3.60	244				

\* Discharge measurement made on this day.  
Note.--No gage-height record Nov. 20 to Mar. 29 (stage-discharge relation affected by ice during part of period).

8-2175. Rio Grande at Wagonwheel Gap, Colo.

Location.--Lat 37°46'00", long 106°49'50", in NE¼ sec.35, T.41 N., R.1 E., on right bank 250 ft upstream from private bridge, 0.2 mile upstream from Goose Creek, and 0.3 mile west of town of Wagonwheel Gap.

Drainage area.--780 sq mi.

Records available.--May 1951 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 8,431.26 ft above mean sea level, datum of 1929.

Average discharge.--14 years, 497 cfs (359,800 acre-ft per year).

Extremes.--Maximum discharge during year, 3,370 cfs June 4; maximum gage height, 4.97 ft June 21; minimum discharge not determined. 1951-65: Maximum discharge, 4,870 cfs July 26, 1957 (gage height, 5.38 ft); minimum daily, 46 cfs Dec. 9, 1956.

Remarks.--Records good except those for period of ice effect, which are poor. Flow regulated by Santa Maria, Rio Grande, and Continental Reservoirs (total capacity, 121,400 acre-ft). Diversions above station for irrigation. Transmountain diversions to drainage area above station from Colorado River basin (see elsewhere in this report).

Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 20-25)

0.9	90	2.5	710
1.1	110	3.0	1,100
1.3	144	4.0	2,200
1.6	232	4.8	3,400
2.0	415		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	225	142	* 100		(*)		120	1,690	* 2,540	2,150	1,280	580
2	208	140	110				124	1,930	2,860	2,400	1,230	* 544
3	195	* 138	110			(*)	120	2,020	2,970	2,440	* 1,110	544
4	186	128	100				124	1,930	3,270	2,280	1,050	482
5	183	121	90				116	1,580	2,780	2,250	938	460
6	180	126	85				116	* 1,660	2,720	2,170	759	498
7	177	128	80				121	1,750	2,870	* 2,050	675	470
8	174	123	85				116	1,690	2,980	2,070	874	492
9	171	128	90				128	1,250	2,480	1,940	914	498
10	174	140	90				114	1,190	2,480	1,790	978	460
11	174	144	80				110	1,120	2,410	1,820	1,000	415
12	168	113	90	(*)			111	1,070	1,940	1,970	1,130	400
13	* 161	126	75				118	1,140	1,890	1,870	1,090	365
14	161	128	70				123	1,060	1,890	1,620	1,040	347
15	161	108	85				* 130	1,020	2,110	1,370	1,020	320
16	163	99	80	85	80	95	161	1,040	2,030	1,360	1,040	320
17	161	105	80				229	1,270	1,810	1,340	1,060	324
18	161	110	75				320	1,730	2,140	1,430	994	425
19	154	109	75				380	2,010	3,130	1,650	1,010	668
20	149	90	80				532	2,120	3,080	* 1,930	1,030	634
21	149	95	85				628	2,000	* 3,160	1,680	766	616
22	146	100	80				822	2,330	3,100	1,680	654	514
23	146	100	85				1,010	2,160	2,840	1,710	668	482
24	146	100	90				1,110	2,050	3,080	1,510	710	487
25	138	110	90				1,140	2,440	3,050	1,750	703	538
26	138	110	90				1,270	2,230	2,430	1,910	634	598
27	146	110	90				1,250	1,950	1,950	2,110	592	634
28	154	100	85				1,460	1,590	2,030	1,790	509	610
29	151	110	80			(*)	1,330	1,530	2,360	1,590	526	696
30	158	100	75				1,320	1,650	2,620	1,740	668	580
31	154		90				120	1,840		1,780	745	
Total	5,112	3,481	2,670	2,635	2,240	2,985	14,753	52,040	77,000	57,150	27,397	15,001
Mean	165	116	86.1	85	80	96.3	492	1,679	2,567	1,844	884	500
Ac-ft	10,140	6,900	5,300	5,230	4,440	5,920	29,260	103,200	152,700	113,400	54,340	29,750

Calendar year 1964: Max 2,900 Min 65 Mean 342 Ac-ft 248,000

Water year 1964-65: Max 3,270 Min - Mean 719 Ac-ft 520,600

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 20 to Apr. 1 (no gage-height record Dec. 31 to Mar. 29).

8-2185. Goose Creek at Wagonwheel Gap, Colo.

Location.--Lat 37°45'07", long 106°49'46", in SW $\frac{1}{4}$ SE $\frac{1}{4}$  sec.35, T.41 N., R.1 E., on left bank a quarter of a mile downstream from Pierce Creek, 1 mile upstream from mouth, 1 mile south of Wagonwheel Gap, and 8.8 miles southeast of Creede.

Drainage area.--90 sq mi, approximately.

Records available.--June 1954 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 8,460 ft (from topographic map).

Average discharge.--11 years, 58.4 cfs (42,280 acre-ft per year).

Extremes.--Maximum discharge during year, about 551 cfs June 16 (gage height, 4.11 ft); minimum not determined.

1954-65: Maximum discharge, 645 cfs July 27, 1957 (gage height, 4.44 ft); minimum daily, 9.6 cfs Nov. 15, 16, Dec. 5, 1956.

Flood in June 1927 is the greatest known including those in October 1911 and June 18, 1949. Flood in October 1911 probably exceeded that of June 18, 1949, from information by local residents.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Several small diversions above station for irrigation. Lake Humphreys (capacity, 842 acre-ft) above station with a fixed spillway and no gates has slight effect on flow.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Nov. 30

Dec. 1 to Sept. 30

2.3	8.0	2.6	29	3.2	140
2.5	17	2.8	55	3.6	290
2.6	23	3.0	92	4.1	545

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	23	17						221	290	355	135	42
2	22	18						304	294	420	174	48
3	22	18						355	308	395	137	43
4	21	16						326	304	360	135	39
5	21	16						263	272	335	191	38
6	21	17						245	276	326	158	44
7	21	16						229	326	304	135	42
8	20	16					22	213	390	330	117	43
9	20	16						184	410	304	105	55
10	21	19						181	350	272	99	42
11	20	17						158	345	294	92	39
12	19	17						152	308	308	84	39
13	19	18						174	360	290	78	39
14	19	18						161	446	241	70	37
15	18	19						158	501	250	69	34
16	18	20	17	16	16	17	38	170	*490	229	*72	34
17	19	20				(*)	46	233	446	225	72	42
18	19	20					62	295	490	276	72	96
19	*18	19					64	340	468	233	69	146
20	18	17		(*)			90	425	512	209	64	107
21	18						140	451	496	213	62	88
22	18	(*)					*174	484	452	177	58	78
23	18						213	430	415	158	57	76
24	17						217	355	474	146	49	78
25	16	20					191	299	425	140	46	82
26	17						152	245	350	135	44	84
27	19						119	205	308	*135	42	*86
28	18						101	*177	312	127	40	101
29	19						103	177	317	112	43	99
30	19		(*)				140	209	*345	135	60	86
31	17							237		130	46	
Total	595	554	527	496	448	527	2,180	3,056	11,480	7,564	2,675	1,907
Mean	19.2	18.5	17	16	16	17	72.7	260	383	244	86.3	63.6
Ac-ft	1,180	1,100	1,050	984	889	1,050	4,320	15,980	22,770	15,000	5,310	3,780

Calendar year 1964: Max 220 Min 10 Mean 36.6 Ac-ft 26,580  
 Water year 1964-65: Max 512 Min - Mean 101 Ac-ft 73,410

Peak discharge (base, 200 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-23	2200	3.55	268	6-16	0200	4.11	†551
5-3	2200	3.86	415	7-2	2400	3.94	468
5-21	2330	4.10	540	8-5	0130	3.51	268
6-8	2400	3.96	457				

† About.

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 19 to Apr. 16 (stage-discharge relation affected by ice during most of period).

## 8-2195. South Fork Rio Grande at South Fork, Colo.

Location.--Lat 37°39'40", long 106°38'50", in sec.4, T.39 N., R.3 E., on left bank near U. S. Highway 160, a quarter of a mile downstream from Church Creek, 1½ miles upstream from mouth, and 1½ miles southwest of village of South Fork.

Drainage area.--216 sq mi.

Records available.--August 1910 to September 1922, May 1936 to September 1965. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 8,221.79 ft above mean sea level, datum of 1929. Aug. 9, 1910, to Mar. 28, 1915, staff or chain gage and Mar. 29, 1915, to Sept. 30, 1922, water-stage recorder, at bridges 1 mile downstream at different datums.

Average discharge.--41 years, 212 cfs (153,500 acre-ft per year).

Extremes.--Maximum discharge during year, 2,430 cfs June 18 (gage height, 5.97 ft); minimum not determined.

1910-22, 1936-65: Maximum discharge, 8,000 cfs Oct. 5, 1911 (gage height, 9.7 ft, from floodmarks, present site and datum), from rating curve extended above 1,500 cfs; minimum daily, 14 cfs Nov. 28, 29, 1960.

Maximum stage known since at least 1873, that of Oct. 5, 1911. Flood of June 29, 1927, reached a stage about 1 ft lower than that of Oct. 5, 1911, from information by local resident.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Transmountain diversions from Colorado River basin to drainage area above station through Treasure Pass ditch (see elsewhere in this report). Natural flow of stream affected by a few small diversions for irrigation, slight regulation by Beaver Creek Reservoir (capacity, 4,760 acre-ft) and several smaller storage reservoirs.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 2-22)

1.0	26	3.0	415
1.5	74	4.0	850
2.0	150	5.0	1,500
2.5	265	6.0	2,460

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	75	38					154	745	1,030	1,120	317	101
2	71	41					127	905	1,080	1,260	401	115
3	66	38					126	960	1,110	1,220	365	116
4	66	32					112	883	1,030	1,180	311	106
5	64	34					102	735	916	1,120	317	103
6	62	40					101	682	932	1,060	278	118
7	60	35					106	624	1,120	1,010	230	108
8	56	37					99	606	1,270	1,080	198	105
9	55	39					105	542	1,320	954	192	121
10	55	45					98	550	*1,120	866	195	102
11	56	35				38	89	498	1,120	1,020	186	94
12	50	36					81	482	1,080	978	172	99
13	50	39					81	522	1,330	835	160	94
14	51	38					84	518	1,650	691	154	87
15	50	37					84	502	1,800	650	148	82
16	48	48	42	38	36		122	534	*1,810	598	150	80
17	50	46					195	696	1,810	570	152	96
18	49	45				(*)	270	900	2,090	619	156	178
19	*44	45					314	1,070	2,140	566	148	432
20	46	43		(*)			432	1,340	2,090	498	141	412
21	46						582	1,430	2,060	454	134	311
22	43						*686	1,560	1,650	398	129	252
23	45	(*)				46	775	1,470	1,720	362	126	252
24	40						740	1,200	*1,900	341	119	262
25	38						614	966	1,650	305	*113	272
26	40	45					522	800	1,410	299	109	275
27	45						415	664	1,240	299	106	*285
28	43					85	371	*582	1,160	*260	103	329
29	46						390	594	1,100	235	103	329
30	46		(*)				534	682	1,100	272	116	317
31	39						785			293	106	
Total	1,595	1,241	1,302	1,178	1,008	1,500	8,511	25,027	42,838	21,413	5,635	5,633
Mean	51.5	41.4	42	38	36	48.4	284	807	1,428	691	182	188
Ac-ft	3,160	2,460	2,580	2,340	2,000	2,980	16,880	49,640	84,970	42,470	11,180	11,170

Calendar year 1964: Max 1,080 Min 17 Mean 134 Ac-ft 96,940  
Water year 1964-65: Max 2,140 Min - Mean 320 Ac-ft 231,800

Peak discharge (base, 900 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-23	2000	4.17	990	6-18	2330	5.97	2,430
5-2	2100	4.47	1,120	6-24	1200	5.60	2,030
5-22	0030	5.25	1,720	7-2	2300	4.81	1,360

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 18 to Mar. 29 (stage-discharge relation affected by ice during most of period). Stage-discharge relation affected by ice Nov. 13, 14, Mar. 30 to Apr. 1.

## 8-2200. Rio Grande near Del Norte, Colo.

Location.--Lat 37°41'20", long 106°27'40", in NW¼ sec.29, T.40 N., R.5 E., on right bank 20 ft downstream from county highway bridge, 5 miles upstream from Pinos Creek, and 6 miles west of Del Norte.

Drainage area.--1,320 sq mi, approximately.

Records available.--June 1889 to September 1965. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 7,980.25 ft above mean sea level, datum of 1929. Prior to May 16, 1908, staff gage at site 4 miles downstream at different datum. May 16, 1908, to Nov. 8, 1910, staff or chain gage on bridge at present site and datum.

Average discharge.--76 years, 915 cfs (662,400 acre-ft per year).

Extremes.--Maximum discharge during year, 6,210 cfs June 21 (gage height, 5.02 ft); minimum daily, 95 cfs Dec. 14.

1889-1965: Maximum discharge, 18,000 cfs Oct. 5, 1911 (gage height, 6.80 ft), from rating curve extended above 12,900 cfs; minimum daily, 69 cfs Aug. 21, 1902.

Maximum stage known since at least 1873, that of Oct. 5, 1911, from information by local residents.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Discharge measurements generally made twice a month. Small diversions above station for irrigation. Flow regulated by Beaver Creek Reservoir since 1910, Santa Maria Reservoir since 1912, Rio Grande Reservoir since 1913, and Continental Reservoir since 1925 (total capacity, 126,100 acre-ft), and by several smaller reservoirs. Transmountain diversions to drainage area above station from Colorado River basin (see elsewhere in this report).

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 30 to May 23, June 15-22, June 27 to July 2)

0.4	76	2.5	1,570
.8	180	3.0	2,320
1.1	335	4.0	4,240
1.5	588	5.0	6,520
2.0	1,010		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	330	194	125	115	115	135	318	2990	3950	3700	2030	813
2	302	189	125	115	120	135	318	3560	4300	4090	2020	737
3	286	189	130	105	125	130	296	3860	4470	4200	1780	745
4	269	171	130	105	120	120	308	3820	4710	4050	1620	672
5	264	162	125	110	120	125	275	3140	4240	3860	1640	641
6	258	171	120	115	125	125	258	3040	4050	3740	1370	680
7	253	174	115	120	120	125	280	3080	4650	3560	1130	680
8	248	168	110	130	115	130	264	3150	4710	3700	1250	680
9	242	168	110	120	115	130	296	2460	4670	3520	1300	721
10	242	185	110	115	110	130	269	2390	3990	3190	1320	664
11	242	198	105	115	110	135	248	2210	4280	3400	1330	581
12	237	171	105	110	110	135	221	2100	3500	3500	1400	554
13	226	165	100	110	105	140	248	2240	3700	3270	1380	527
14	231	185	95	110	110	140	258	2140	3880	2840	1320	488
15	231	156	100	110	120	145	269	2060	4260	2480	1290	449
16	231	127	105	115	130	150	371	2060	4260	2360	1310	431
17	231	147	105	120	140	150	534	2460	3900	2300	1340	468
18	226	159	110	130	145	145	704	3290	4240	2390	1330	611
19	221	150	110	130	135	140	804	3900	5370	2540	1280	1250
20	208	120	110	125	140	140	1150	4470	5810	2810	1300	1240
21	208	120	110	130	145	135	1490	4370	5920	2480	1060	1080
22	198	125	110	125	135	135	1810	4910	5630	2360	919	937
23	198	130	110	120	120	140	2190	4850	5490	2320	892	857
24	198	125	115	115	125	150	2390	4180	5720	2100	928	866
25	185	125	115	120	130	165	2190	4390	5600	2190	919	919
26	174	130	110	125	130	171	2340	3860	4650	2410	857	964
27	185	130	115	120	135	177	2050	3380	3680	2630	788	1040
28	203	120	110	120	140	203	2100	2810	3640	2390	704	1110
29	212	125	110	120	-	237	2140	2640	3740	2000	696	1160
30	217	125	110	115	-----	231	2300	2840	4300	2140	892	1040
31	212	-----	110	115	-----	280	-----	3040	-----	2390	983	-----
Total	7168	4604	3470	3650	3490	4729	28689	99690	135310	90910	38378	23605
Mean	231	153	112	118	125	153	956	3216	4510	2933	1238	787
Ac-ft	14,220	9,130	6,880	7,240	6,920	9,380	56,900	197,700	268,400	180,300	76,120	46,820

Calendar year 1964: Max 4,140 Min 80 Mean 510 Ac-ft 370,100

Water year 1964-65: Max 5,920 Min 95 Mean 1,216 Ac-ft 880,000

Note.--Stage-discharge relation affected by ice Nov. 20 to Dec. 13, Dec. 17 to Jan. 8, Jan. 18 to Feb. 13. No gage-height record Dec. 14-16, Jan. 9-17, Feb. 14 to Mar. 24 (stage-discharge relation affected by ice during most of periods).

8-2205. Pinos Creek near Del Norte, Colo.

Location.--Lat 37°35'30", long 106°26'50", in sec.29, T.39 N., R.5 E., on left bank just downstream from Bennett Creek, 8 miles southwest of Del Norte.

Drainage area.--53 sq mi, approximately.

Records available.--April 1919 to September 1924, May 1936 to September 1965. No winter records prior to 1950 except water years 1941, 1944-47. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder and rectangular box flume. Altitude of gage is 8,350 ft (from topographic map). May 1, 1919, to Sept. 30, 1924, staff gages at sites about 1,000 ft downstream at different datums.

Average discharge.--21 years (1940-41, 1943-47, 1949-65), 24.0 cfs (17,380 acre-ft per year).

Extremes.--Maximum discharge during year, 413 cfs June 18 (gage height, 2.78 ft), from rating curve extended above 260 cfs; minimum not determined.

1919-24, 1936-65: Maximum discharge not determined, occurred June 3, 1922, caused by failure of private fish-lake dam; maximum discharge determined, 720 cfs Aug. 3, 1936 (gage height, 4.19 ft), by slope-area measurement of peak flow; minimum daily recorded, 1.8 cfs Sept. 26-28, 1951.

Maximum stage known since at least 1903, that of June 3, 1922, from information by local residents.

Revisions.--The figures of maximum discharge for some water years have been revised, as shown in the following table. They supersede figures previously published.

Water year	Date	Discharge (cfs)	Gage height (feet)
1961	May 2, 1961	156	1.67
1962	May 10, 1962	313	2.45
1964	May 22, 1964	174	1.71

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. One small diversion above station.

Revisions.--Revised figures of discharge, in cubic feet per second, for the water years 1962 and 1964, superseding those previously published, are given herewith:

1962		1964	
May	5..... 143	May	13..... 77
	6..... 156		14..... 76
	7..... 184		15..... 81
	8..... 212		16..... 103
	9..... 239		17..... 105
	10..... 250		18..... 92
	11..... 256		19..... 78
	12..... 261		20..... 78
	13..... 243		21..... 86
	14..... 210		22..... 106
	15..... 170		23..... 108
	16..... 143		24..... 105
	17..... 129		25..... 111
			26..... 105
			27..... 97

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
May 1962.....	4,525	261	86	146	8,980
Water year 1961-62.....	-	261	-	35.4	25,630
Calendar year 1962.....	-	261	-	34.7	25,130
May 1964.....	2,043	111	18	65.9	4,050
Water year 1963-64.....	-	111	-	15.4	11,190

Revised peak discharge.--1961-62: Apr. 20 (2000) 134 cfs (1.58 ft); Apr. 25 (2000) 154 cfs (1.69 ft); May 10 (2000) 313 cfs (2.45 ft); June 11 (2300) 141 cfs (1.62 ft).

1963-64: May 16 (2000) 148 cfs (1.58 ft); May 22 (2200) 174 cfs (1.71 ft).



## 8-2205. Pinos Creek near Del Norte, Colo.--Continued

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

0.2	3.0	1.2	84
.3	6.0	1.6	152
.5	15	2.0	232
.8	37	2.5	344

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.6	6.4					14	110	184	168	78	18
2	7.2	6.8					12	168	182	180	86	21
3	6.8	6.4					13	184	182	168	68	19
4	7.2	6.0					14	178	178	160	62	18
5	7.2	b5.6					11	139	164	148	62	17
6	7.2	b6.6					13	113	158	145	55	18
7	7.2	b6.8					12	118	172	145	49	17
8	6.8	b7.0					14	114	196	147	46	20
9	6.8	b7.0					14	114	216	139	45	17
10	6.8	6.8					12	90	198	130	44	16
11	6.8	6.4					10	81	188	130	39	15
12	6.4	b5.8					15	81	186	108	38	15
13	6.4	b5.4					14	83	210	105	34	14
14	6.4	b5.8					14	84	265	95	31	*14
15	6.0	b6.0					15	86	276	89	31	13
16	* 6.0		5	6	5.5	7	21	94	* 280	81	35	12
17	6.4					(*)	29	121	294	87	35	14
18	6.4						34	174	332	83	34	28
19	6.0						43	214	344	76	29	36
20	6.0			(*)			62	239	332	74	28	30
21	6.4						78	254	322	70	28	23
22	6.0						* 97	269	298	66	27	20
23	6.0	b5.5					111	272	283	* 70	24	21
24	5.7						116	228	294	74	22	23
25	5.7						89	186	274	73	21	22
26	6.4					7.8	74	* 141	236	69	21	21
27	6.4					9.0	59	127	214	* 71	20	20
28	6.4					8.6	47	114	194	66	20	26
29	6.4					8.4	46	123	188	55	20	26
30	6.4		(*)			8.8	65	139	* 178	51	21	21
31	6.4					12		164		68	19	
Total	201.8	177.3	155	186	154.0	229.6	1,168	4,602	7,018	3,191	1,172	595
Mean	6.51	5.91	5	6	5.5	7.41	38.9	148	234	103	37.8	19.8
Ac-ft	400	352	307	369	305	455	2,320	9,130	13,920	6,330	2,320	1,180

Calendar year 1964: Max 111 Min - Mean 15.8 Ac-ft 11,500  
Water year 1964-65: Max 344 Min - Mean 51.6 Ac-ft 37,390

Peak discharge (base, 120 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-23	1930	1.50	134	6-18	2130	2.78	413
5- 3	2100	1.90	212	7-23	2030	1.51	136
5-22	2100	2.38	316	8- 1	2330	1.50	134
5-31	2100	1.87	206				

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 19 to Mar. 29 (stage-discharge relation affected by ice during most of period), July 20, 21.

8-2215. Rio Grande near Monte Vista, Colo.

Location.--Lat 37°36'30", long 106°08'50", at west line of sec.19, T.39 N., R.8 E., on left bank 25 ft downstream from bridge on U. S. Highway 285, 2 miles north of Monte Vista, and 12 miles downstream from San Francisco Creek.

Drainage area.--1,590 sq mi, approximately.

Records available.--May 1926 to September 1965. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 7,654.16 ft above mean sea level, datum of 1929. May 1, 1926, to July 5, 1927, staff or slope gage near present site at datum 0.50 ft lower. July 6-22, 1927, chain gage and July 23, 1927, to Feb. 22, 1934, water-stage recorder, near present site at datum 0.50 ft higher. Feb. 23, 1934, to Aug. 19, 1936, water-stage recorder at present site and datum. Aug. 20 to Dec. 30, 1936, water-stage recorder at site 75 ft downstream at present datum. Dec. 31, 1936, to Apr. 2, 1937, water-stage recorder at present site and datum. Apr. 3, 1937, to June 14, 1938, water-stage recorder at site 75 ft downstream at present datum.

Average discharge.--39 years, 325 cfs (235,300 acre-ft per year).

Extremes.--Maximum discharge during year, 3,900 cfs June 20 (gage height, 6.70 ft); minimum daily, 3.6 cfs Apr. 15.  
1926-65: Maximum discharge, 18,500 cfs June 30, 1927 (gage height, 7.35 ft, present datum, from floodmarks); minimum daily, 1.5 cfs Apr. 14, 1959.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Diversions above station for irrigation of about 90,000 acres. Flow regulated by Beaver Creek, Santa Maria, Rio Grande, and Continental Reservoirs (total capacity, 126,100 acre-ft), and by several smaller reservoirs. Transmountain diversions to drainage area above station from Colorado River basin (see elsewhere in this report).

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 27 to May 31, July 19-30)

1.4	3.0	2.6	285
1.5	6.0	3.2	590
1.6	13	4.0	1,060
1.7	24	5.0	1,850
1.9	58	6.0	2,930
2.2	134	6.7	3,900

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	82	38	17				*140	712	1,310	1,210	1,200	117
2	88	29	20				117	928	*1,370	1,610	1,130	156
3	82	24	26				62	1,040	1,240	1,570	1,010	156
4	85	26	14				22	958	1,370	1,330	790	117
5	90	23	11				15	748	1,300	1,140	736	80
6	92	20	11				26	874	1,300	880	518	78
7	92	22	11				9.5	934	1,520	856	298	128
8	92	26	12				* 6.7	874	*1,620	1,120	370	105
9	85	26	13				5.7	672	1,870	1,030	*370	131
10	82	26	13				5.4	796	1,340	1,190	312	186
11	82	32	50				4.8	790	1,910	1,360	290	120
12	80	44	90				4.5	*754	1,140	1,370	267	100
13	78	27	82				4.2	826	1,200	988	232	95
14	73	13	84				3.9	772	1,490	640	176	* 54
15	78	9.5	86				3.6	712	1,850	480	134	35
16	* 71	*12		128	150		4.2	712	*1,980	513	128	51
17	73	14					30	844	1,650	694	111	67
18	82	18					92	1,070	1,740	718	172	102
19	82	17					92	*1,240	*2,690	662	193	623
20	85	8.1					290	1,440	3,520	618	224	922
21	80	6.7					405	1,250	3,690	584	190	898
22	76	6.0					*420	1,580	3,400	* 640	90	862
23	80	8.1					355	1,710	2,930	623	67	868
24	80	7.4					385	1,330	2,820	612	*128	856
25	78	21					345	1,400	3,010	634	146	892
26	71	21					190	480	1,010	2,400	689	122
27	62	26					200	400	1,010	1,480	623	92
28	60	21					205	672	994	1,150	634	71
29	51	20					200	628	904	1,050	435	73
30	49	20					168	513	952	*1,240	530	146
31	37						162		1,020		736	159
Total	2,378	611.8	2,540	3,968	4,200	5,250	5,541.5	30,856	56,580	26,719	9,945	13,035
Mean	76.7	20.4	81.9	128	150	169	185	995	1,886	862	321	434
Ac-ft	4,720	1,210	5,040	7,870	8,330	10,410	10,990	61,200	112,200	53,000	19,730	25,850

Calendar year 1964: Max 1,400 Min 6.0 Mean 168 Ac-ft 121,900  
Water year 1964-65: Max 3,690 Min 3.6 Mean 443 Ac-ft 320,600

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 30 to Jan. 18, Feb. 26 to Mar. 3. No gage-height record Dec. 6-29, Jan. 19 to Feb. 25, Mar. 4-28 (stage-discharge relation affected by ice during most of periods).

## 8-2230. Rio Grande at Alamosa, Colo.

Location.--Lat 37°29', long 105°53', in SE¼ sec.4, T.37 N., R.10 E., on right bank a quarter of a mile northwest of city limits of Alamosa and 9 miles upstream from Alamosa Creek.

Drainage area.--1,710 sq mi, approximately.

Records available.--May 1912 to September 1965. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Datum of gage is 7,532.66 ft above mean sea level, datum of 1929. Prior to Apr. 7, 1915, staff or chain gage and Apr. 7, 1915, to Nov. 5, 1935, water-stage recorder, at railroad and highway bridges in Alamosa 1 to 2½ miles downstream at different datums. Nov. 6, 1935, to June 30, 1942, water-stage recorder at present site at datum 1.00 ft higher.

Average discharge.--53 years, 260 cfs (188,200 acre-ft per year).

Extremes.--Maximum discharge during year, 2,380 cfs June 23 (gage height, 6.46 ft); minimum daily, 17 cfs Oct. 1.

1912-65: Maximum discharge, 14,000 cfs July 1, 1927 (gage height, 8.37 ft, site and datum then in use); maximum gage height, 10.62 ft June 20, 1949; minimum daily discharge, 1.0 cfs May 19, 1950.

Flood in October 1911 (stage, 0.2 ft lower than July 1, 1927, from floodmark) probably exceeded that of July 1, 1927, and is probably the greatest known since at least 1884, from information by local resident.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by transmountain diversions, storage reservoirs, ground-water withdrawals and diversions for irrigation, and return flow from irrigated areas.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Nov. 15 to Dec. 5, July 16 to Aug. 1, Aug. 28 to Sept. 20)

0.9	10	3.0	280
1.2	29	4.0	525
1.6	64	5.0	950
2.0	107	6.0	1,780
2.5	180	6.5	2,440

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	17	33	75				216	51	107	390	209	72
2	23	34	91				200	94	238	296	562	58
3	22	34	67				177	230	314	438	689	75
4	22	32	76				144	328	432	681	649	88
5	22	31	62				111	260	286	745	519	84
6	21	31					96	134	288	614	477	70
7	21	31					92	146	360	455	330	68
8	22	31					87	150	504	302	200	78
9	22	32					80	119	645	302	160	83
10	22	34					73	69	*825	415	134	85
11	22	33					70	100	600	408	87	97
12	23	29					66	106	962	549	75	78
13	24	24					62	95	495	697	*65	*78
14	24	27					60	136	528	705	56	73
15	23	23					58	115	725	486	53	71
16	23	*21					56	73	1,040	314	49	67
17	24	20					54	64	1,180	200	46	63
18	25	22					63	90	944	148	50	59
19	25	26					97	*194	1,020	176	76	69
20	24	35					80	296	1,440	212	81	354
21	*24	48					*64	438	*2,060	*192	81	586
22	26	42					95	355	2,130	134	79	576
23	26	45					97	555	2,360	85	61	543
24	27	47					87	850	2,130	92	54	549
25	27	53					81	428	1,880	99	53	555
26	28	54					230	60	*418	1,940	122	583
27	28	63					260	75	230	1,650	154	629
28	28	52					260	48	202	754	119	677
29	28	64					*262	105	150	452	126	750
30	29	69					254	128	119	316	80	805
31	35	-----					228	-----	119	-----	80	-----
Total	757	1,120	2,659	3,875	4,480	6,494	2,782	6,714	28,605	9,816	5,284	8,023
Mean	24.4	37.3	85.8	125	160	209	92.7	217	954	317	170	267
Ac-ft	1,500	2,220	5,270	7,690	8,890	12,880	5,520	13,320	56,740	19,470	10,480	15,910

Calendar year 1964: Max - Min - Mean 57.3 Ac-ft 41,610  
Water year 1964-65: Max 2,360 Min 17 Mean 221 Ac-ft 159,900

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 29 to Mar. 28 (stage-discharge relation affected by ice during most of period).

## RIO GRANDE BASIN

Closed basin in San Luis Valley, Colo.

8-2245. Kerber Creek at Ashley Ranch, near Villa Grove, Colo.

Location.--Lat 38°15', long 106°08', in sec.7, T.46 N., R.8 E., on left bank at Ashley Ranch, 5 miles upstream from Little Kerber Creek and 10 miles west of Villa Grove.

Drainage area.--38 sq mi, approximately.

Records available.--June 1923 to September 1926 (published as Kerber Creek near Villa Grove), May 1936 to September 1965. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 8,900 ft, revised (from topographic map). Prior to Dec. 10, 1963, at site 150 ft upstream at datum 1.50 ft higher.

Average discharge.--32 years, 12.9 cfs (9,340 acre-ft per year).

Extremes.--Maximum discharge during year, 130 cfs (estimated) about June 18; minimum not determined.

1923-26, 1936-65: Maximum discharge, 407 cfs May 14, 1941, from rating curve extended above 140 cfs; maximum gage height, 5.04 ft (site and datum then in use) May 11, 1947 (backwater from beaver dam); minimum daily discharge, 0.2 cfs Sept. 3, 1950, July 30 to Aug. 2, 1963, but may have been less during periods of no gage-height record.

Maximum discharge known since at least 1872, that of May 14, 1941, from information by local residents.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 7, 9-11, June 19-28, Aug. 9 to Sept. 18, Sept. 28-30)

0.3	1.7	0.8	23
.4	3.8	1.0	44
.6	10	1.5	130

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.6	3.4						32	73	51	20	5.3
2	3.6	3.6						39	*71	51	18	5.2
3	3.4	3.8					5.2	56	70	51	17	5.8
4	3.4	3.2						63	70	49	16	5.8
5	3.4	3.6						61	71	46	14	5.8
6	3.4	4.4					5.4	51	64	39	13	7.0
7	3.4	4.4					*5.5	46	*58	38	12	5.8
8	3.4	3.8					5.6	49	66	38	10	*6.6
9	3.4	4.1					5.8	43	81	36	*9.3	6.3
10	3.6	4.1					5.8	40	78	36	8.6	5.2
11	3.6	4.4					6.3	*38	80	34	8.6	5.2
12	3.6	4.4					6.6	33	81	*38	8.2	5.2
13	3.6	3.8					6.8	36	81	34	7.4	4.9
14	3.6	4.0					7.4	32	85	30	8.2	4.6
15	3.6	4.2					9.5	30	*93	28	9.3	4.4
16	3.6		2.5	1.8	1.8	3.2	12	30	104	28	8.2	4.4
17	3.8						13	32	102	26	7.8	4.4
18	3.8						15	42	110	25	9.7	6.3
19	3.4						17	46	98	25	8.6	11
20	3.2						20	*58	95	22	8.9	11
21	*3.2						20	86	92	20	8.6	8.9
22	3.4						*28	112	90	18	8.9	*7.0
23	3.6	3.8					32	114	88	17	8.9	7.4
24	3.8	(*)					34	102	93	17	7.4	7.4
25	3.8						32	93	90	17	*7.0	7.4
26	3.8				(*)		28	78	70	17	6.3	7.0
27	3.8						25	66	*54	20	6.0	7.0
28	3.6			(*)			22	63	51	18	6.0	7.4
29	3.6		(*)		-		22	51	51	*17	6.6	8.2
30	3.4				-		24	52	51	19	6.6	7.8
31	3.4				-			59	-	21	6.0	-
Total	109.8	116.2	77.5	55.8	50.4	99.2	434.7	1,733	2,361	926	301.1	195.7
Mean	3.54	3.87	2.5	1.8	1.8	3.2	14.5	55.9	78.7	29.9	9.71	6.52
Ac-ft	218	230	154	111	100	197	862	3,440	4,680	1,840	597	388

Calendar year 1964: Max 85 Min - Mean 9.57 Ac-ft 6,950  
Water year 1964-65: Max 114 Min - Mean 17.7 Ac-ft 12,820

Peak discharge (base, 70 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-4	1900	1.13	76	†6-18	Unknown	Unknown	†130
5-22	2100	1.40	121	7-12	1800	1.15	78
6-1	0300	1.13	75	7-30	1330	1.22	76

† About.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 12-20, Apr. 8, 12-17. No gage-height record Nov. 21 to Apr. 6 (stage-discharge relation affected by ice during most of period), June 17-22.

Closed basin in San Luis Valley, Colo.

8-2270. Saguache Creek near Saguache, Colo.

Location.--Lat 38°10', long 106°17', in SE¼ sec.10, T.45 N., R.6 E., on left bank just upstream from Ford Creek, 10 miles northwest of Saguache.

Drainage area.--595 sq mi.

Records available.--August 1910 to September 1912, June 1914 to September 1965. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is about 8,050 ft (estimated from nearby U. S. Coast and Geodetic Survey level line).

Prior to Apr. 9, 1934, at sites three-quarters of a mile downstream at different datums.

Average discharge.--53 years, 71.0 cfs (51,400 acre-ft per year).

Extremes.--Maximum discharge during year, 595 cfs June 19 (gage height, 2.51 ft), from rating curve extended above 300 cfs; minimum not determined.

1910-12, 1914-65: Maximum discharge, 790 cfs Aug. 3, 1964 (gage height, 2.85 ft), from rating curve extended above 83 cfs; minimum daily recorded, 8.2 cfs Dec. 22, 1950, Aug. 17, 1951.

Greatest flood known occurred in 1869. Flood in 1884 or 1886 exceeded that of Aug. 3, 1964, from information by local residents.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Natural flow of stream affected by transmountain diversions from Colorado River basin to drainage area above station through Tarbell ditch (see elsewhere in this report) and diversions above station for irrigation.

Revisions.--Records for May and June 1951 are in error. Revised records for this period are on file in the District Office and will be published in a later water supply paper.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 24 to June 7, June 16, 17)

Oct. 1 to June 16

June 17 to Sept. 30

0.5	20	1.5	135	0.7	49	1.6	245
.6	24	2.0	265	1.0	92	2.0	375
.8	38	2.5	500	1.3	158	2.5	590
1.1	69						

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	32	25				32	62	88	238	316	239	73
2	31	26				28	61	110	*256	308	257	71
3	29	27				26	53	133	296	296	236	79
4	29	26				26	55	151	296	269	182	76
5	28	24				27	54	153	304	251	197	71
6	31	23				28	43	175	272	233	188	79
7	32	23				28	51	202	256	215	156	83
8	31	24			28	30	45	200	293	230	143	*78
9	32	25			33	51	180	324	236	*133	70	
10	32	27			31	45	170	345	233	126	67	
11	31	26				31	34	162	320	224	124	66
12	30	27				31	35	141	316	*278	113	64
13	29	24				28	a 38	149	272	254	107	63
14	30	23				28	a 41	141	226	242	111	60
15	32	24				29	a 40	145	*232	209	115	57
16	32	25	23	26	28	30	a 41	178	304	212	113	56
17	32	26			28	32	a 45	185	400	230	126	54
18	29	27			28	29	a 48	188	450	233	153	64
19	29	27			29	28	52	190	535	236	156	126
20	a 28	23			30	26	63	*190	495	245	166	120
21	* 28	a 23			32	31	* 74	202	470	272	138	98
22	26	a 23			31	36	77	226	454	233	129	* 79
23	26	23			31	29	96	279	414	197	118	78
24	27	* 23			29	31	101	300	396	177	107	76
25	25	27			32	30	98	259	386	254	* 96	76
26	23	29			* 32	26	93	256	254	230	85	74
27	26	29			33	27	85	226	* 278	203	78	74
28	28	25			32	32	74	214	266	* 185	73	74
29	28	23		(*)	-	41	68	229	275	166	76	74
30	28	24			-	48	73	241	299	194	98	71
31	28	-			-	59	-	247	-	233	85	-
Total	902	751	713	806	815	971	1,796	5,910	9,922	7,294	4,224	2,251
Mean	29.1	25.0	23	26	29.1	31.3	59.9	191	331	235	136	75.0
Ac-ft	1,790	1,490	1,410	1,600	1,620	1,930	3,560	11,720	19,680	14,470	8,380	4,460

Calendar year 1964: Max 221 Min - Mean 42.6 Ac-ft 30,940

Water year 1964-65: Max 535 Min - Mean 99.6 Ac-ft 72,110

Peak discharge (base, 210 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-8	1700	1.76	211	7-13	0600	1.88	333
5-24	0230	2.16	380	7-21	1100	1.75	290
6-10	1100	2.20	380	7-25	2100	1.92	347
6-19	1330	2.51	595	8-2	0130	1.71	278

\* Discharge measurement made on this day.

a No gage-height record.

Note.--Stage-discharge relation affected by ice Nov. 6-12, 14-19, 25-27, 29, 30, Dec. 1 to Feb. 15, Mar. 1-5, 19-21.

## RIO GRANDE BASIN

Closed basin in San Luis Valley, Colo.

8-2275. North Crestone Creek near Crestone, Colo.

Location.--Lat 38°00'49", long 105°41'32", on right bank in canyon, 1½ miles northeast of Crestone, Saguache County, and 3¼ miles upstream from South Crestone Creek.

Drainage area.--10.7 sq mi.

Records available.--May 1936 to September 1965 (no winter records prior to 1948).

Gage.--Water-stage recorder. Altitude of gage is 8,360 ft (from topographic map).

Average discharge.--18 years (1947-65), 10.6 cfs (7,670 acre-ft per year).

Extremes.--Maximum discharge during year, 153 cfs June 17 (gage height, 2.23 ft); minimum not determined.

1936-65: Maximum discharge, 735 cfs Aug. 6, 1936 (gage height, 4.33 ft), from rating curve extended above 160 cfs on basis of slope-area measurement of peak flow; minimum daily recorded, 0.4 cfs Apr. 3, 1945.

Maximum stage known probably since at least 1884 occurred in October 1911. No flood since that in October 1911 has exceeded the flood of Aug. 6, 1936, from information by local residents.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 15-17)

0.9	1.3	1.4	20
1.0	3.0	1.6	39
1.1	5.5	2.1	112
1.2	9.0		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.5	4.0	3.5				4.0	22	52	55	49	8.6
2	9.0	4.0	3.5				3.8	30	* 51	55	42	8.3
3	8.6	4.0	3.5				3.8	36	52	56	37	8.6
4	8.3	3.8	b 3.4				3.8	34	48	56	32	8.0
5	8.3	3.8	b 3.2				3.5	26	46	55	28	8.3
6	8.0	3.8					3.5	22	43	55	26	10
7	7.6	3.8					3.2	18	47	53	23	10
8	7.6	3.5					3.5	17	58	55	22	* 12
9	7.6	3.5					3.8	14	62	52	* 19	12
10	7.6	3.2					3.5	14	59	49	19	12
11	7.6	2.8					3.2	* 12	59	51	19	12
12	7.2	3.2					3.8	15	59	* 58	16	11
13	7.2	4.2				1.7	3.5	15	67	51	15	10
14	6.9	3.5					3.5	15	88	46	15	8.6
15	6.6	4.0					3.5	14	* 90	43	16	8.3
16	6.2	4.2		2.6	2.0		4.0	14	95	43	16	7.6
17	6.2	4.5					5.2	13	100	43	16	7.6
18	6.2	* 5.0	3.0				6.2	29	102	42	16	10
19	5.8	b 4.4					5.8	37	81	40	18	13
20	5.8	b 3.4					8.0	* 44	59	39	17	14
21	* 5.2	b 3.2					14	52	48	38	15	13
22	5.2	b 3.4					14	52	62	37	14	* 12
23	5.5	b 3.6					14	51	65	32	13	13
24	5.0	3.6					15	49	65	34	12	15
25	4.8	3.8					13	38	65	32	* 11	17
26	4.8	4.0			(*)	1.9	12	31	60	27	10	18
27	4.8	3.8				1.9	9.0	25	* 59	27	9.5	19
28	4.8	3.5		(*)		2.0	8.3	22	59	28	9.0	21
29	4.8	3.8			-	2.5	8.3	22	60	* 26	10	22
30	4.5	3.5	(*)			* 3.0	12	28	60	26	10	19
31	4.5					4.0		38		35	9.5	
Total	201.7	112.8	95.1	80.6	56.0	57.8	202.7	849	1,921	1,339	584.0	368.9
Mean	6.51	3.76	3.07	2.6	2.0	1.86	6.76	27.4	64.0	43.2	18.8	12.3
Ac-ft	400	224	189	160	111	115	402	1,680	3,810	2,660	1,160	732

Calendar year 1964: Max 63 Min - Mean 8.99 Ac-ft 6,520

Water year 1964-65: Max 102 Min - Mean 16.1 Ac-ft 11,640

Peak discharge (base, 60 cfs)--June 17 (2100) 153 cfs (2.23 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 24, 25, Dec. 6 to Mar. 29 (stage-discharge relation affected by ice during most of periods).

Closed basin in San Luis Valley, Colo.

8-2305. Carnero Creek near La Garita, Colo.

**Location.**--Lat 37°52', long 106°19', in sec.28, T.42 N., R.6 E., on left bank 4 miles northwest of La Garita and 5½ miles downstream from North Fork.

**Drainage area.**--117 sq mi.

**Records available.**--April 1919 to September 1965. No winter records prior to water year 1945 except water years 1926, 1941. Monthly discharge only for some periods, published in WSP 1312.

**Gage.**--Water-stage recorder. Altitude of gage is 8,200 ft (from topographic map). Prior to Aug. 6, 1925, staff gage or water-stage recorder at site 300 ft downstream at different datum. Aug. 6, 1925, to Apr. 20, 1929, staff gage or water-stage recorder at present site and datum.

**Average discharge.**--23 years (1925-26, 1940-41, 1944-65), 11.0 cfs (7,960 acre-ft per year).

**Extremes.**--Maximum discharge during year, 287 cfs Aug. 18 (gage height, 2.06 ft), from rating curve extended above 110 cfs; minimum daily, 1.6 Nov. 5.

1919-65: Maximum discharge, 1,600 cfs July 21, 1945 (gage height, 5.75 ft), from rating curve extended above 160 cfs; no flow for several days during summer months in 1951, 1955-56, 1963.

**Remarks.**--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for irrigation.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1 to Nov. 19, Apr. 21-24)

0.1	1.0	0.7	29
.2	3.0	1.0	64
.3	5.5	1.5	145
.4	9.0	2.0	266
.5	14		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.2	2.8					8.2	81	63	24	60	16
2	3.0	2.8					8.4	149	63	24	55	16
3	2.8	2.6					8.2	175	61	22	43	19
4	2.6	2.0					8.0	184	60	20	41	15
5	2.6	1.6					8.2	164	63	20	51	15
6	2.8	1.8					8.4	156	58	22	39	15
7	2.2	1.8					*8.6	141	56	19	35	14
8	2.2	1.8					10	128	*56	21	33	13
9	2.2	2.0					8.6	103	55	19	*30	12
10	2.4	2.4					9.0	93	58	20	30	12
11	2.8	2.2					10	88	60	31	28	10
12	2.8	2.0					9.5	87	67	32	25	10
13	3.2	2.4					9.0	104	56	22	24	9.0
14	2.8	2.4					14	95	54	*23	24	8.6
15	2.4	2.8					13	87	54	18	28	8.0
16	*2.4	3.2	4.0	4.5	4.2	6.0	13	86	54	18	28	7.6
17	2.4	3.5					14	90	54	17	28	8.3
18	2.4	3.0					16	99	54	16	60	14
19	2.6	2.8					16	107	54	17	65	44
20	2.4	b 2.6					20	*109	50	26	65	*33
21	2.4						*31	96	47	23	45	26
22	2.2						31	95	43	19	40	18
23	2.2						54	114	*40	19	35	17
24	2.2	(*)					60	104	39	21	30	16
25	2.2				(*)		61	92	37	21	*28	15
26	2.2	3.5					46	86	35	29	24	14
27	2.2			(*)			34	80	33	26	21	14
28	2.4						32	68	30	27	19	13
29	3.0						40	60	27	30	19	12
30	3.0						56	59	25	25	23	12
31	3.2							60		30	19	
Total	79.4	83.5	124.0	139.5	117.6	186.0	665.1	3,240	1,506	701	1,095	456.5
Mean	2.56	2.78	4.0	4.5	4.2	6.0	22.2	105	50.2	22.6	35.3	15.2
Ac-ft	157	166	246	277	233	369	1,320	6,430	2,990	1,390	2,170	905

Calendar year 1964: Max 37 Min - Mean 6.15 Ac-ft 4,460  
Water year 1964-65: Max 184 Min 1.6 Mean 23.0 Ac-ft 16,650

Peak discharge (base, 110 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-3	0200	1.98	255	8-18	1600	2.06	287
5-23	2000	1.40	132				

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 21 to Apr. 6 (stage-discharge relation affected by ice during most of period), July 17-20.

## RIO GRANDE BASIN

Closed basin in San Luis Valley, Colo.

8-2310. La Garita Creek near La Garita, Colo.

Location.--Lat 37°48'50", long 106°19'10", in sec.9, T.41 N., R.6 E., on right bank 4 miles southwest of La Garita and 4½ miles downstream from Little La Garita Creek.

Drainage area.--61 sq mi, approximately.

Records available.--April 1919 to September 1965. No winter records prior to water year 1948 except water years 1926, 1941, 1945-46. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 8,030 ft (from topographic map). Apr. 1, 1919, to June 23, 1927, staff gages and June 24, 1927, to Nov. 13, 1935, water-stage recorder, at sites within a quarter of a mile downstream at different datums.

Average discharge.--22 years (1925-26, 1940-41, 1944-46, 1947-65), 12.6 cfs (9,120 acre-ft per year).

Extremes.--Maximum discharge during year, 162 cfs May 21 (gage height, 1.53 ft); minimum not determined.

1919-65: Maximum discharge, 530 cfs July 9, 1957 (gage height, 3.00 ft), from rating curve extended above 140 cfs; minimum daily recorded, 0.2 cfs Sept. 28, 29, 1956.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for irrigation.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.1	0	0.6	13
.2	1.0	.8	29
.3	2.4	1.0	54
.4	4.6	1.5	155

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.4	4.6					9.0	70	93	46	57	15
2	5.0	5.0					9.2	85	95	44	53	16
3	5.0	4.6					9.0	93	100	43	47	16
4	4.6	4.4					8.8	97	95	42	41	15
5	4.6	4.4					8.6	89	93	41	48	14
6	5.4	5.8					8.4	81	83	40	38	16
7	5.8	5.8					*8.6	74	81	39	36	14
8	5.8	5.0					9.5	76	*81	39	34	14
9	5.4	5.0					8.6	62	87	38	*33	13
10	5.4	6.6					9.0	57	83	37	31	12
11	5.0	5.4					10	54	87	50	29	12
12	4.6	4.2					9.0	50	87	44	26	12
13	4.4	5.4					7.8	54	78	37	25	12
14	4.2	5.4					7.8	66	78	*41	25	11
15	4.2	5.4					9.5	62	81	33	26	10
16	*4.4		5.0	4.8	4.5	5.2	10	60	85	38	28	10
17	4.6						13	78	83	33	27	11
18	4.6						15	96	89	32	38	14
19	4.6						20	114	85	28	38	24
20	5.0						32	*121	81	40	34	*25
21	5.0						*47	130	80	30	31	21
22	5.0						54	128	74	28	29	19
23	4.6	5.3					60	125	*72	26	27	17
24	4.6	(*)					59	112	72	28	24	19
25	4.4				(*)		57	108	68	26	*23	16
26	4.4						48	97	65	30	20	14
27	4.6			(*)			46	91	56	29	19	13
28	5.0						44	81	51	28	18	13
29	5.4		(*)				43	80	50	32	17	13
30	5.0						56	85	47	29	20	12
31	4.6							89		34	16	
Total	150.6	156.5	155.0	148.8	126.0	161.2	736.8	2665	2360	1105	958	443
Mean	4.86	5.22	5.0	4.8	4.5	5.2	24.6	86.0	78.7	35.6	30.9	14.8
Ac-ft	299	310	307	295	250	320	1,460	5,290	4,680	2,190	1,900	879

Calendar year 1964: Max 81 Min - Mean 9.50 Ac-ft 6,900

Water year 1964-65: Max 130 Min - Mean 25.1 Ac-ft 18,180

Peak discharge (base, 80 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5- 3	2100	1.36	119	6- 3	0600	1.21	104
5-21	2300	1.53	162				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 18-22, Nov. 24 to Dec. 6. No gage-height record Nov. 16, 17, 23, Dec. 7 to Apr. 6 (stage-discharge relation affected by ice during most of periods), Apr. 27, 28, May 11, 13-18, July 1-6.



8-2360. Alamosa Creek above Terrace Reservoir, Colo.

Location.--Lat 37°23', long 106°21', in sec.8, T.36 N., R.6 E., on left bank 3 miles upstream from Terrace Reservoir Dam and 15 miles northwest of Capulin.

Drainage area.--107 sq mi.

Records available.--September 1911 to September 1912 (published as Rio Alamosa near Monte Vista), May to June 1914, April 1915 to September 1927, October 1934 to September 1965. No winter records water years 1919-23. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 8,600 ft (from topographic map). Sept. 29, 1911, to Sept. 30, 1912, staff gage at ranger station 1.8 miles upstream at different datum. Apr. 25, 1914, to May 6, 1915, staff gage and May 7, 1915, to Sept. 30, 1927, water-stage recorder, near present site at different datums. Datum lowered 0.27 ft Mar. 28, 1925.

Average discharge.--39 years (1911-12, 1915-18, 1923-27, 1934-65), 115 cfs (83,260 acre-ft per year).

Extremes.--Maximum discharge during year, 1,510 cfs June 19 (gage height, 3.50 ft); minimum not determined.

1911-12, 1914-27, 1934-65: Maximum discharge, 5,200 cfs Oct. 5, 1911 (gage height, 11.0 ft, site and datum then in use, from floodmark), from rating curve extended above 1,000 cfs on basis of computation of peak flow over dam about 8 miles upstream; minimum not determined.

Maximum stage known since at least 1854, that of Oct. 5, 1911, from information by local residents.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 16 to May 1)

Oct. 1 to Nov. 30

Dec. 1 to Sept. 30

0.7	11	0.9	23	2.3	430
.8	15	1.1	49	2.7	700
1.0	29	1.4	106	3.3	1,260
		1.9	250		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	13						322	716	544	278	45
2	24	13						419	780	564	348	54
3	23	13						466	807	592	286	56
4	23	13						442	716	532	240	51
5	23	13						362	592	508	212	43
6	22	12						339	578	496	182	52
7	20	12						334	748	466	165	58
8	20	12					27	339	*807	526	151	61
9	19	11						282	843	478	135	71
10	19	12						274	772	436	125	54
11	19	12						240	652	478	120	48
12	19	b11						229	620	430	108	48
13	17	b13						243	825	380	102	45
14	17	13						236	1,050	330	99	39
15	*17	14						243	1,060	310	93	36
16	18	13	14	15	15	17		46	250	980	294	93
17	18	*14						59	330	1,000	298	91
18	18	b13				(*)		97	472	*1,140	334	97
19	17	b12						143	620	1,240	310	80
20	16	b12						215	772	1,250	290	75
21	16							282	834	1,100	*266	70
22	16							357	1,040	825	240	64
23	16							408	933	807	226	*63
24	15							414	*732	843	218	59
25	14					(*)		334	532	772	226	54
26	13	b13						266	419	592	203	46
27	13			(*)				203	370	532	206	43
28	12							*170	339	526	191	42
29	13							168	366	*564	173	43
30	13							215	466	557	203	56
31	13								532		240	49
Total	549	381	434	465	420	527	3,782	13,777	24,294	10,988	3,669	2,383
Mean	17.7	12.7	14	15	15	17	126	444	810	354	118	79.4
Ac-ft	1,090	756	861	922	833	1,050	7,500	27,330	48,190	21,790	7,280	4,730

Calendar year 1964: Max 728 Min - Mean 75.0 Ac-ft 54,410  
Water year 1964-65: Max 1,250 Min - Mean 169 Ac-ft 122,300

Peak discharge (base, 670 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-22	0300	3.22	1,150	6-19	2345	3.50	1,510
6-2	2400	2.94	897	7-2	2400	2.75	780
6-9	0330	3.07	1,030				

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 28 to Apr. 15 (stage-discharge relation affected by ice during most of period).

## RIO GRANDE BASIN

8-2380. La Jara Creek at Gallegos Ranch, near Capulin, Colo.

Location.--Lat 37°12'30", long 106°11'20", in NE¼ sec.10, T.34 N., R.7 E., on left bank 2.7 miles downstream from Canyon Del Rancho, 7 miles southwest of Capulin, and 16½ miles downstream from La Jara Reservoir.

Drainage area.--98 sq mi, approximately.

Records available.--April 1916 to November 1917, April 1919 to November 1923, May 1936 to September 1965. No winter records prior to 1950 except water year 1944. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 8,130 ft (from topographic map). Apr. 1, 1916, to Nov. 30, 1917, and Apr. 1, 1919, to Nov. 30, 1923, near present site at different datums.

Average discharge.--17 years (1943-44, 1949-65), 15.8 cfs (11,440 acre-ft per year).

Extremes.--Maximum discharge during year, 292 cfs Apr. 23 (gage height, 4.49 ft), from rating curve extended above 72 cfs; minimum not determined.

1916-17, 1919-23, 1936-65: Maximum discharge, 653 cfs Apr. 22, 1919, Apr. 15, 1937 (gage height, 5.94 ft, present site and datum); minimum daily recorded, 2.2 cfs Nov. 6, 1951.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Small diversions above station for irrigation. Flow regulated by La Jara Reservoir (capacity, 14,040 acre-ft).

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 31

Apr. 1 to Sept. 30

2.1	3.0	2.0	5.0	2.6	35
2.2	6.0	2.1	8.0	3.0	68
2.4	17	2.3	17	4.0	203

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.1	5.7					11	123	56	21	17	8.0
2	5.1	6.5					11	163	50	21	29	8.4
3	5.1	6.5					11	176	47	20	21	8.4
4	5.1	6.0					12	179	43	20	13	8.4
5	5.1	5.1					12	142	51	19	11	8.0
6	5.1	4.8					*12	131	40	19	9.6	7.7
7	5.4	4.8					13	117	36	16	8.8	8.0
8	5.7	4.8					12	112	33	16	8.8	8.0
9	5.7	4.8					12	75	*32	16	8.8	7.7
10	5.7	4.8					12	84	32	15	8.8	7.4
11	5.7	6.0					13	75	32	16	9.2	7.4
12	5.7	5.2					11	67	29	12	8.4	7.4
13	6.0	6.5					12	104	26	12	7.7	7.4
14	6.0	8.0					12	80	23	12	7.7	7.1
15	*6.0	7.0					12	89	22	11	7.7	7.1
16	5.7	7.0	5.5	5.8	6.5	7.8		76	22	11	7.7	7.1
17	5.7	*7.5					14	98	20	12	8.4	7.1
18	6.0	7.5				(*)	26	128	20	12	8.0	9.6
19	6.0	5.2					43	182	33	11	8.0	10
20	6.0	6.5					84	184	22	10	7.7	*13
21	6.5						103	152	18	*13	7.4	12
22	6.5						151	144	17	11	7.7	10
23	6.5						182	124	*16	11	*7.4	9.2
24	6.5						185	109	16	14	7.1	8.8
25	6.5				(*)		159	92	16	15	7.1	8.8
26	6.5	6.0							17	14	6.8	8.4
27	7.0			(*)			107	*71	59	14	6.8	*8.0
28	6.5						83	51	12	22	6.8	8.8
29	6.0						*75	94	*11	14	7.1	12
30	6.0						94	51	18	10	7.7	10
31	6.0		(*)				101	54		19	8.0	
								55				
Total	182.4	180.2	170.5	179.8	182.0	241.8	1,603	3,347	824	460	296.2	259.2
Mean	5.88	6.01	5.5	5.8	6.5	7.8	53.4	108	27.5	14.8	9.55	8.64
Ac-ft	362	357	338	357	361	480	3,180	6,640	1,630	912	588	514

Calendar year 1964: Max 50 Min - Mean 9.32 Ac-ft 6,760

Water year 1964-65: Max 185 Min - Mean 21.7 Ac-ft 15,720

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 12, 13, Nov. 19 to Dec. 2. No gage-height record Dec. 3 to Apr. 5 (stage-discharge relation affected by ice during most of period).

8-2400. Rio Grande above mouth of Trinchera Creek, near La Sauses, Colo.

Location.--Lat 37°19', long 105°45', in sec.35, T.36 N., R.11 E., on right bank a quarter of a mile upstream from Trinchera Creek, 3½ miles north of La Sauses, and 13 miles southeast of Alamosa.

Drainage area.--5,740 sq mi, approximately (includes 2,940 sq mi in closed basin in northern part of San Luis Valley, Colo.).

Records available.--May 1936 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,500 ft (estimated from nearby level lines).

Average discharge.--29 years, 238 cfs (172,300 acre-ft per year).

Extremes.--Maximum discharge during year, 2,310 cfs June 24 (gage height, 7.19 ft); minimum daily, 6.7 cfs Oct. 1, 2.

1936-65: Maximum discharge, 5,470 cfs June 21, 1949 (gage height, 9.50 ft), from rating curve extended above 3,600 cfs; minimum daily, 0.4 cfs July 4, 1940.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by transmountain diversions, storage reservoirs, ground-water withdrawals and diversions for irrigation, and return flow from irrigated areas.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 16-19, May 7 to June 18, June 29 to Aug. 2)

0.3	0	1.1	32	4.0	695
.4	1.5	1.5	70	6.0	1,580
.5	4.0	2.0	138	7.2	2,320
.7	10	2.5	240		
.9	18	3.0	370		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.7	35					342	291	227	800	301	136
2	6.7	38					331	271	209	779	544	140
3	7.7	42					309	309	291	660	856	133
4	9.8	42					283	391	331	796	928	149
5	10	41					245	472	288	936	888	152
6	14	41					211	415	403	932	790	131
7	16	41					190	364	*451	844	740	118
8	17	40				205	182	322	555	754	586	122
9	23	*37					174	342	706	642	466	143
10	25	37					166	296	852	670	418	140
11	28	40					152	298	960	726	356	154
12	26	b39					147	301	952	734	301	156
13	*25	b37					136	317	1,100	832	271	134
14	26	b39					127	320	848	936	247	118
15	28	b40					118	350	884	908	218	106
16	30		60	(*)	165	*298	110	342	1,020	754	198	103
17	28				(*)	353	101	306	*1,200	572	182	95
18	26		(*)			367	61	293	1,300	460	176	93
19	23					415	47	*306	1,280	*400	172	89
20	24					406	*129	373	1,380	436	194	131
21	25					406	118	487	1,680	436	190	472
22	29					421	114	590	*1,920	412	192	670
23	30					311	134	572	2,080	334	*178	684
24	33	b40				382	140	748	2,260	296	166	678
25	30					353	142	751	2,260	314	156	674
26	27					342	156	642	2,120	331	166	681
27	29					320	151	580	2,080	362	178	702
28	32					400	172	427	1,840	362	162	737
29	34					353	158	382	1,190	345	143	776
30	34					373	240	306	916	322	134	*782
31	34					362		254		283	131	
Total	736.9	1,189	1,860	4,030	4,620	8,937	5,086	12,418	33,583	18,368	10,628	9,399
Mean	23.8	39.6	60	130	165	288	170	401	1,119	593	343	313
Ac-ft	1,460	2,360	3,690	7,990	9,160	17,730	10,090	24,630	66,610	36,430	21,080	18,640

Calendar year 1964: Max 291 Min 0.9 Mean 51.9 Ac-ft 37,690  
Water year 1964-65: Max 2,260 Min 6.7 Mean 304 Ac-ft 219,900

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 10-12, Nov. 19 to Mar. 16 (stage-discharge relation affected by ice during most of period).

8-2405. Trinchera Creek above Turners Ranch, near Fort Garland, Colo.

Location.--Lat 37°22', long 105°17', in Sangre de Cristo Grant, on right bank just downstream from confluence of North and South Forks, 1 mile upstream from Turners Ranch and 7 miles southeast of Fort Garland, Costilla County.

Drainage area.--45 sq mi, approximately.

Records available.--April 1923 to September 1965. No winter records prior to 1935 except water year 1928. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Prior to Apr. 12, 1929, at site 200 ft upstream at different datum.

Average discharge.--32 years (1927-28, 1934-65), 24.0 cfs (17,380 acre-ft per year).

Extremes.--Maximum discharge during year, 121 cfs June 19 (gage height, 3.01 ft); minimum not determined.

1923-65: Maximum discharge, 689 cfs May 27, 1942, from rating curve extended above 240 cfs; maximum gage height, 3.73 ft May 10, 1947; minimum daily discharge recorded, 3.0 cfs Oct. 3, 1942.

Outstanding floods occurred in 1886 and in October 1911. The flood in 1886 probably exceeded that in October 1911 and the flood in October 1911 probably exceeded all subsequent floods, from information by local residents.

Remarks.--Records excellent except those for periods of ice effect or no gage-height record, which are fair. No regulation or diversion above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.9	4.5
2.1	12
2.3	24
2.6	57
3.0	119

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	10	8.3					9.1	24	* 63	58	34	15
2	9.9	8.7					8.7	32	64	54	36	16
3	9.5	8.7					8.5	38	68	52	34	18
4	9.1	8.3					9.1	43	69	48	32	16
5	8.7	9.5					9.9	42	74	47	31	15
6	8.7	9.1					9.1	42	72	44	30	18
7	7.9	9.5					9.1	42	68	43	29	* 16
8	7.9	9.1					9.1	44	64	44	* 28	21
9	7.9	9.5					9.1	40	66	41	29	18
10	7.9	* 9.1					8.3	40	68	38	28	16
11	8.3	8.3				7.0	8.2	40	72	40	28	15
12	* 8.3	9.0					11	37	72	* 41	24	16
13	8.7	9.0					9.9	44	72	41	23	16
14	8.7	9.2					9.1	42	75	36	22	15
15	8.7	9.4					9.1	41	80	33	22	14
16	8.7		7.6	8.4	8.6		9.1	40	82	33	22	14
17	8.7						10	* 42	84	30	21	15
18	8.3						13	47	76	28	21	15
19	8.7						13	53	84	28	23	16
20	8.7						16	60	93	27	22	21
21	8.7						6.6	69	* 95	27	18	18
22	8.7						* 6.9	69	90	25	18	18
23	8.7	8.5					6.3	* 32	81	84	24	* 19
24	8.7						6.0	78	82	24	* 18	18
25	8.3						5.7	80	80	26	16	16
26	8.3						5.6	25	66	74	* 25	16
27	9.1						5.8	21	70	* 64	* 27	15
28	8.3						6.2	19	64	66	26	16
29	8.3						6.9	17	62	62	24	16
30	8.7						7.5	18	60	60	26	18
31	8.3						8.3	62	62	30	16	16
Total	267.4	262.2	235.6	260.4	240.8	211.8	445.4	1,594	2,223	1,090	724	494
Mean	8.63	8.74	7.6	8.4	8.6	6.83	14.8	51.4	74.1	35.2	23.4	16.5
Ac-ft	530	520	467	516	478	420	883	3,160	4,410	2,160	1,440	980

Calendar year 1964: Max 60 Min 4.5 Mean 12.9 Ac-ft 9,370

Water year 1964-65: Max 95 Min - Mean 22.1 Ac-ft 15,960

Peak discharge (base, 50 cfs).--May 23 (1030) 89 cfs (2.81 ft); June 19 (0100) 121 cfs (3.01 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 12, 13, Nov. 19 to Dec. 5, Mar. 26. No gage-height record Nov. 14-18, Dec. 6 to Mar. 21, Mar. 27, 28 (stage-discharge relation affected by ice during most of periods), Apr. 3, 4, 11.

8-2415. Sangre de Cristo Creek near Fort Garland, Colo.

**Location.**--Lat 37°25', long 105°25', in W $\frac{1}{2}$  sec.23, T.30 S., R.72 W., on left bank at road bridge, 1 mile east of Fort Garland and 6 miles upstream from Ute Creek.

**Drainage area.**--190 sq mi, approximately.

**Records available.**--March to October 1916, May 1923 to September 1930, October 1931 to September 1965. No winter records prior to 1946 except water year 1941. Monthly discharge only for some periods, published in WSP 1312.

**Gage.**--Water-stage recorder. Altitude of gage is 7,930 ft (estimated from nearby U. S. Coast and Geodetic Survey level line). Mar. 15 to Oct. 9, 1916, staff gage and Cipolletti weir near present site 600 ft upstream from Garland Canal at different datum. May 7, 1923, to Feb. 29, 1964, water-stage recorder at site 1 mile upstream at different datum.

**Average discharge.**--21 years (1940-41, 1945-65), 20.4 cfs (14,770 acre-ft per year).

**Extremes.**--Maximum discharge during year, 89 cfs May 3 (gage height, 1.62 ft); minimum daily, 0.4 cfs Oct. 1-3.

1916, 1923-65: Maximum discharge, 1,520 cfs Aug. 31, 1936, from rating curve extended above 280 cfs on basis of slope-area measurement at gage height, 6.10 ft (site and datum then in use); maximum gage height, 7.82 ft (site and datum then in use) June 4, 1957; no flow at times in many years.

Outstanding floods occurred in 1886 and in October 1911. The flood in 1886 probably exceeded that in October 1911 and the flood in October 1911 probably exceeded all subsequent floods, from information by local residents.

**Remarks.**--Records good except those for periods of ice effect or no gage-height record, which are poor. A few diversions above station for irrigation.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 21

Mar. 22 to Sept. 30

0.4	0	0.5	0	1.2	33
.5	.5	.6	2.0	1.5	69
.6	2.2	.8	8.5	1.7	103
.7	5.5	.9	13		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	1.7					24	48	*30	12	18	3.5
2	.4	1.9					21	66	28	12	14	3.2
3	.4	2.2					23	79	27	10	9.8	4.7
4	.7	2.2					23	80	27	9.4	7.4	3.8
5	.8	2.9					22	74	34	8.5	6.0	3.2
6	.8	3.2					20	66	37	9.0	3.8	3.2
7	.8	3.2					23	58	29	9.4	2.9	* 3.5
8	.8	3.2					18	51	26	10	2.3	8.5
9	.8	3.5					23	47	* 25	9.4	1.8	9.0
10	.8	* 4.2					23	44	26	8.5	* 2.0	6.4
11	.8	4.2				5.2	20	44	28	9.0	2.6	5.0
12	* .8	2.2					18	42	30	* 8.2	2.3	5.4
13	.8	2.2					21	47	27	7.6	1.6	3.8
14	.8	2.2					21	47	24	7.4	1.6	3.2
15	.8						20	44	23	7.2	1.4	2.3
16	.8		3.5	6.0	4.5		24	42	21	7.0	1.6	2.0
17	.8						27	* 41	20	7.6	1.8	1.8
18	.8						36	42	20	6.6	2.0	3.8
19	.8						35	47	23	5.7	6.8	6.4
20	.8						37	48	20	4.7	13	14
21	.8						7.5	39	51	* 17	4.7	7.1
22	1.0	2.5					* 9.0	48	56	15	4.4	5.0
23	1.0						11	* 59	56	15	4.1	* 9.0
24	1.2				(*)		9.0	72	59	15	4.4	* 3.2
25	1.4						9.4	66	53	17	6.0	2.3
26	1.5			(*)			11	58	48	18	* 5.7	1.6
27	1.7						13	47	43	15	* 4.4	1.4
28	1.7		(*)				15	38	37	* 13	5.4	1.2
29	1.7						16	36	34	11	4.7	1.8
30	1.7						14	38	32	11	8.5	6.0
31	1.7						22	31		9.0	5.0	
Total	30.1	79.0	108.5	186.0	126.0	240.9	980	1,557	672	230.5	141.4	185.7
Mean	0.97	2.63	3.5	6.0	4.5	7.77	32.7	50.2	22.4	7.44	4.56	6.19
Ac-ft	60	157	215	369	250	478	1,940	3,090	1,330	457	280	368

Calendar year 1964: Max 40 Min 0 Mean 5.85 Ac-ft 4,250

Water year 1964-65: Max 80 Min 0.4 Mean 12.4 Ac-ft 8,990

Peak discharge (base, 75 cfs).--Apr. 24 (1000) 87 cfs (1.61 ft); May 3 (1000) 89 cfs (1.62 ft).

\* Discharge measurement made on this day.

**Note.**--Stage-discharge relation affected by ice Nov. 15-18, Mar. 26-28. No gage-height record Nov. 19 to Mar. 21 (stage-discharge relation affected by ice during most of period), July 13-18.

## RIO GRANDE BASIN

8-2425. Ute Creek near Fort Garland, Colo.

Location.--Lat 37°27', long 105°26', in S½ sec.10, T.30 S., R.72 W., on left bank 1½ miles north of Fort Garland and 6 miles upstream from mouth.

Drainage area.--32 sq mi, approximately.

Records available.--March to October 1916, May 1923 to September 1965. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 8,030 ft (from topographic map). Mar. 18 to Oct. 9, 1916, staff gage and Cippoletti weir at different datum.

Average discharge.--42 years, 20.7 cfs (14,990 acre-ft per year).

Extremes.--Maximum discharge during year, 186 cfs June 19 (gage height, 3.02 ft), from rating curve extended above 62 cfs; minimum not determined.

1916, 1923-65: Maximum daily discharge, 630 cfs May 15, 1941; no flow July 28-31, Sept. 6-29, 1956.

Outstanding floods occurred in 1886 and in October 1911. The flood in 1886 probably exceeded that in October 1911 and the flood in October 1911 probably exceeded all subsequent floods, from information by local residents.

Remarks.--Records good except those for period of no gage-height record, which are poor. A few diversions above station for irrigation.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 9-14)

Oct. 1 to Feb. 28

Mar. 1 to June 20

June 21 to Sept. 30

1.0 2.2  
1.1 4.0  
1.3 10

1.0 2.0  
1.2 10  
1.5 27  
1.9 60  
2.8 160

1.3 15  
1.5 32  
2.0 105  
2.4 173

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.7	2.7					10	33	* 60	82	124	21
2	7.4	2.7					10	46	61	100	99	23
3	7.4	3.1					10	55	61	91	74	24
4	6.4	3.1					10	54	56	78	59	23
5	6.4	2.9					10	47	55	77	49	21
6	6.4	3.1					10	44	47	74	42	24
7	6.1	2.7					12	40	43	78	36	* 28
8	6.1	2.9					9.6	38	43	103	30	53
9	6.1	2.9					10	35	* 53	91	28	76
10	6.1	* 3.3					10	37	47	80	* 26	44
11	6.1	2.9				4.5	9.2	36	52	88	22	36
12	* 6.1	2.4					8.8	35	54	68	19	30
13	5.8	2.4					12	40	53	* 59	17	25
14	5.5	2.7					12	36	69	52	17	20
15	5.2	2.7					12	34	78	59	17	18
16	4.9	2.7	3.5	4.0	3.5		14	33	85	72	22	16
17	4.9	3.1					20	* 33	91	48	30	16
18	4.9	3.1					21	35	123	51	28	27
19	5.8	2.9					21	42	152	49	32	33
20	5.2	2.7					26	49	158	48	45	65
21	3.6	2.7				7.0	28	56	* 124	45	36	44
22	3.3	2.6				* 8.0	33	67	103	37	28	35
23	3.3	2.6				5.6	* 40	69	100	36	22	* 30
24	3.3	2.9			(*)	5.6	49	71	136	36	* 21	28
25	3.1	3.4				4.8	44	58	115	49	18	26
26	3.1	3.5		(*)		b 6.0	39	50	83	* 42	17	27
27	3.3	3.7				b 7.0	34	44	65	* 44	16	30
28	3.3	3.5				8.0	29	40	* 64	108	16	32
29	3.5	3.8				7.6	26	36	72	66	21	36
30	3.1	4.0				7.6	27	42	84	55	32	31
31	2.9					9.6		46		91	27	
Total	156.3	89.7	108.5	124.0	98.0	166.8	606.6	1,381	2,367	2,057	1,070	942
Mean	5.04	2.99	3.5	4.0	3.5	5.38	20.2	44.5	78.9	66.4	34.5	31.4
Ac-ft	310	178	215	246	194	331	1,200	2,740	4,690	4,080	2,120	1,870

Calendar year 1964: Max 34 Min - Mean 6.33 Ac-ft 4,600  
Water year 1964-65: Max 152 Min - Mean 25.1 Ac-ft 18,170

Peak discharge (base, 100 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-19	0300	3.02	186	7- 8	0800	2.04	116
6-24	1500	2.25	150	7-28	0030	2.35	164
7- 3	0200	2.04	118	8- 1	0030	2.37	168

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 24 to Mar. 22 (stage-discharge relation affected by ice during most of period).

8-2435. Trinchera Creek below Smith Reservoir, near Blanca, Colo.

Location.--Lat 37°23', long 105°33', in sec.4, T.31 S., R.73 W. (unsurveyed), on right bank 600 ft downstream from bridge, 1 mile downstream from Smith Reservoir, and 5 miles southwest of Blanca. Prior to Oct. 12, 1964, at site 200 ft downstream.

Drainage area.--396 sq mi.

Records available.--October 1928 to September 1965. No winter records prior to 1944 except water years 1931, 1934-36, 1938. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 7,700 ft (estimated from nearby U. S. Coast and Geodetic Survey level lines). Prior to Oct. 12, 1964, at site 200 ft downstream; prior to Apr. 19, 1943, at datum 1.00 ft higher; and at present datum thereafter.

Average discharge.--27 years (1930-31, 1933-36, 1937-38, 1943-65), 11.4 cfs (8,250 acre-ft per year).

Extremes.--Maximum discharge during year, 36 cfs July 1 (gage height, 2.36 ft); minimum daily, 0.4 cfs Oct. 27.

1929-65: Maximum daily discharge, 1,340 cfs May 11, 1942; no flow Sept. 13, 14, 16, 17, 1957.

Outstanding floods occurred in 1886 and October 1911. The flood in 1886 probably exceeded that in October 1911 and the flood in October 1911 probably exceeded all subsequent floods, from information by local residents.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Diversions above station for irrigation. Flow regulated by Smith Reservoir (capacity, 5,335 acre-ft).

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Aug. 5 to Sept. 1)

Oct. 1-11		Oct. 12 to Sept. 30			
0.3	0.3	1.6	0	2.0	10
.4	.9	1.7	1.0	2.2	23
		1.8	3.0	2.5	46
		1.9	6.0		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.7	3.6	0.8				1.8	14	*20	22	14	1.6
2	.7	3.6	.8				1.8	14	20	16	11	2.4
3	.7	3.3	.8				1.8	14	19	12	11	4.5
4	.8	3.3	.8				2.0	14	17	12	11	4.5
5	.8	3.3	.8				1.8	14	16	11	11	4.5
6	.8	3.3	.9				1.8	14	16	11	7.6	4.5
7	.8	3.3	.6				1.8	14	16	11	5.1	4.5
8	.8	3.3	.6				6.8	14	16	12	5.1	4.5
9	.8	3.3	.6				11	14	16	12	*5.1	4.5
10	.8	*3.9	.6				11	14	16	13	4.2	4.5
11	.8	.8				1.2	11	14	16	14	4.5	4.5
12	*1.0	.8					11	14	16	*14	3.6	4.5
13	1.2	.8					11	14	15	15	4.8	4.2
14	1.2	.8					11	15	15	15	5.1	4.5
15	1.2	.8					11	15	15	15	5.1	5.1
16	1.4	.8		1.3	1.5		11	15	15	15	6.0	5.4
17	1.6	.9					11	*16	15	15	6.0	5.4
18	1.6	.8					11	16	16	15	6.0	5.7
19	1.6	.8					12	17	16	15	6.0	5.7
20	1.6	.8					15	17	16	15	6.0	5.4
21	1.4	.9	.8			1.6	16	15	*16	15	6.0	5.1
22	1.2	1.0				*1.8	21	14	15	15	6.4	*5.1
23	1.0	.9				1.8	*25	14	19	15	6.8	5.1
24	.8	.8			(*)	1.8	25	14	20	15	*6.8	5.1
25	.7	.8				1.8	25	18	20	15	6.8	5.1
26	.5	.8		(*)		1.8	25	22	20	*15	4.8	5.1
27	.4	.8				1.8	17	21	*20	*15	3.9	5.1
28	2.4	.8	(*)			1.8	13	20	20	15	3.6	5.1
29	4.5	.8				1.8	13	20	20	15	3.6	5.1
30	3.9	.8				1.8	14	20	20	15	3.6	5.1
31	3.9					1.8		20		15	1.6	
Total	41.6	50.7	24.1	40.3	42.0	43.6	350.6	491	517	445	192.1	141.4
Mean	1.34	1.69	0.78	1.3	1.5	1.41	11.7	15.8	17.2	14.4	6.20	4.71
Ac-ft	83	101	48	80	83	86	695	974	1,030	883	381	280

Calendar year 1964: Max 15 Min - Mean 2.98 Ac-ft 2,160

Water year 1964-65: Max 25 Min 0.4 Mean 6.52 Ac-ft 4,720

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 22-26, Dec. 8 to Mar. 21 (stage-discharge relation affected by ice during most of period).

## RIO GRANDE BASIN

## 8-2445. Platoro Reservoir at Platoro, Colo.

Location.--Lat 37°21'00", long 106°32'35", in NW¼SW¼ sec.22, T.36 N., R.4 E., on right bank in valvehouse, 400 ft downstream from Platoro Dam on Conejos River, half a mile west of Platoro, 3½ miles downstream from Adams Fork, and 7 miles southwest of Jasper.

Drainage area.--40 sq mi, approximately.

Records available.--November 1951 to September 1965.

Gage.--Mercury manometer. Datum of gage is 9,911.5 ft above mean sea level (Bureau of Reclamation bench mark). Gage readings have been reduced to elevations above mean sea level. Prior to June 9, 1955, mercury manometer at present site and datum. June 9, 1955, to Sept. 30, 1959, water-stage recorder in gate chamber at dam for elevations above 9,921.0 ft at same datum.

Extremes.--Maximum contents observed during year, 39,300 acre-ft June 29 to Sept. 30 (elevation, 10,010.5 ft); minimum, 2,800 acre-ft Nov. 15 to sometime during period Apr. 1-30 (elevation, 9,941.7 ft).  
1951-65: Maximum contents, 61,420 acre-ft June 9, 11, 1958 (elevation, 10,035.5 ft); no contents for long periods in 1952-56.

Remarks.--Reservoir is formed by an earth- and rock-fill dam and dikes. Dam completed Dec. 9, 1951; storage began Nov. 7, 1951. Capacity of reservoir, 60,000 acre-ft between elevations 9,911.5 (sill of trashrack at outlet) and 10,034.0 ft (crest of spillway). No dead storage. Reservoir is used for irrigation and flood control. Figures given herein represent usable contents.

Cooperation.--Records furnished by Bureau of Reclamation.

Month-end elevation and contents, water year October 1964 to September 1965

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	9,964.5	10,700	-
Oct. 31.....	9,964.5	10,700	0
Nov. 30.....	9,941.7	2,800	-7,900
Dec. 31.....	9,941.7	2,800	0
Calendar year 1964.....	-	-	-200
Jan. 31.....	9,941.7	2,800	0
Feb. 28.....	9,941.7	2,800	0
Mar. 31.....	9,941.7	2,800	0
Apr. 30.....	9,949.7	5,100	+2,300
May 31.....	9,964.0	10,500	+5,400
June 30.....	10,010.5	39,300	+28,800
July 31.....	10,010.5	39,300	0
Aug. 31.....	10,010.5	39,300	0
Sept. 30.....	10,010.5	39,300	0
Water year 1964-65.....	-	-	+28,600

† Elevation at 0800 on first day of following month.



8-2450. Conejos River below Platoro Reservoir, Colo.

Location.--Lat 37°21'20", long 106°32'35", in NW¼NW¼ sec.22, T.36 N., R.4 E., on left bank 1,500 ft downstream from valve house for Platoro Reservoir and half a mile northwest of Platoro.

Drainage area.--40 sq mi, approximately.

Records available.--May 1952 to September 1965.

Gage.--Water-stage recorder and concrete control. Datum of gage is 9,866.60 ft above mean sea level (levels by Bureau of Reclamation).

Average discharge.--13 years, 83.5 cfs (60,450 acre-ft per year).

Extremes.--Maximum discharge during year, 920 cfs July 5 (gage height, 4.05 ft); minimum daily, 2.2 cfs June 21, 22.

1952-65: Maximum discharge, 1,160 cfs Nov. 1, 1957; maximum gage height, 4.29 ft June 15, 1958; no flow Oct. 16-20, 1955.

Maximum stage known since at least 1854 occurred Oct. 5, 1911, from information by local residents.

Remarks.--Records good except those for period of no gage-height record, which are poor. No diversion above station. Flow completely regulated by Platoro Reservoir (see preceding page).

Cooperation.--Three discharge measurements furnished by Bureau of Reclamation.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Nov. 30				Dec. 1 to Sept. 30			
1.1	8.5	2.0	116	0.9	1.5	1.8	58
1.2	13	2.5	225	1.0	3.0	2.0	92
1.4	26	3.0	385	1.1	5.5	2.5	210
1.6	49	3.5	590	1.2	9.0	3.0	385
1.8	81			1.4	18	4.1	950
				1.6	34		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	32	13						141	240	755	166	41
2	32	13						194	377	760	228	41
3	32	13						200	445	785	261	41
4	32	13						317	445	896	258	41
5	21	13						398	445	820	222	41
6	17	13						296	311	695	179	41
7	13	156						250	444	670	166	41
8	12	540					12	231	434	680	166	41
9	11	*518						189	*282	600	141	41
10	11	532						*168	113	680	104	*41
11	11	532						161	2.4	680	87	41
12	11	536						163	2.6	680	*87	41
13	*11	536						187	2.7	680	87	41
14	12	576						109	186	630	74	41
15	12	243						69	134	480	52	41
16	12	14	12	12	12	12		81	2.7	314	41	41
17	12	12						90	2.7	300	*41	41
18	12	12						121	3.2	300	41	52
19	12	12						189	2.7	421	41	87
20	12	12						117	2.4	510	41	158
21	12	12					13	14	2.2	*373	41	194
22	12	12						12	2.2	258	41	213
23	12	12						10	2.7	225	41	192
24	12	12						7.6	5.8	225	41	116
25	12	12						5.5	7.2	225	41	90
26	13	12						13	109	225	41	88
27	13	12						13	187	455	41	96
28	13	12						13	184	565	41	*139
29	13	12						26	184	*705	41	205
30	13	12						44	181	755	41	237
31	13							181		163	41	
Total	468	4,429	372	372	336	372	419	4,746.1	6,602.5	14,818	2,934	2,564
Mean	15.1	148	12	12	12	12	14.0	153	220	478	94.6	85.5
Ac-ft	928	8,780	738	738	666	738	831	9,410	13,100	29,390	5,820	5,090

Calendar year 1964: Max 600 Min 3.8 Mean 75.5 Ac-ft 54,810  
 Water year 1964-65: Max 896 Min 2.2 Mean 105 Ac-ft 76,230

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 15 to Apr. 29.

8-2465. Conejos River near Mogote, Colo.

Location.--Lat 37°03'20", long 106°11'10", in SE¼ sec.34, T.33 N., R.7 E., on right bank 25 ft upstream from bridge on State Highway 174, 0.3 mile downstream from Fox Creek, 5.3 miles west of Mogote, and 10 miles west of Antonito.

Drainage area.--282 sq mi.

Records available.--April 1903 to October 1905, October 1911 to September 1965. Monthly discharge only for some periods, published in WSP 1312. Records for March 1900 at site 5½ miles upstream and May 1905 to September 1911 (some missing periods most years) at site 3½ miles upstream not equivalent to present site owing to inflow.

Gage.--Water-stage recorder. Datum of gage is 8,271.54 ft above mean sea level (State Highway Department bench mark). Apr. 17, 1903, to Oct. 31, 1905, staff gage 500 ft downstream at different datum. Oct. 5, 1911, to early 1915, chain gage at present site and datum.

Average discharge.--56 years, 340 cfs (246,100 acre-ft per year).

Extremes.--Maximum discharge during year, 2,840 cfs June 19 (gage height, 5.14 ft); minimum daily, 38 cfs Dec. 14.

1903-65: Maximum discharge, 9,000 cfs Oct. 5, 1911 (gage height, 8.50 ft, from floodmarks, present site and datum), from rating curve extended above 3,100 cfs; minimum daily determined, 10 cfs July 18, 1904.

Maximum stage known since at least 1854, that of Oct. 5, 1911, from information by local residents.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Discharge measurements generally made two or more times a month. Diversions for irrigation of about 500 acres of hay meadows above station. Some regulation by Platoro Reservoir (see elsewhere in this report).

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	77	44	44	44	56	52	122	638	1,380	1,770	566	125
2	74	44	45	47	56	46	118	1,040	1,580	1,850	696	139
3	71	45	46	45	58	44	98	1,210	1,700	1,910	647	136
4	71	40	44	49	56	40	108	1,340	1,560	1,930	575	139
5	71	40	42	50	54	42	98	1,350	1,430	1,850	526	129
6	66	42	40	52	56	41	92	1,260	1,350	1,680	449	139
7	56	42	40	56	54	42	108	1,090	1,490	1,550	400	154
8	54	369	40	60	52	42	92	1,100	1,970	1,630	376	143
9	50	552	40	58	50	43	101	840	1,780	1,440	356	161
10	50	584	41	56	48	44	92	785	1,410	1,410	304	139
11	47	616	40	56	47	45	74	692	1,010	1,430	252	132
12	52	606	42	56	46	45	68	683	996	1,450	229	132
13	47	638	40	54	45	43	89	775	1,290	1,410	218	129
14	45	647	38	54	47	41	92	735	1,700	1,300	215	122
15	45	620	40	53	50	41	83	670	2,150	1,140	197	115
16	45	146	42	52	52	43	112	624	1,880	906	208	108
17	45	98	42	51	49	45	172	775	1,870	795	215	112
18	44	83	43	52	50	43	248	1,100	2,110	822	204	193
19	45	71	44	54	52	42	320	1,440	2,400	810	186	324
20	45	56	44	55	53	40	449	1,790	2,130	918	172	376
21	44	52	45	58	55	45	580	1,610	2,010	846	161	384
22	42	46	45	54	56	54	701	1,690	1,760	683	161	364
23	42	43	46	51	50	60	840	1,610	1,570	584	150	372
24	42	45	46	53	51	49	858	1,410	1,650	562	139	340
25	39	50	47	56	52	44	755	1,080	1,500	593	132	300
26	39	60	46	54	54	44	593	846	1,230	624	125	288
27	42	55	47	52	56	47	454	888	1,360	629	122	284
28	40	50	46	54	58	52	380	822	1,460	584	118	336
29	42	50	46	56	-	63	356	852	1,660	512	122	458
30	42	44	45	57	-----	77	392	1,020	1,830	512	139	458
31	44	-----	46	59	-----	108	-----	1,100	-----	539	136	-----
Total	1,558	5,878	1,342	1,658	1,463	1,507	8,645	32,865	49,216	34,669	8,496	6,731
Mean	50.3	196	43.3	53.5	52.2	48.6	288	1,060	1,641	1,118	274	224
Ac-ft	3,090	11,660	2,660	3,290	2,900	2,990	17,150	65,190	97,620	68,760	16,850	13,350

Calendar year 1964: Max 2,180 Min 20 Mean 223 Ac-ft 161,900  
 Water year 1964-65: Max 2,400 Min 38 Mean 422 Ac-ft 305,500

Note.--Stage-discharge relation affected by ice Nov. 21 to Mar. 26 (no gage-height record Dec. 5-9).

8-2475. San Antonio River at Ortiz, Colo.

Location.--Lat 37°00', long 106°02', in New Mexico, in NE¼ sec.25, T.32 N., R.8 E., on left bank a quarter of a mile south of New Mexico-Colorado State line, half a mile south of Ortiz, and half a mile upstream from Los Pinos River.

Drainage area.--110 sq mi, approximately.

Records available.--April 1919 to October 1920, October 1924 to September 1965 (no winter records prior to 1941). Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 8,000 ft (from topographic map). Prior to Apr. 7, 1926, staff gage at various locations near present site at different datums. Apr. 7, 1926, to June 24, 1954, water-stage recorder at site 200 ft downstream at present datum.

Average discharge.--25 years (1940-65), 26.6 cfs (19,260 acre-ft per year).

Extremes.--Maximum discharge during year, 682 cfs July 31 (gage height, 3.79 ft); no flow Aug. 28 to Sept. 1. 1919-20, 1924-65: Maximum discharge, 1,750 cfs Apr. 15, 1937 (gage height, 5.38 ft), from rating curve extended above 1,100 cfs; no flow at times in most years. Maximum stage known since at least 1854 occurred Oct. 5, 1911, from information by local residents.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Discharge measurements or observations of no flow generally made twice a month. A few small diversions above station for irrigation.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used May 18 to June 12, Aug. 9 to Sept. 30)

Oct. 1 to June 30

July 1 to Sept. 30

0.6	0	1.3	35	0.5	0
.7	.7	1.6	75	.6	.1
.8	3.4	2.2	195	.7	.7
.9	6.7	3.0	415	<u>Note.</u> --Same as preceding table above 0.7 ft.	
1.0	11	4.0	795		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.8	1.5					130	304	89	5.4	23	0
2	1.2	1.5					130	435	77	6.4	39	.6
3	1.0	2.0					130	472	68	6.0	34	.2
4	1.0	2.6					132	482	59	2.6	18	.1
5	1.0	1.8					97	391	60	2.0	11	.4
6	1.0	2.0					84	349	52	1.8	7.1	.1
7	1.2	1.8					84	337	48	1.5	5.0	.1
8	1.2	1.8					50	349	43	1.8	4.4	1.0
9	.6	1.8					55	222	42	1.2	3.1	2.6
10	.4	1.8					30	235	46	.6	2.9	2.3
11	.6	4.1					20	190	37	1.5	2.0	.7
12	.7	2.3					22	215	35	1.0	1.2	1.0
13	1.2	.6					37	382	34	.7	1.0	.7
14	1.0	1.5					35	355	34	1.2	.6	.6
15	1.2	4.1				6.5	30	278	25	3.7	1.8	.3
16	1.5	3.7	2.2	6	5.5		57	222	24	5.0	.7	.1
17	1.0	4.7					108	265	21	2.9	1.2	.1
18	1.0	5.4					154	394	21	1.8	3.1	.1
19	1.2	3.4					190	422	31	1.8	2.3	1.0
20	1.5						242	458	21	1.2	2.0	6.4
21	1.8						304	367	16	.6	1.5	7.1
22	1.2						322	319	13	.2	.7	4.1
23	1.0						322	265	12	.2	.6	2.9
24	1.0						331	235	11	1.0	.6	1.8
25	1.0	2.5					295	172	12	2.6	.6	1.5
26	1.2						222	128	12	11	.4	1.8
27	1.2						160	105	8.8	11	.3	.7
28	1.8						126	96	6.7	25	0	.7
29	2.3					50	128	97	6.0	8.4	0	2.0
30	2.0					75	164	94	5.0	5.0	0	2.9
31	1.8					170		96		7.6	0	
Total	37.6	75.9	68.2	186	154.0	477.0	4,191	8,731	969.5	191.1	168.1	43.9
Mean	1.21	2.53	2.2	6	5.5	15.4	140	282	32.3	6.16	5.42	1.46
Ac-ft	75	151	135	369	305	946	8,310	17,320	1,920	379	333	87

Calendar year 1964: Max 182 Min 0 Mean 12.8 Ac-ft 9,310  
Water year 1964-65: Max 482 Min 0 Mean 41.9 Ac-ft 30,330

Peak discharge (base, 330 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-2	1730	2.95	391	5-13	0930	3.26	472
4-21	2230	3.49	577	5-20	0400	3.75	650
5-4	0230	3.67	622	7-31	1430	3.79	682

Note.--No gage-height record Nov. 20 to Mar. 31 (stage-discharge relation affected by ice during most of period).

8-2480. Los Pinos River near Ortiz, Colo.

Location.--Lat 36°59', long 106°05', in NE¼ sec.34, T.32 N., R.8 E., in New Mexico, on left bank 1 mile south of New Mexico-Colorado State line, 2 miles southwest of Ortiz, and 2½ miles upstream from mouth.

Drainage area.--167 sq mi.

Records available.--January 1915 to December 1920, October 1924 to September 1965. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 8,100 ft (from topographic map). Prior to Apr. 15, 1955, at site 350 ft upstream at datum 2.52 ft higher.

Average discharge.--46 years, 125 cfs (90,500 acre-ft per year).

Extremes.--Maximum discharge during year, 2,000 cfs May 20 (gage height, 6.05 ft); minimum not determined.

1915-20, 1924-65: Maximum discharge, 3,160 cfs May 12, 1941 (gage height, 5.77 ft, site and datum then in use), from rating curve extended above 1,600 cfs; minimum observed, 4.0 cfs Dec. 17, 1945 (discharge measurement), but may have been less during periods of no gage-height record.

Maximum stage known since at least 1854 occurred Oct. 5, 1911, from information by local residents.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Discharge measurements generally made twice a month. Diversions above station for irrigation.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 1-20)

Oct. 1 to Dec. 31

Jan. 1 to Sept. 30

1.8	9.0	1.8	19	3.5	350
1.9	13	2.0	35	4.0	540
2.1	26	2.3	68	5.0	1,050
		2.6	118	6.0	1,950
		3.0	196		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	12					60	548	1,010	357	102	25
2	15	13					65	775	912	354	134	27
3	14	13					63	948	828	350	123	27
4	14	12					69	990	720	322	107	25
5	14	12					63	822	644	298	79	23
6	14	11					60	795	632	280	67	25
7	14	11					63	785	730	274	60	28
8	13	12					55	785	780	268	55	28
9	14	12					58	608	760	238	51	35
10	14	13					52	588	620	213	47	25
11	14	14				15	49	500	580	210	46	24
12	14	12					46	544	588	208	43	25
13	14	12					52	700	665	194	40	25
14	14	16					53	700	725	190	38	23
15	14	14					53	652	745	170	36	22
16	14	14	11	10	10		69	568	755	160	42	21
17	14	15					98	705	760	140	51	22
18	14	15					138	1,010	882	131	50	30
19	14	15					166	1,340	852	116	46	58
20	14	16					201	1,670	735	107	39	86
21	14	14					268	1,570	670	104	35	60
22	14	15				10	364	1,550	608	98	35	51
23	14	14				12	492	1,310	560	95	35	59
24	14	16				14	600	1,140	604	104	31	63
25	12	18				16	596	805	564	91	28	59
26	13	20				18	484	636	496	131	26	53
27	14	22				20	374	580	402	122	25	52
28	13	20				25	340	588	371	100	24	64
29	14	22				35	357	690	368	76	26	82
30	14	25				45	392	795	364	78	31	63
31	13					50		852		127	28	
Total	431	450	341	310	280	560	5,800	26,549	19,930	5,706	1,580	1,210
Mean	13.9	15.0	11	10	10	18.1	193	856	664	184	51.0	40.3
Ac-ft	855	893	676	615	555	1,110	11,500	52,660	39,530	11,320	3,130	2,400

Calendar year 1964: Max 660 Min - Mean 63.5 Ac-ft 46,060

Water year 1964-65: Max 1,670 Min - Mean 173 Ac-ft 125,200

Peak discharge (base, 900 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-3	2230	5.23	1,230	5-31	2330	5.23	1,230
5-20	0030	6.05	2,000	6-19	0100	5.07	1,100

Note.--No gage-height record Nov. 21-30, Dec. 4 to Mar. 31 (stage-discharge relation affected by ice during most of period). Stage-discharge relation affected by ice Nov. 19, 20, Dec. 1-3.

8-2485. San Antonio River at mouth, near Manassa, Colo.

Location.--Lat 37°11', long 105°53', in sec.21, T.34 N., R.10 E., on right bank a quarter of a mile downstream from bridge on State Highway 142, 1 mile upstream from mouth, and 3½ miles east of Manassa.

Drainage area.--348 sq mi.

Records available.--April 1923 to September 1965. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Water-stage recorder. Altitude of gage is 7,680 ft (estimated from nearby U. S. Coast and Geodetic Survey level line). Prior to Apr. 23, 1936, at former bridge site 200 ft upstream at same datum.

Average discharge.--42 years, 83.3 cfs (60,310 acre-ft per year).

Extremes.--Maximum discharge during year, 1,550 cfs May 20 (gage height, 6.14 ft); no flow Oct. 1 to Jan. 15.

1923-65: Maximum discharge, 2,620 cfs May 14, 1941, from rating curve extended above 2,200 cfs; maximum gage height, 6.42 ft May 6, 1952; no flow at times in most years.

Maximum stage known since at least 1854 occurred Oct. 5, 1911, from information by local residents.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Natural flow of stream affected by diversions to Cave Lake Reservoir (capacity, 9,700 acre-ft) and diversions for irrigation above station.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 2					May 3 to Sept. 30	
0.1	0	0.7	3.0	2.0	126	<u>Note</u> .--Same as preceding table below 5.0 ft
.2	.1	.8	5.8	2.5	198	
.3	.3	1.0	16	3.0	290	
.4	.7	1.3	44	4.0	520	
.5	1.1	1.6	75	5.0	810	
.6	1.6					
						5.5 995
						6.0 1,380
						6.2 1,720

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1							54	308	652	188	185	1.5
2					(*)		60	510	677	192	139	1.7
3							63	704	644	179	122	1.7
4							66	862	562	174	97	1.4
5							68	873	556	172	80	1.4
6							60	758	494	164	62	1.4
7							59	704	*486	158	49	1.4
8				0			53	710	530	158	37	1.6
9							43	577	564	143	30	1.9
10		(*)					42	502	554	127	29	1.6
11							34	437	468	134	29	1.4
12							32	418	432	148	25	1.3
13							31	598	451	*143	22	1.2
14	(*)						38	722	473	127	19	1.1
15							29	680	499	112	17	.9
16					4.5	13	22	606	499	96	15	1.6
17						(*)	22	551	*510	94	15	1.5
18							35	722	533	91	17	1.6
19							*65	986	683	79	17	1.7
20							99	1,310	658	65	15	2.4
21							162	*1,450	572	55	13	1.4
22							218	1,450	507	50	12	2.0
23				.6			286	1,370	463	44	9.6	1.1
24							409	1,260	402	42	*6.6	1.9
25							481	1,040	413	98	5.4	2.2
26				(*)			468	716	374	151	3.0	1.8
27							*369	541	286	113	2.4	1.5
28			(*)				282	456	232	108	1.9	*1.8
29							228	461	190	86	1.6	2.4
30							218	528	178	68	1.6	2.9
31						31		572		73	1.6	
Total	0	0	0	9.6	126.0	421	4,096	23,382	14,542	3,632	1,079.7	220.3
Mean	0	0	0	0.3	4.5	13.6	137	754	485	117	34.8	7.34
Ac-ft	0	0	0	19	250	835	8,120	46,380	28,840	7,200	2,140	437

Calendar year 1964: Max 280 Min 0 Mean 16.3 Ac-ft 11,810  
 Water year 1964-65: Max 1,450 Min 0 Mean 130 Ac-ft 94,220

Peak discharge (base, 500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-25	1200	4.10	546	5-20	1900	6.14	1,550
5-4	1630	5.52	1,010	6-2	1200	4.77	731
5-14	1400	4.90	775	6-19	1430	4.79	737

\* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record Dec. 2-27, Jan. 2 to Mar. 31 (stage-discharge relation affected by ice during part of periods).

## 8-2490. Conejos River near La Sauses, Colo.

Location.--Lat 37°18', long 105°45', in secs. 2 and 11 (two channels), T.35 N., R.11 E., on left bank of main channel 125 ft downstream from bridge on State Highway 158 and on right bank of secondary channel 50 ft downstream from bridge on State Highway 158, half a mile upstream from mouth, 1.8 miles north of La Sauses, and 13 miles southeast of Alamosa.

Drainage area.--887 sq mi.

Records available.--March 1921 to September 1965. Monthly discharge only for some periods, published in WSP 1312.

Gage.--Two water-stage recorders. Datum of gage on main (north) channel is 7,495.02 ft, and on secondary (south) channel is 7,495.89 ft, above mean sea level (levels by Bureau of Reclamation). Main channel: Prior to Oct. 23, 1934, at bridge 125 ft upstream at various datums; Oct. 23, 1934, to Apr. 10, 1937, at site 50 ft upstream, and Apr. 11 to Sept. 30, 1937, at present site, at datum 1.00 ft higher. South channel: Prior to Oct. 23, 1934, at bridge 50 ft upstream at datum 0.44 ft higher; Oct. 23, 1934, to May 3, 1936, at site 30 ft upstream at present datum.

Average discharge.--44 years, 191 cfs (138,300 acre-ft per year).

Extremes.--Maximum discharge during year, 1,840 cfs May 21; minimum daily, 0.1 cfs Oct. 1, 2.

1921-65: Maximum discharge, 3,890 cfs May 15, 1941; no flow at times in 1934, 1948, 1950-51, 1953-64.

Maximum stage known since at least 1854 occurred Oct. 5, 1911, from information by local residents.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements, field estimates, or observations of no flow generally made twice a month. Diversions for irrigation of about 75,000 acres above station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	0.4	21	48	85	90	104	200	581	655	603	6.3
2	.1	.8	21	48	81	76	126	331	694	714	704	7.8
3	.5	.6	24	46	87	70	117	725	784	778	700	12
4	1.4	.5	27	45	85	62	98	1,050	774	900	622	15
5	.6	2.4	32	46	85	68	105	1,200	809	937	556	18
6	.2	.8	34	48	87	72	93	1,100	822	956	465	19
7	.3	.6	34	52	75	71	86	901	768	878	331	21
8	.4	1.0	34	65	63	77	76	805	916	872	274	22
9	.5	119	35	61	53	83	65	703	1,390	873	221	22
10	1.1	326	35	56	52	90	61	499	1,450	762	150	19
11	1.9	386	30	56	49	99	51	444	1,140	822	95	18
12	2.5	420	28	53	48	101	46	369	849	855	57	17
13	2.5	448	28	49	45	97	39	527	822	818	30	17
14	.9	473	29	49	48	98	38	714	962	790	9.7	11
15	.7	498	32	47	52	93	37	720	1,170	640	8.4	8.8
16	.5	418	34	50	51	100	35	650	1,360	488	12	8.4
17	.2	140	37	51	47	93	31	523	1,270	388	11	8.7
18	.2	66	38	53	49	96	30	599	1,220	359	10	11
19	.2	42	39	55	54	96	52	922	1,520	306	13	10
20	.3	31	39	55	61	82	103	1,300	1,760	225	11	16
21	.3	26	40	62	64	80	230	1,810	1,780	175	11	19
22	.3	23	41	59	68	86	359	1,770	1,580	121	9.8	41
23	.2	18	41	55	61	98	455	1,730	1,270	46	8.4	41
24	.2	23	43	56	62	102	673	1,590	968	20	7.2	44
25	.2	23	44	63	66	101	686	1,290	995	122	6.6	46
26	.3	25	44	60	68	85	577	830	929	434	6.3	39
27	.2	24	45	60	78	85	400	562	735	457	6.3	32
28	.2	22	46	65	83	87	288	434	641	475	6.3	32
29	.2	22	46	67	-	97	213	408	485	413	6.3	39
30	.2	21	47	65	-----	107	172	434	481	360	6.6	62
31	.3	-----	48	74	-----	104	-----	498	-----	346	6.6	-----
Total	17.7	3,601.1	1,116	1,719	1,807	2,736	5,446	25,638	30,925	16,985	4,964.5	683.0
Mean	0.57	120	36.0	55.5	64.5	88.3	182	827	1,031	548	160	22.8
Ac-ft	35	7,140	2,210	3,410	3,580	5,430	10,800	50,850	61,340	33,690	9,850	1,350

Calendar year 1964: Max 498 Min 0 Mean 25.3 Ac-ft 18,370  
 Water year 1964-65: Max 1,810 Min 0.1 Mean 262 Ac-ft 189,700

Note.--Stage-discharge relation affected by ice on main channel Nov. 21-25, Dec. 5 to Mar. 5 (no gage-height record Dec. 6-18), and on secondary channel Nov. 20-26, 28, 29, Dec. 4 to Mar. 5 (no gage-height record Dec. 9-18).

## 8-2500. Culebra Creek at San Luis, Colo.

Location.--Lat 37°11', long 105°26', in Beaubien Grant, at bridge on left bank, 1 mile south of San Luis, Costilla County, and 1 mile upstream from Rito Seco.

Drainage area.--220 sq mi.

Records available.--April 1927 to September 1965. Monthly discharge only for some periods, published in WSP 1312. Records for January 1910 to December 1911, published as Culebra River at San Luis in WSP 288 and 308, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 8,000 ft (from topographic map). Prior to May 23, 1931, water-stage recorder at present site at different datum.

Average discharge.--38 years, 49.9 cfs (36,130 acre-ft per year).

Extremes.--Maximum discharge during year, 183 cfs Aug. 2 (gage height, 2.15 ft); minimum daily, 8.0 cfs Feb. 6, Mar. 19, 21, 25. 1927-65: Maximum discharge, 654 cfs July 1, 1947 (gage height, 5.09 ft), from rating curve extended above 300 cfs; minimum daily, 4.6 cfs Oct. 31, 1950.

Remarks.--Records good except those for period of no gage-height record, which are fair. Diversions above station for irrigation. Flow regulated by Sanchez Reservoir on Ventero Creek (capacity, 103,000 acre-ft).

Rating table (gage height, in feet, and discharge,  
in cubic feet per second)  
(Shifting-control method used Mar. 12-18, June 9-17)

0.2	8.0
.5	24
1.0	59
1.5	107
2.0	165

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	16	12	10	14	12	12	14	*121	93	86	36
2	14	16	12	10	12	12	12	16	127	97	70	43
3	14	18	12	10	12	12	12	16	130	90	54	38
4	13	16	12	10	12	12	12	16	130	70	63	38
5	13	16	12	10	13	12	10	25	140	72	102	35
6	13	16	11	12	8.0	12	10	25	117	87	72	36
7	12	16	11	18	14	12	10	25	102	82	71	*24
8	11	15	11	15	14	12	10	24	82	82	57	42
9	14	16	11	14	13	12	10	30	*82	89	51	31
10	14	*16	11	12	13	13	10	31	80	95	*57	27
11	14	16	11	12	12	13	10	32	88	98	75	27
12	14	14	11	12	12	12	10	31	95	107	105	28
13	*14	14	10	12	14	12	10	32	95	*105	115	28
14	14	13	10	12	12	12	10	24	100	106	116	43
15	14	14	10	12	12	12	12	23	97	103	120	42
16	14	14	10	12	12	12	12	20	84	92	118	40
17	14	14	10	12	12	10	11	*17	87	73	114	41
18	14	14	9.0	12	12	*10	11	14	109	70	124	45
19	14	12	10	12	12	8.0	14	12	112	69	137	47
20	14	12	10	12	12	10	15	14	96	72	140	52
21	14	12	10	12	12	8.0	14	17	*74	84	137	38
22	14	12	10	12	13	10	12	31	69	94	120	30
23	14	12	10	12	12	10	11	42	82	91	a95	*25
24	15	12	12	12	*12	10	10	43	119	88	*a91	23
25	16	12	12	12	13	8.0	12	44	134	84	a40	22
26	16	12	12	*12	13	9.0	*14	54	142	*61	a88	22
27	16	12	10	12	14	12	14	55	93	*56	a86	22
28	16	12	*11	12	14	12	14	54	64	60	a82	23
29	15	12	10	12	-	12	13	57	53	59	a82	23
30	16	13	10	13	-	11	12	81	75	57	70	24
31	15	-----	10	15	-----	12	-----	90	-----	64	40	-----
Total	439	419	333.0	377	350.0	346.0	349	1,009	2,979	2,550	2,778	995
Mean	14.2	14.0	10.7	12.2	12.5	11.2	11.6	32.5	99.3	82.3	89.6	33.2
Ac-ft	871	831	660	748	694	686	692	2,000	5,910	5,060	5,510	1,970

Calendar year 1964: Max 115 Min 9.0 Mean 25.7 Ac-ft 18,680  
Water year 1964-65: Max 142 Min 8.0 Mean 35.4 Ac-ft 25,630

\* Discharge measurement made on this day.  
a No gage-height record.

## RIO GRANDE BASIN

8-2515. Rio Grande near Lobatos, Colo.

Location.--Lat 37°05', long 105°45', in sec.22, T.33 N., R.11 E., on right bank at highway bridge, 6 miles north of Colorado-New Mexico State line, 7 miles downstream from Culebra Creek, 10 miles east of Lobatos, and 14 miles east of Antonito.

Drainage area.--7,700 sq mi, approximately (includes 2,940 sq mi in closed basin in northern part of San Luis Valley, Colo.).

Records available.--June 1899 to September 1965. Monthly discharge only for some periods, published in WSP 1312. Published as "at Cenicero" 1899-1901, and as "near Cenicero" 1902-4.

Gage.--Water-stage recorder. Datum of gage is 7,427.63 ft above mean sea level, datum of 1929. Prior to Nov. 8, 1910, staff or chain gage at same site and datum.

Average discharge.--66 years, 616 cfs (446,000 acre-ft per year).

Extremes.--Maximum discharge during year, 3,790 cfs June 22 (gage height, 4.78 ft); minimum daily, 7.0 cfs Oct. 4.

1899-1965: Maximum discharge observed, 13,200 cfs June 8, 1905 (gage height, 9.1 ft), from rating curve extended above 8,000 cfs; no flow at times in 1950-51, 1956.

Maximum stage known, probably since at least 1828, occurred June 8, 1905.

Remarks.--Records good except those for periods of ice effect, which are fair. Discharge measurements generally made twice a month.

Natural flow of stream affected by transmountain diversions, storage reservoirs, ground-water withdrawals, diversions for irrigation, and return flow from irrigated areas. Records of chemical analyses for the water year 1965 are published in Part 2 of this report as "above Culebra Creek, near Lobatos."

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 30

May 1 to Sept. 30

0.4	7.0	1.1	134	1.0	105	2.5	880
.5	15	1.5	284	1.3	195	3.0	1,350
.6	26	2.0	554	1.6	310	4.0	2,600
.8	58	2.5	940	2.0	520	4.8	3,820

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.6	40	80	120	215	230	418	450	840	1,370	808	142
2	7.8	39	80	125	220	230	440	502	934	1,450	1,090	164
3	7.8	44	75	130	225	220	429	792	1,070	1,350	1,480	154
4	7.0	47	70	135	230	200	384	1,160	1,220	1,550	1,570	157
5	9.4	49	65	140	225	210	358	1,460	1,180	1,820	1,500	170
6	12	49	75	145	220	230	322	1,490	1,340	1,960	1,310	174
7	15	47	80	150	215	250	284	1,290	1,350	1,860	1,160	154
8	18	47	80	170	220	280	272	1,140	1,450	1,730	943	154
9	19	45	80	165	220	310	264	1,120	1,980	1,590	752	164
10	24	173	75	170	220	340	239	925	2,310	1,490	587	167
11	27	358	75	165	215	350	231	856	2,320	1,600	496	164
12	27	412	70	160	210	360	196	776	1,950	1,640	390	188
13	32	446	65	170	200	370	188	832	2,100	1,740	330	167
14	32	474	60	180	210	380	173	1,010	1,920	1,840	286	151
15	32	490	65	195	215	384	166	1,100	2,010	1,820	254	136
16	33	513	70	200	220	412	156	1,060	2,350	1,530	234	128
17	33	298	70	210	215	412	150	925	2,570	1,200	230	120
18	32	163	70	205	220	412	128	864	2,670	997	220	125
19	30	108	70	205	225	406	20	1,100	2,780	880	212	125
20	29	100	75	210	230	401	108	1,410	2,960	768	206	125
21	29	95	75	215	230	395	289	1,960	3,440	720	216	242
22	29	90	80	210	235	390	406	2,170	3,710	650	202	594
23	32	81	85	205	230	434	537	2,220	3,640	520	206	685
24	33	80	90	200	215	429	639	2,280	3,600	410	184	671
25	34	80	90	205	230	440	777	2,250	3,610	410	174	685
26	33	85	95	215	235	418	746	1,760	3,400	706	164	671
27	33	85	95	220	235	401	632	1,430	3,140	916	178	685
28	33	80	100	215	240	429	525	1,090	2,920	925	181	736
29	34	80	105	210	-	423	434	916	1,980	856	164	792
30	40	82	110	210	-	434	384	848	1,470	792	151	848
31	40	-----	115	210	-----	446	-----	840	-----	678	142	-----
Total	805.6	4,780	2,490	5,665	6,220	11,026	10,365	38,026	68,214	37,768	16,020	9,638
Mean	26.0	159	80.3	183	222	356	346	1,227	2,274	1,218	517	321
Ac-ft	1,600	9,480	4,940	11,240	12,340	21,870	20,560	75,420	135,300	74,910	31,780	19,120

Calendar year 1964: Max 513 Min 4.0 Mean 79.1 Ac-ft 57,440  
 Water year 1964-65: Max 3,710 Min 7.0 Mean 578 Ac-ft 418,600

Note.--Stage-discharge relation affected by ice Nov. 20 to Mar. 14, Mar. 19.



## 8-2520. Rio Grande at Colorado-New Mexico State line

Location.--Lat 37°00', long 105°43', in SE¼ sec.36, T.1 N., R.75 W., in Beaubien Grant, on left bank a quarter of a mile upstream from Colorado-New Mexico State line, 1½ miles upstream from Costilla Creek, and 5¼ miles west of Jaroso.

Records available.--October 1953 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,390 ft (from topographic map).

Average discharge.--12 years, 266 cfs (192,600 acre-ft per year).

Extremes.--Maximum discharge during year, 3,600 cfs June 22 (gage height, 6.65 ft); minimum daily, 8.4 cfs Oct. 5.

1953-65: Maximum discharge, 4,150 cfs May 29, 1958 (gage height, 7.07 ft); no flow at times in 1956.

Flood of June 8, 1905 (daily discharge, 13,100 cfs at station near Lobatos 5.8 miles upstream) was probably the greatest since at least 1828.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by transmountain diversions, storage reservoirs, ground-water withdrawals and diversions for irrigation, and return flow from irrigated areas.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Aug. 6-24)

0.9	6.5	3.0	555
1.0	13	4.0	1,040
1.2	35	5.0	1,790
1.5	88	6.0	2,820
2.0	222	7.0	4,060

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	40	74				414	438	785	1,310	707	* 152
2	10	40	72				418	484	855	1,360	968	169
3	9.8	44	78				421	712	962	1,280	1,390	175
4	9.8	46	63				385	1,080	1,140	1,410	1,530	169
5	8.4	48	65				359	1,330	1,120	1,690	1,480	186
6	11	47					333	1,360	1,250	1,840	1,330	198
7	14	47					289	1,190	*1,290	1,740	1,190	178
8	18	43					274	1,030	1,340	1,630	974	175
9	20	43					258	1,020	1,790	1,510	795	180
10	22	90					237	865	2,140	1,420	*658	192
11	25	* 340					225	770	2,200	1,480	559	180
12	29	404					204	707	1,860	1,520	459	198
13	30	431					189	725	1,970	1,620	385	195
14	*31	473					183	880	1,840	1,700	343	175
15	34	501					172	992	1,850	1,740	302	155
16		539						956	2,160	1,460	271	138
17		398						855	2,380	1,140	264	130
18		189						411	141	775	920	138
19		118						411	103	932	*815	141
20		80						398	*103	1,250	237	141
21		55						381	246	*1,800	676	219
22		57						388	378	2,140	*3,540	559
23		70						421	490	2,190	3490	680
24		57						401	591	2,200	3,410	676
25		57						435	743	2,180	3,460	689
26		68						418	738	1,750	3,270	676
27		72						428	644	1,420	3,010	684
28		68						401	543	1,080	2,850	716
29		68						435	456	875	2,000	761
30		* 74						428	388	805	1,410	825
31		-----						438	-----	790	-----	-----
Total	811.0	4,607	2,484	5,673	6,216	10,964	10,243	35,581	64,622	35,304	16,583	9,850
Mean	26.2	154	80.1	183	222	354	341	1,148	2,154	1,139	535	328
Ac-ft	1,610	9,140	4,930	11,250	12,330	21,750	20,320	70,570	128,200	70,020	32,890	19,540

Calendar year 1964: Max 539 Min 1.6 Mean 77.9 Ac-ft 56,590  
Water year 1964-65: Max 3,540 Min 8.4 Mean 556 Ac-ft 402,600

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 5 to Mar. 18 (no gage-height record Dec. 6-22, Dec. 29 to Jan. 4). No gage-height record Oct. 15 to Nov. 5.

## 9-105. Colorado River below Baker Gulch, near Grand Lake, Colo.

Location.--Lat 40°19'33", long 105°51'22", in sec.12, T.4 N., R.76 W., on left bank 500 ft downstream from Baker Gulch, 1 mile upstream from Bowen Gulch, and 5 miles northwest of town of Grand Lake.

Drainage area.--53.0 sq mi.

Records available.--May 1953 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 8,750 ft (from topographic map).

Average discharge.--12 years, 56.5 cfs (40,900 acre-ft per year).

Extremes.--Maximum discharge during year, 880 cfs June 18 (gage height, 6.91 ft); minimum daily, 4.8 cfs Jan. 2, 3, Feb. 1-3. 1953-65: Maximum discharge, 976 cfs June 30, 1957 (gage height, 7.19 ft); minimum daily, 3.0 cfs Jan. 13, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Transmountain diversion above station by Grand River ditch (see elsewhere in this report).

Rating tables, except periods of ice-effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to June 20

June 21 to Sept. 30

3.2	7.0	4.5	156	3.6	22	5.0	232
3.3	11	5.0	260	3.9	48	6.0	525
3.5	23	6.0	550	4.2	83	7.0	920
4.0	76	7.0	920	4.5	131		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18	11	8.4	5.0	4.8	5.4	6.0	127	228	330	80	32
2	16	11	8.0	4.8	4.8	5.4	6.0	170	224	*366	74	32
3	16	11	8.0	4.8	4.8	5.2	6.0	178	244	333	71	36
4	15	9.0	8.0	5.0	5.0	5.0	6.0	184	255	312	73	33
5	14	9.8	7.8	5.2	5.0	5.2	6.0	*154	237	290	62	33
6	13	9.8	7.5	5.4	5.0	5.6	6.0	125	226	268	55	34
7	13	10	7.2	5.6	5.0	5.6	5.8	109	300	248	52	32
8	13	9.0	*7.0	5.6	5.0	5.6	*5.8	87	*338	237	47	32
9	13	8.2	7.0	5.6	*5.1	5.8	5.8	75	384	221	44	28
10	14	*9.4	7.0	5.6	5.2	5.8	6.0	66	456	202	*43	26
11	15	8.6	6.8	5.6	5.2	6.0	6.6	71	550	198	41	25
12	14	8.0	6.6	*5.6	5.2	6.2	6.8	79	468	221	40	39
13	*13	8.0	6.4	5.6	5.2	6.2	7.0	89	478	198	40	35
14	13	8.0	6.8	5.6	5.4	6.0	7.0	86	475	180	41	*32
15	12	8.0	7.2	5.6	5.6	6.0	7.4	84	518	156	46	31
16	12	8.0	7.2	5.6	5.6	6.0	8.0	109	684	142	50	32
17	12	8.4	7.0	5.6	5.4	6.0	8.5	142	794	144	55	32
18	11	9.0	6.6	5.6	5.6	5.6	8.8	151	*836	133	70	36
19	9.8	8.5	6.4	5.4	5.4	5.6	9.5	*154	817	156	73	41
20	10	8.2	6.2	5.2	5.2	5.6	12	186	787	122	60	42
21	10	8.0	6.4	5.6	5.2	5.9	18	230	761	111	50	37
22	11	8.2	6.8	5.6	5.2	*6.1	25	287	749	110	45	39
23	11	7.8	6.8	5.4	5.2	5.8	45	344	*721	108	46	44
24	12	8.4	6.8	5.4	5.2	5.4	60	313	654	118	46	41
25	10	8.4	6.6	5.6	5.2	5.8	57	248	648	110	36	46
26	9.8	8.4	6.6	5.6	5.2	5.2	47	198	606	94	32	48
27	9.8	8.4	6.4	5.6	5.0	5.2	50	169	525	89	32	50
28	10	8.2	6.2	5.4	5.2	5.4	52	146	486	83	32	53
29	11	8.0	5.8	5.4	-	5.6	66	146	390	75	39	60
30	11	8.2	5.4	5.2	-----	5.6	89	170	363	73	45	51
31	11	-----	5.2	5.0	-----	5.8	-----	213	-----	87	36	-----
Total	383.4	262.9	212.1	167.8	144.9	175.6	650.0	4,890	15,202	5,515	1,556	1,132
Mean	12.4	8.76	6.84	5.41	5.18	5.66	21.7	158	507	178	50.2	37.7
Ac-ft	760	521	421	333	287	348	1,290	9,700	30,150	10,940	3,090	2,250

Calendar year 1964: Max 475 Min 5.2 Mean 53.6 Ac-ft 38,960  
 Water year 1964-65: Max 836 Min 4.8 Mean 83.0 Ac-ft 60,090

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 12 to Apr. 24 (no gage-height record Oct. 31 to Nov. 2, Nov. 19 to Dec. 8, Dec. 11 to Jan. 5, Jan. 19 to Feb. 9). No gage-height record Oct. 1-8.

9-110. Colorado River near Grand Lake, Colo.

Location.--Lat 40°13'08", long 105°51'25", in NE¼SW¼ sec.13, T.3 N., R.76 W., on left bank 200 ft downstream from bridge on U. S. Highway 34, 400 ft upstream from high-water line of Shadow Mountain Lake at elevation 8,367 ft, and 3 miles southwest of town of Grand Lake.

Drainage area.--103 sq mi.

Records available.--July 1904 to September 1918, October 1933 to September 1965. Monthly discharge only for some periods, published in WSP 1313. Published as Grand River (North Fork) near Grand Lake 1904 and as North Fork of Grand River near Grand Lake 1905-18.

Gage.--Water-stage recorder. Altitude of gage is 8,380 ft (from topographic map). Prior to June 15, 1934, staff gage at same site and datum. June 15, 1934, to Sept. 26, 1944, water-stage recorder at site 1,100 ft downstream at different datum.

Average discharge.--46 years, 95.0 cfs (68,780 acre-ft per year).

Extremes.--Maximum discharge during year, 1,070 cfs June 18 (gage height, 6.28 ft); minimum daily, 12 cfs Mar. 3, 4, 23-27. 1904-18, 1933-65: Maximum discharge observed, 1,840 cfs June 15, 16, 1918 (gage height, 7.0 ft), from rating curve extended above 1,100 cfs; minimum daily, 1.7 cfs July 18, 19, 1934.

Remarks.--Records good except those for periods of ice effect, which are fair. Diversions above station for irrigation of about 200 acres of hay meadows above station and about 2,000 acres below. Transmountain diversion above station by Grand River ditch through La Poudre Pass to Cache la Poudre River basin (see elsewhere in this report).

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

3.2	11	4.6	185
3.3	16	5.0	290
3.5	28	5.5	480
3.8	58	6.0	810
4.2	112	6.3	1,090

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	20	15	13	13	14	14	201	318	328	123	46
2	24	20	15	13	13	13	14	284	308	*376	108	44
3	24	20	15	13	14	12	14	325	332	364	104	44
4	23	19	14	16	*14	12	14	304	*346	342	114	48
5	22	18	14	16	14	13	14	266	353	314	97	45
6	21	18	13	16	14	13	14	197	318	275	86	50
7	21	19	13	16	14	13	*14	185	384	233	78	45
8	21	18	13	16	14	13	14	155	424	210	73	46
9	21	17	13	16	14	13	14	131	456	201	64	44
10	21	*16	*14	16	14	14	16	117	500	179	*65	40
11	23	16	16	16	13	14	16	115	604	167	64	38
12	22	16	16	*16	13	14	16	130	578	199	63	44
13	21	16	13	16	14	14	16	147	536	185	62	49
14	21	16	14	16	15	14	16	149	578	149	60	*44
15	21	17	15	16	15	13	18	140	560	*136	65	41
16	20	18	15	16	13	13	18	155	709	123	73	42
17	20	17	14	16	14	13	20	201	900	110	69	43
18	20	16	13	16	14	13	20	225	1,010	96	102	47
19	18	16	14	15	14	13	22	*215	*972	123	109	59
20	18	16	14	15	14	13	27	251	882	97	100	66
21	18	15	14	16	15	13	43	304	855	80	79	59
22	18	16	15	16	15	*13	60	372	819	79	69	59
23	19	16	16	15	14	12	78	440	794	74	65	69
24	20	16	16	16	14	12	112	432	*716	103	73	65
25	20	16	16	16	14	12	109	364	688	93	60	70
26	20	16	16	16	13	12	98	308	653	74	54	73
27	20	15	16	16	14	12	93	257	560	60	49	74
28	19	16	16	15	14	13	93	210	495	58	46	79
29	20	16	15	15	-	13	112	195	440	47	45	93
30	19	16	14	14	-----	13	147	215	392	78	64	83
31	20	-----	14	14	-----	14	-----	278	-----	140	55	-----
Total	642	507	451	478	390	403	1,276	7,268	17,480	5,093	2,338	1,649
Mean	20.7	16.9	14.5	15.4	13.9	13.0	42.5	234	583	164	75.4	55.0
Ac-ft	1,270	1,010	895	948	774	799	2,530	14,420	34,670	10,100	4,640	3,270

Calendar year 1964: Max 559 Min 8.5 Mean 59.4 Ac-ft 43,120  
Water year 1964-65: Max 1,010 Min 12 Mean 104 Ac-ft 75,330

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 6 to Dec. 10, Dec. 13, 14, 17, 18, 25-27, Dec. 29 to Jan. 3, Jan. 8, 9, 17-23, Feb. 1, 2, 5, 10-13, 15-21, Feb. 23-27, Mar. 1-9, 11, 16, 18-20, Mar. 30 to Apr. 1, Apr. 7, 12, 14, 16, 17, 21, 22.

## GRAND LAKE OUTLET BASIN

9-130. Alva B. Adams tunnel at east portal, near Estes Park, Colo.

Location.--Lat 40°19'40", long 105°34'39", in SW¼NW¼ sec.9, T.4 N., R.73 W., on right bank at upstream end of Aspen Creek siphon, 700 ft downstream from east portal and 4½ miles southwest of Estes Park.

Records available.--October 1946 to September 1965 (monthly discharge only for August and September 1947).

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 8,250 ft (from topographic map). Prior to Oct. 1, 1950, water-stage recorder and Parshall flume at different datum. Oct. 1, 1950, to Sept. 30, 1952, water-stage recorder and Cippoletti weir at different datum.

Average discharge.--19 years, 237 cfs (171,600 acre-ft per year).

Extremes.--Maximum discharge during year, 576 cfs Oct. 21 (gage height, 4.21 ft); no flow June 9 to July 18, July 24-27, Aug. 20-22. 1946-65: Maximum discharge, 671 cfs Jan. 23, 1962 (gage height, 4.63 ft); no flow at times in most years.

Remarks.--Records excellent. This is a transmountain diversion from Grand Lake and Shadow Mountain Lake for power and irrigation development in the South Platte River basin as part of the Colorado-Big Thompson project. Diversion point is at west portal near town of Grand Lake, 13.35 miles west of east portal.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	375	232	438	412	449	435	394	281	215	0	12	246
2	348	400	458	439	451	459	208	273	208	0	234	268
3	345	414	457	410	449	443	206	314	247	0	189	266
4	299	413	459	461	443	445	155	308	193	0	163	214
5	408	418	430	455	435	485	333	318	138	0	210	154
6	426	362	461	449	410	410	262	334	153	0	204	155
7	380	421	454	461	410	386	209	367	297	0	248	231
8	375	437	460	437	447	435	168	412	6.5	0	204	273
9	299	438	459	435	449	461	122	354	0	0	236	216
10	378	420	393	461	445	460	1.4	393	0	0	236	275
11	302	385	378	466	433	457	1.0	432	0	0	192	238
12	376	462	458	337	437	433	156	368	0	0	270	132
13	392	484	452	351	445	435	119	370	0	0	284	271
14	411	486	456	425	410	410	120	373	0	0	212	275
15	418	487	488	412	447	459	107	469	0	0	71	266
16	408	473	441	412	449	443	48	310	0	0	71	248
17	369	482	481	423	445	457	1.4	478	0	0	126	254
18	278	480	482	*401	444	464	.8	406	0	0	55	226
19	378	470	483	444	364	485	.6	342	0	204	1.0	174
20	*362	491	474	400	349	484	343	468	0	2.0	0	156
21	350	483	471	360	362	435	514	330	0	17	0	156
22	351	453	414	342	349	507	338	274	0	164	0	158
23	354	470	451	367	412	483	351	2.0	0	2.0	120	155
24	358	*330	457	365	412	499	410	190	*0	0	108	157
25	269	442	414	403	432	501	273	243	0	0	159	124
26	382	460	462	400	351	515	359	231	0	0	138	1.4
27	377	412	462	435	345	503	225	*180	0	0	226	224
28	389	381	438	436	410	448	274	271	0	124	335	124
29	393	360	436	474	-	494	*269	328	0	77	213	208
30	403	461	436	440	-----	*501	232	206	0	86	224	157
31	423	-----	463	393	-----	496	-----	293	-----	92	149	-----
Total	11,376	12,907	13,966	12,906	11,684	14,328	6,200.2	9,918.0	1,457.5	768.0	4,879.2	6,002.4
Mean	367	430	451	416	417	462	207	320	48.6	24.8	157	200
Ac-ft	22,560	25,600	27,700	25,600	23,170	28,420	12,300	19,670	2,890	1,520	9,680	11,910

Calendar year 1964: Max 567 Min 0 Mean 427 Ac-ft 310,100

Water year 1964-65: Max 515 Min 0 Mean 291 Ac-ft 211,000

\* Discharge measurement or observation of no flow made on this day.

## 9-145. Shadow Mountain Lake near Grand Lake, Colo.

Location.--Lat 40°12'30", long 105°50'20", in SW¼NW¼ sec.19, T.3 N., R.75 W., in gatehouse on left side of outlet gates near center of Shadow Mountain Dam on the Colorado River, 1 mile upstream from Pole Creek and 3¼ miles south of town of Grand Lake.

Drainage area.--190 sq mi.

Records available.--April 1947 to September 1965. Prior to October 1960, published as Shadow Mountain Reservoir near Grand Lake.

Gage.--Water-stage recorder for elevations above 8,364.0 ft and reference points along upstream face of dam for those below. Datum of gage is at mean sea level (Bureau of Reclamation bench mark). Supplementary water-stage recorder at Grand Lake outlet gates about 3 miles from dam.

Extremes.--Maximum contents during year, 17,770 acre-ft Aug. 21 (elevation, 8,366.95 ft); minimum, 16,120 acre-ft June 16 (elevation, 8,366.05 ft).

1947-65: Maximum contents, 17,920 acre-ft May 22, 1955 (elevation, 8,367.03 ft); minimum since appreciable storage was first attained, 2,630 acre-ft May 14, 1948.

Remarks.--Figures given herein are combined figures of usable contents for Shadow Mountain Lake and Grand Lake. Shadow Mountain Lake is used for stabilization of water level in Grand Lake, from which it is separated by gates. Shadow Mountain Lake is formed by earth- and rock-fill dam and dikes. Storage began in April 1947. Capacity, 17,860 acre-ft (including usable capacity of Grand Lake above elevation 8,365 ft) between elevations 8,347 (sill of outlet gate) and 8,367 ft (maximum water surface). Dead storage in Shadow Mountain Lake, 506 acre-ft. Dead storage in Grand Lake not determined. Capacity of Shadow Mountain Lake and Grand Lake usable for diversion through Alva B. Adams tunnel, 3,660 acre-ft between elevations 8,365 (crest of tunnel inlet) and 8,367 ft (maximum water surface). Transmountain diversion from Colorado River basin, including water pumped from Lake Granby, is effected through Grand Lake and Alva B. Adams tunnel, for power and irrigation in South Platte River basin.

Cooperation.--Records furnished by Bureau of Reclamation.

Month-end elevation and contents, water year October 1964 to September 1965

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	8,366.64	17,200	-
Oct. 31.....	8,366.47	16,890	-310
Nov. 30.....	8,366.54	17,020	+130
Dec. 31.....	8,366.62	17,160	+140
Calendar year 1964.....	-	-	-210
Jan. 31.....	8,366.69	17,290	+130
Feb. 28.....	8,366.66	17,240	-50
Mar. 31.....	8,366.63	17,180	-60
Apr. 30.....	8,366.58	17,090	-90
May 31.....	8,366.51	16,960	-130
June 30.....	8,366.70	17,310	+350
July 31.....	8,366.77	17,440	+130
Aug. 31.....	8,366.60	17,130	-310
Sept. 30.....	8,366.67	17,260	+130
Water year 1964-65.....	-	-	+60

† Elevation at 2400.

## ARAPAHO CREEK BASIN

9-165. Arapaho Creek at Monarch Lake Outlet, Colo.

Location.--Lat 40°06'45", long 105°44'57", in SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec.24, T.2 N., R.75 W., on left bank a quarter of a mile downstream from Monarch Lake Outlet and 10 miles east of Granby.

Drainage area.--47.1 sq mi.

Records available.--October 1944 to September 1965.

Gage.--Water-stage recorder (digital). Altitude of gage is 8,310 ft (from topographic map).

Average discharge.--21 years, 83.5 cfs (60,450 acre-ft per year).

Extremes.--Maximum discharge during year, 1,180 cfs June 18 (gage height, 4.60 ft); minimum daily, 5.0 cfs Mar. 18.

1944-65: Maximum discharge, 1,300 cfs June 11, 1952 (gage height, 4.71 ft); minimum daily, 0.2 cfs Nov. 5, 1956 (spillway at Monarch Lake blocked for construction).

Remarks.--Records good. Natural flow regulated by Monarch Lake. No diversion above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

1.2	2.5	2.5	188
1.3	5.5	3.0	345
1.4	10	3.5	550
1.5	16	4.0	805
1.7	34	4.5	1,110
2.0	79		

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	17	8.2	8.2	7.3	7.8	5.7	5.2	80	323	443	275	43
2	16	8.2	8.2	7.1	7.8	5.6	5.2	113	303	*484	199	41
3	16	8.2	8.2	6.9	7.8	5.6	10	139	285	469	183	38
4	15	8.2	8.2	6.9	8.2	5.9	14	*148	255	412	159	36
5	15	8.2	8.2	6.5	8.2	5.6	14	151	248	384	116	36
6	14	8.2	8.1	6.4	8.2	5.5	14	140	245	380	128	35
7	14	8.2	7.8	6.4	8.2	5.7	*13	113	270	373	126	34
8	14	8.2	*7.8	6.4	*8.1	5.5	12	104	316	396	95	35
9	13	8.2	7.8	6.4	7.8	5.2	12	94	483	388	95	34
10	13	*8.2	7.8	6.2	7.9	5.3	12	80	639	363	*95	30
11	13	8.2	7.8	6.3	7.3	5.2	11	67	829	349	93	26
12	12	8.2	7.8	*6.4	7.3	5.2	11	63	574	338	94	28
13	*12	8.2	7.7	6.4	7.3	5.2	10	75	586	359	90	30
14	12	8.2	7.3	6.4	7.3	5.2	10	89	753	321	85	28
15	12	8.2	7.3	6.4	7.0	5.2	9.8	88	709	260	84	*27
16	12	8.2	7.2	6.4	7.0	5.2	9.7	80	915	224	82	26
17	11	8.2	7.1	6.9	6.9	5.2	9.7	*89	922	212	77	25
18	11	8.2	6.9	6.9	6.6	5.0	9.7	124	*959	233	82	25
19	11	8.0	6.9	6.9	6.4	5.2	9.9	142	777	260	96	26
20	11	7.8	6.9	6.9	6.4	5.5	10	160	666	263	125	28
21	11	7.8	6.7	6.6	6.4	5.2	11	191	674	303	126	29
22	9.6	7.8	6.6	6.5	6.2	*5.1	12	272	651	370	97	29
23	8.1	7.8	6.7	6.4	6.2	5.1	15	482	602	314	81	29
24	8.2	7.8	7.0	6.4	6.0	5.1	22	455	555	469	78	28
25	8.2	8.2	6.9	6.5	6.1	5.2	88	328	571	469	73	128
26	8.2	8.2	6.4	6.9	6.0	5.2	152	255	440	359	67	71
27	8.2	8.2	6.6	6.9	6.0	5.2	88	207	321	282	60	5.6
28	8.1	8.2	7.0	7.0	5.9	5.2	55	176	354	163	55	6.3
29	8.2	8.2	7.1	7.2	-----	5.2	49	154	459	150	51	8.4
30	8.2	8.2	7.2	7.3	-----	5.2	56	156	488	168	48	13
31	8.2	-----	7.1	7.6	-----	5.1	-----	214	-----	328	46	-----
TOTAL	358.2	243.8	228.5	207.7	198.3	164.5	760.2	5,029	16,172	10,286	3,161	978.3
MEAN	11.6	8.13	7.37	6.70	7.08	5.31	25.3	162	539	332	102	32.6
AC-FT	710	484	453	412	393	326	1,510	9,970	32,080	20,400	6,270	1,940

CALENDAR YEAR 1964 MAX 560 MIN 4.9 MEAN 69.0 AC-FT 50,120  
 WATER YEAR 1964-65 MAX 959 MIN 5.0 MEAN 104 AC-FT 74,950

\* Discharge measurement made on this day.

## 9-185. Lake Granby near Granby, Colo.

Location.--Lat 40°11'00", long 105°52'10", in NW $\frac{1}{4}$ NE $\frac{1}{4}$  sec.35, T.3 N., R.76 W., in Granby pumping plant at north shore of lake, 2½ miles north of Granby Dam on Colorado River and 7½ miles northeast of Granby.

Drainage area.--311 sq mi.

Records available.--October 1949 to September 1965. Prior to October 1955, published as Granby Reservoir near Granby.

Gage.--Water-stage recorder. Datum of gage is at mean sea level (Bureau of Reclamation bench mark). Prior to Apr. 9, 1951, staff gage at Granby Dam at same datum.

Extremes.--Maximum contents during year, 311,800 acre-ft Aug. 27 (elevation, 8,257.16 ft); minimum, 41,920 acre-ft Apr. 21 (elevation, 8,200.42 ft).

1949-65: Maximum contents, 465,900 acre-ft July 13, 1962 (elevation, 8,280.05 ft); minimum since appreciable storage was first attained, 22,940 acre-ft Apr. 21, 1956 (elevation, 8,194.37 ft).

Remarks.--Lake is formed by earth-fill dam and dikes. Regulation began Sept. 13, 1949, and usable storage began June 14, 1950, while dam was under construction. Usable capacity, 465,600 acre-ft between elevations 8,186.00 (trashrack sills at outlet structures) and 8,280.00 ft (top of radial spillway gates). Dead storage, 74,190 acre-ft. Lake is used to store water for pumping to Shadow Mountain Lake and transmountain diversion through Alva B. Adams tunnel for power and irrigation in South Platte River basin. Figures given herein represent usable contents.

Cooperation.--Records furnished by Bureau of Reclamation.

Month-end elevation and contents, water year October 1964 to September 1965

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	8,234.48	184,400	-
Oct. 31.....	8,230.07	162,700	-21,700
Nov. 30.....	8,225.33	140,400	-22,300
Dec. 31.....	8,219.82	115,900	-24,500
Calendar year 1964.....	-	-	-116,300
Jan. 31.....	8,214.41	93,360	-22,540
Feb. 28.....	8,208.89	71,830	-21,530
Mar. 31.....	8,201.45	45,340	-26,490
Apr. 30.....	8,201.69	46,150	+810
May 31.....	8,213.58	90,020	+43,870
June 30.....	8,243.85	234,000	+143,980
July 31.....	8,255.58	302,200	+68,200
Aug. 31.....	8,256.99	310,800	+8,600
Sept. 30.....	8,256.75	309,300	-1,500
Water year 1964-65.....	-	-	+124,900

† Elevation at 2400.

## 9-190. Colorado River below Lake Granby, Colo.

Location.--Lat 40°08'39", long 105°52'00", in SE $\frac{1}{4}$ SE $\frac{1}{4}$  sec.11, T.2 N., R.76 W., on right bank 0.3 mile downstream from Granby Dam, 1 mile upstream from Walden Hollow, and 5 miles northeast of Granby.

Drainage area.--311 sq mi.

Records available.--October 1950 to September 1965. Prior to October 1955, published as "below Granby Reservoir."

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 8,050 ft (from topographic map).

Extremes.--Maximum discharge during year, 109 cfs July 18 (gage height, 1.92 ft); minimum daily, 16 cfs Dec. 3-6, 8-21, Mar. 16. 1950-65: Maximum daily discharge, 1,400 cfs (estimated) July 3, 4, 1962; minimum, 5.6 cfs Sept. 23-28, 1961.

Remarks.--Records excellent. Seepage from Lake Granby, which varies from 2-8 cfs depending on elevation of Lake Granby, is not included in record. Flow completely regulated by Lake Granby (see preceding page). Several diversions for irrigation of hay meadows above station. Transmountain diversions by Eureka and Grand River ditches and Alva B. Adams tunnel (see elsewhere in this report).

Rating table (gage height, in feet, and discharge,  
in cubic feet per second)

0.5	13
.8	28
1.3	60
1.9	110

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	23	26	17	17	17	17	19	59	103	*100	58	24
2	19	26	17	17	17	17	19	39	102	100	48	18
3	19	25	16	17	17	17	19	20	*102	100	39	17
4	19	25	16	17	17	17	19	20	103	100	39	17
5	19	27	16	17	17	17	19	41	103	100	41	17
6	19	25	16	17	17	17	18	65	103	103	*42	17
7	27	25	17	17	17	17	*20	67	104	106	43	17
8	29	25	*16	17	*17	17	20	67	104	106	43	17
9	27	25	16	17	17	17	21	67	103	106	43	17
10	27	*24	16	17	17	17	21	67	103	107	43	17
11	27	24	16	17	17	17	21	67	104	107	42	17
12	30	25	16	*17	17	17	21	68	104	102	41	17
13	33	25	16	17	17	17	21	71	105	98	41	18
14	33	25	16	17	17	17	20	71	97	96	42	30
15	*33	25	16	17	17	17	20	70	88	101	41	*34
16	33	20	16	17	17	16	20	70	89	107	42	34
17	33	17	16	17	17	18	20	*70	*89	107	43	34
18	33	17	16	17	17	19	20	70	89	107	43	34
19	29	17	16	17	17	19	19	71	91	107	41	34
20	26	17	16	17	17	19	19	71	94	105	41	29
21	25	17	16	17	17	19	19	71	97	105	41	25
22	26	17	17	17	17	*19	19	71	103	105	40	25
23	26	17	17	17	17	19	19	71	106	102	40	25
24	25	17	17	17	17	19	19	71	104	101	41	26
25	26	17	17	17	17	19	19	69	103	101	41	26
26	26	17	17	17	17	19	20	69	103	102	41	26
27	26	17	17	17	17	19	20	69	103	102	41	25
28	26	17	17	17	17	19	20	69	103	104	41	25
29	26	17	17	17	-	19	20	72	106	105	41	25
30	26	17	17	17	-	19	43	90	101	105	41	25
31	26	-----	17	17	-----	19	-----	104	-----	88	38	-----
Total	822	635	509	527	476	555	614	2037	3,009	3,185	1,302	712
Mean	26.5	21.2	16.4	17.0	17.0	17.9	20.5	65.7	100	103	42.0	23.7
Ac-ft	1,630	1,260	1,010	1,050	944	1,100	1,220	4,040	5,970	6,320	2,580	1,410

Calendar year 1964: Max 94 Min 15 Mean 36.8 Ac-ft 26,740  
 Water year 1964-65: Max 107 Min 16 Mean 39.4 Ac-ft 28,530

\* Discharge measurement made on this day.



## 9-195. Colorado River near Granby, Colo.

Location.--Lat 40°07'15", long 105°54'00", in SW¼NW¼ sec.22, T.2 N., R.76 W., on right bank 0.3 mile upstream from bridge on U. S. Highway 34, 1.3 miles upstream from Willow Creek, and 3.2 miles northeast of Granby.

Drainage area.--322 sq mi.

Records available.--October 1907 to September 1911 (published as Grand River near Granby), October 1933 to September 1953, May 1961 to September 1965 (seasonal records only). Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 7,960 ft (from topographic map). June 10, 1908, to Sept. 30, 1911, staff gage and May 12 to June 10, 1934, chain gage, at site 300 ft upstream at different datums. June 11, 1934, to Sept. 30, 1953, water-stage recorder at same site and datum.

Extremes.--Maximum discharge during season, 121 cfs May 1 (gage height, 1.32 ft); minimum daily, 17 cfs Sept. 10, 30. 1907-11, 1933-53, 1961-65: Maximum discharge observed, 4,100 cfs June 20, 1909 (gage height, 5.5 ft, site and datum then in use); minimum daily, 6.6 cfs Jan. 29, 1950; minimum observed prior to starting construction of Shadow Mountain Lake, 20 cfs Apr. 6, 1936 (discharge measurement).

Remarks.--Records good. Flow regulated by Lake Granby since Sept. 13, 1949 (see elsewhere in this report). Several diversions for irrigation of hay meadows above station. Transmountain diversions above station by Eureka and Grand River ditches and Alva B. Adams tunnel (see elsewhere in this report).

Rating table (gage height, in feet, and discharge,  
in cubic feet per second)

0.3	16
.5	27
.8	54
1.2	104

Discharge, in cubic feet per second, May to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								94	82	*82	66	28
2								73	81	80	55	21
3								38	*80	76	45	20
4								*33	81	77	45	21
5								50	81	77	45	20
6								82	78	78	*46	20
7								80	81	81	47	19
8								81	78	82	47	20
9								84	76	82	47	19
10								81	78	84	47	17
11								77	82	86	46	19
12								72	82	86	46	20
13								78	91	81	46	18
14								84	85	78	46	20
15								82	77	77	44	*20
16								81	80	81	45	20
17								80	*78	81	46	19
18								80	75	82	47	20
19								80	76	82	46	20
20								*81	78	80	44	22
21								82	76	80	44	19
22								82	76	84	44	18
23								84	81	82	44	18
24								86	82	81	44	18
25								84	78	81	44	19
26								81	80	80	44	19
27								80	78	78	43	19
28								75	77	78	44	19
29								72	77	78	46	19
30								70	82	81	46	17
31		-----			-----		-----	81	-----	93	42	-----
Total								2,368	2,387	2,509	1,431	588
Mean								76.4	79.6	80.9	46.2	19.6
Ac-ft								4,700	4,730	4,980	2,840	1,170

Calendar year	: Max	Min	Mean	Ac-ft
Water year	: Max	Min	Mean	Ac-ft

\* Discharge measurement made on this day.

## WILLOW CREEK BASIN

9-207. Willow Creek Reservoir near Granby, Colo.

Location.--Lat 40°08'40", long 105°56'30", in SE¼ sec.7, T.2 N., R.76 W., in shaft house near right end of Willow Creek Dam on Willow Creek, 3¼ miles upstream from mouth, and 4 miles north of Granby.

Drainage area.--134 sq mi.

Records available.--May 1953 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 8,077.00 ft above mean sea level, datum of 1929 (levels by Bureau of Reclamation); gage readings have been reduced to elevations above mean sea level.

Extremes.--Maximum contents during year, 8,870 acre-ft Sept. 8 (elevation, 8,129.35 ft); minimum 5,570 acre-ft Sept. 17 (elevation, 8,116.18 ft).

1953-65: Maximum contents observed, 9,060 acre-ft Aug. 3, 1953 (elevation, 8,129.99 ft); minimum since first filling to spillway level, 2,380 acre-ft Apr. 2, 1962 (elevation, 8,097.15 ft).

Remarks.--Reservoir is formed by earth- and rock-fill dam. Storage began in March 1953 and dead storage pool filled May 3, 1953. Usable capacity, 9,060 acre-ft between elevations 8,077.00 (trashrack sill at Willow Creek Outlet) and 8,130.00 ft (crest of spillway). Dead storage, 1,490 acre-ft. Reservoir is used to store water for pumping to Lake Granby, Shadow Mountain Lake, and transmountain diversion through Alva B. Adams tunnel for power and irrigation in the South Platte River basin. It is part of the Colorado-Big Thompson project. Figures given herein represent usable contents.

Cooperation.--Records furnished by Bureau of Reclamation.

Month-end elevation and contents, water year October 1964 to September 1965

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	8,125.58	7,800	-
Oct. 31.....	8,126.62	8,090	+290
Nov. 30.....	8,117.23	5,790	-2,300
Dec. 31.....	8,118.98	6,170	+380
Calendar year 1964.....	-	-	+450
Jan. 31.....	8,120.72	6,570	+400
Feb. 28.....	8,121.88	6,850	+280
Mar. 31.....	8,122.98	7,130	+280
Apr. 30.....	8,120.45	6,510	-620
May 31.....	8,125.60	7,810	+1,300
June 30.....	8,120.74	6,580	-1,230
July 31.....	8,117.93	5,940	-640
Aug. 31.....	8,127.80	8,420	+2,480
Sept. 30.....	8,120.34	6,480	-1,940
Water year 1964-65.....	-	-	-1,320

† Elevation at 2400.

## 9-210. Willow Creek below Willow Creek Reservoir, Colo.

Location.--Lat 40°08'45", long 105°56'22", in SE¼ sec.7, T.2 N., R.76 W., on left bank 1,000 ft downstream from Willow Creek Dam, three-quarters of a mile upstream from Bunte Highline Canal diversion, 3 miles upstream from mouth, and 4 miles north of Granby.

Drainage area.--134 sq mi.

Records available.--August 1953 to September 1965.

Gage.--Water-stage recorder and 10-ft Parshall flume with overflow weirs. Datum of gage is 8,023.64 ft above mean sea level (Bureau of Reclamation bench mark). Supplementary water-stage recorder and Parshall flume on McQueary ditch 500 ft downstream from point of diversion at Willow Creek Dam. Datum of gage is 8,031.68 ft above mean sea level (Bureau of Reclamation bench mark).

Average discharge (combined flow).--12 years, 27.7 cfs (20,050 acre-ft per year).

Extremes (combined flow).--Maximum discharge during year, 458 cfs May 23; no flow May 1.

1953-65: Maximum discharge, 867 cfs June 7, 1957 (gage height, 4.84 ft); no flow Sept. 17-24, 1963, May 1, 1965.

Remarks.--Records good. Records show combined flow of creek and McQueary ditch. Flow completely regulated by Willow Creek Reservoir (see preceding page). Diversions above station for irrigation of hay meadows. McQueary ditch diverts at Willow Creek Dam for irrigation below station. Prior to Oct. 1, 1962, records included priming and waste water from pump canal. Record of diversion from Willow Creek Reservoir by Willow Creek Pump Canal to Lake Granby as part of the Colorado-Big Thompson project is given below:

Month	Diversion in acre-feet	Month	Diversion in acre-feet
October.....	0	April.....	3,750
November.....	2,660	May.....	19,850
December.....	0	June.....	24,770
		July.....	5,590
Calendar year 1964....	27,540	August.....	0
		September.....	3,710
January.....	0		
February.....	0	Water year 1964-65....	60,330
March.....	0		

Cooperation.--Records of diversions to Lake Granby furnished by Bureau of Reclamation.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.6	5.0	7.0	7.0	7.0	7.0	7.0	0	6.5	* 39	39	0.4
2	5.2	5.0	7.0	7.0	7.0	7.0	7.0	24	6.7	40	39	.4
3	5.2	5.0	7.0	7.0	7.0	7.0	7.0	55	6.7	40	39	.5
4	5.2	5.0	7.0	7.0	* 7.0	7.0	7.0	* 89	* 4.7	41	39	.5
5	5.5	4.5	7.0	7.0	7.0	7.0	7.0	150	.6	41	39	.5
6	5.5	4.5	7.0	7.0	7.0	7.0	7.0	69	.5	41	13	.5
7	6.0	4.5	7.0	7.0	7.0	7.0	7.0	.7	.5	42	.2	.5
8	6.0	4.5	* 7.0	7.0	7.0	7.0	7.0	.7	.5	42	.3	.5
9	6.5	4.0	7.0	7.0	7.0	7.0	7.0	.7	55	43	* 39	.5
10	6.5	* 4.0	7.0	7.0	7.0	7.0	7.0	.7	114	43	.2	.5
11	7.0	4.0	7.0	7.0	7.0	7.0	7.0	.6	195	43	.2	.5
12	7.0	4.5	7.0	* 7.0	7.0	* 7.0	7.0	.6	164	41	.2	.5
13	* 7.5	4.5	7.0	7.0	7.0	7.0	7.0	.6	94	39	.2	.5
14	7.5	4.5	7.0	7.0	7.0	7.0	* 7.0	.6	177	39	.2	.5
15	7.5	5.0	7.0	7.0	7.0	7.0	7.0	.6	110	39	.2	.5
16	7.0	6.0	7.0	7.0	7.0	7.0	7.0	.6	110	39	.2	.5
17	7.0	7.0	7.0	7.0	7.0	7.0	7.0	.6	* 110	39	.3	.5
18	7.0	7.0	7.0	7.0	7.0	7.0	7.0	.6	110	38	.3	.5
19	7.0	7.0	7.0	7.0	7.0	7.0	7.0	.5	92	38	.3	.5
20	6.5	7.0	7.0	7.0	7.0	7.0	7.0	.5	53	38	.3	.5
21	6.5	7.0	7.0	7.0	7.0	7.0	7.0	.7	45	37	.3	.5
22	6.5	7.0	7.0	7.0	7.0	7.0	7.0	82	45	36	.3	.5
23	6.5	7.0	7.0	7.0	7.0	7.0	7.0	380	45	38	.3	.5
24	6.0	7.0	7.0	7.0	7.0	7.0	7.0	45.7	45	40	.3	.5
25	6.0	7.0	7.0	7.0	7.0	7.0	7.0	366	45	40	.4	.5
26	6.0	7.0	7.0	7.0	7.0	7.0	7.0	113	45	39	.4	.5
27	6.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	45	39	.4	.5
28	5.5	7.0	7.0	7.0	7.0	7.0	7.0	6.6	45	39	.4	.5
29	5.5	7.0	7.0	7.0	-	7.0	7.0	6.6	45	39	.4	.5
30	5.5	7.0	7.0	7.0	-----	7.0	7.0	6.5	41	39	.4	.5
31	5.5	-----	7.0	7.0	-----	7.0	-----	6.5	-----	39	.4	-----
Total	190.7	172.5	217.0	217.0	196.0	217.0	210.0	1827.2	1856.7	1,230	215.2	14.8
Mean	6.15	5.75	7.00	7.00	7.00	7.00	7.00	58.9	61.9	39.7	6.94	0.49
Ac-ft	378	342	430	430	389	430	417	3,620	3,680	2,440	427	29

Calendar year 1964: Max 46 Min 0.1 Mean 12.1 Ac-ft 8,760  
 Water year 1964-65: Max 457 Min 0 Mean 18.0 Ac-ft 13,010

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 5 to May 3, Sept. 24-30.

## FRASER RIVER BASIN

9-240. Fraser River near Winter Park, Colo.

Location.--Lat 39°54'00", long 105°46'35", in NE¼ sec.4, T.2 S., R.75 W., on left bank 500 ft downstream from bridge on U. S. Highway 40, 1.1 miles northwest of Winter Park, 2 miles upstream from Vasquez Creek, 3½ miles downstream from point of diversion for Moffat water tunnel, and 4 miles southeast of Fraser.

Drainage area.--27.6 sq mi.

Records available.--September 1910 to September 1965. Monthly discharge only for some periods, published in WSP 1313. Published as "near Arrow" 1910-23 and as "near West Portal" 1924-39. Records since June 9, 1936, equivalent to earlier records if transmountain diversions are added to flow past station.

Gage.--Water-stage recorder. Datum of gage is 8,906.23 ft above mean sea level (State Highway Department bench mark). Sept. 23, 1910, to May 12, 1916, staff gage at trail bridge 1 mile upstream at different datum.

Average discharge.--55 years, 40.5 cfs (29,320 acre-ft per year) including diversions to Berthoud Pass ditch and Moffat water tunnel.

Extremes.--Maximum discharge during year, 278 cfs June 17 (gage height, 1.64 ft); minimum daily, 2.2 cfs Oct. 3-5. 1910-65: Maximum discharge, 820 cfs June 13, 1918 (gage height, 2.9 ft); minimum daily determined, 2 cfs Mar. 30, Apr. 9, 1912, Jan. 23, 1915.

Remarks.--Records good except those for periods of ice effect, which are poor. Transmountain diversions above station through Berthoud Pass ditch (see elsewhere in this report) and to Moffat water tunnel (see adjustment figures below).

Cooperation.--Record of flow diverted to Berthoud Pass ditch and Moffat water tunnel furnished by State engineer of Colorado.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.5	2.8	2.7	4.1	3.7	3.9	5.2	21	18	17	101	4.8
2	2.3	2.8	2.7	3.9	3.7	3.9	5.4	20	18	16	92	4.8
3	2.2	2.7	2.7	4.1	3.7	4.1	5.2	*21	18	*15	87	4.8
4	2.2	2.7	2.7	3.9	3.9	4.1	5.4	21	23	14	85	4.8
5	2.2	2.7	2.7	3.9	*3.7	4.5	*5.2	17	22	13	82	4.5
6	3.2	2.8	2.7	3.9	3.7	4.3	5.2	14	21	12	77	4.5
7	3.7	2.8	2.7	3.9	3.9	4.3	5.2	13	22	12	72	4.5
8	3.2	2.8	2.7	3.9	3.9	4.1	5.2	12	22	12	68	4.8
9	3.2	2.8	*2.7	3.9	3.7	4.1	5.2	11	*23	11	*64	4.3
10	3.2	3.2	2.8	3.9	3.7	4.1	5.4	11	27	11	41	4.1
11	3.2	*3.4	2.8	*3.9	3.9	*4.1	5.2	11	31	9.8	19	4.1
12	3.0	3.0	2.7	4.5	3.9	4.3	5.2	12	26	*11	18	4.3
13	3.0	2.7	2.8	3.9	3.9	4.3	5.0	14	33	9.4	18	*3.7
14	*3.0	2.7	2.7	3.9	3.9	4.3	5.0	12	39	8.6	17	3.5
15	3.0	2.7	2.8	3.9	4.1	4.3	5.2	11	79	8.6	17	3.5
16	3.0	2.8	2.8	3.9	4.3	4.1	5.6	12	178	9.4	17	3.5
17	3.0	2.7	2.7	3.7	4.3	4.1	5.6	*15	202	9.0	17	3.4
18	3.0	2.7	2.8	3.7	4.1	4.1	5.4	14	218	9.4	18	3.5
19	3.0	2.7	2.8	3.7	4.1	4.1	5.6	14	*182	10	23	4.3
20	3.0	2.6	2.8	3.7	4.1	4.3	7.0	17	165	11	23	4.5
21	3.0	2.5	2.8	3.7	4.0	4.3	9.4	18	135	10	19	4.1
22	3.0	2.5	2.8	3.7	3.9	4.3	11	24	*78	11	17	4.1
23	3.0	2.5	3.0	3.7	3.7	4.8	12	25	76	35	17	4.1
24	3.2	2.5	3.2	3.7	3.5	4.5	13	21	113	66	17	4.1
25	3.0	2.5	3.0	3.7	3.5	5.0	11	18	225	110	15	3.9
26	3.0	2.7	3.2	3.7	3.7	5.0	11	18	205	124	14	3.9
27	3.0	2.6	3.2	3.7	3.7	4.5	10	17	152	110	13	3.7
28	3.0	2.6	3.0	3.7	3.9	4.5	12	17	77	99	8.2	4.1
29	3.0	2.5	2.9	3.9	-	4.5	13	17	50	94	8.2	5.4
30	3.0	2.5	2.9	4.1	- - - -	4.3	17	18	44	95	7.0	1.2
31	3.0	- - - -	2.9	3.8	- - - -	4.3	- - - -	18	- - - -	110	5.0	- - - -
Total	91.3	81.5	87.7	119.6	108.1	133.4	226.8	504	2522	1093.2	1096.4	133.6
Mean	2.95	2.72	2.83	3.86	3.86	4.30	7.56	16.3	84.1	35.3	35.4	4.45
Ac-ft	181	162	174	237	214	265	450	1,000	5,000	2,170	2,170	265

Adjusted for diversions to Berthoud Pass ditch and Moffat water tunnel

Mean	11.1	12.2	7.63	7.86	8.06	7.60	11.4	55.2	216	142	60.3	24.7
Ac-ft	680	727	469	483	447	468	676	3,390	12,870	8,720	3,700	1,480

Observed

Calendar year 1964: Max 19 Min 2.2 Mean 6.48 Ac-ft 4,710  
 Water year 1964-65: Max 225 Min 2.2 Mean 17.0 Ac-ft 12,290

Adjusted

Calendar year 1964: Max - Min - Mean 28.6 Ac-ft 20,740  
 Water year 1964-65: Max - Min - Mean 47.2 Ac-ft 34,120

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 19-22, 25-28, Nov. 1, 2, 4-9, 12, 14-24, 27, 28, Dec. 1, 3-9, 25, 26, 28-31, Jan. 12, 17-28, Jan. 31 to Feb. 3, Feb. 5-6, 9-14, 21, 24-27, Mar. 1-4, 7-9, 16-22, Mar. 30 to Apr. 1, Apr. 7, 14.

9-250. Vasquez Creek near Winter Park, Colo.

**Location.**--Lat 39°55'13", long 105°47'05", in NE¼NW¼ sec.33, T.1 S., R.75 W., on right bank 40 ft downstream from bridge on U. S. Highway 40, a quarter of a mile upstream from mouth, 2½ miles northwest of Winter Park, 2½ miles southeast of Fraser, and 4½ miles downstream from Moffat water tunnel diversion.

**Drainage area.**--27.8 sq mi.

**Records available.**--June to August 1907, July to October 1909, October 1933 to September 1965. Monthly discharge only for some periods, published in WSP 1313. Records for June to October 1908, published in WSP 269, have been found to be unreliable and should not be used. Published as Vasquez River at lower station, near Fraser 1907, 1909 and as "near West Portal" 1934-39. Records for May 26, 1937, to September 1959 equivalent to earlier records if diversion to Moffat water tunnel is added to flow past station.

**Gage.**--Water-stage recorder and concrete control. Datum of gage is 8,768.48 ft above mean sea level, unadjusted. June 1, 1907, to Oct. 31, 1909, staff gage at site three-quarters of a mile upstream at different datum.

**Extremes.**--Maximum discharge during year, 230 cfs June 25 (gage height, 2.85 ft), from rating curve extended above 160 cfs; minimum daily, 0.1 cfs Oct. 1, 20, 21.  
1933-65: Maximum discharge, 470 cfs June 10, 1952 (gage height, 3.13 ft), from rating curve extended above 340 cfs; no flow at times in 1944, 1946, 1956, 1960.

**Remarks.**--Records good except those for periods of ice effect or no gage-height record, which are fair. Transmountain diversions above station to Moffat water tunnel not known since 1959.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.3	0	1.7	5.3	2.2	54
1.4	.1	1.8	10	2.5	113
1.5	.8	1.9	18	2.8	210
1.6	2.5	2.0	27		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	1.2	1.5	1.2	1.0	0.9	1.2	11	13	4.0	87	3.5
2	.2	1.5	1.5	1.2	1.0	.9	1.4	15	12	3.5	79	3.5
3	.3	1.5	1.5	1.3	1.0	.9	1.2	*17	11	*3.0	79	2.5
4	.3	1.0	1.5	1.4	.9	.9	1.2	21	13	2.7	75	1.9
5	.5	1.5	1.5	1.4	*.9	.9	*1.2	21	14	2.7	71	1.9
6	.3	1.9	1.5	1.4	1.0	.9	1.2	18	12	2.1	68	1.9
7	.4	1.7	1.1	1.4	1.0	.9	1.2	17	12	3.0	64	2.1
8	.6	1.9	1.1	1.4	1.0	.9	1.4	15	10	10	61	2.7
9	.7	1.9	1.1	1.4	1.0	.9	1.4	14	*9.7	7.4	*62	2.3
10	.7	3.7	*1.4	1.4	1.0	*.9	1.5	10	10	1.9	38	1.9
11	.8	*5.0	1.4	*1.4	.9	.9	1.4	12	19	1.9	4.3	1.9
12	.9	3.0	1.4	1.4	.9	1.1	1.4	13	9.7	*1.0	2.5	2.1
13	.9	2.7	1.1	1.4	.9	1.1	1.5	15	11	1.9	2.5	*1.9
14	.8	2.5	1.1	1.4	1.0	1.0	1.4	14	8.5	.4	2.5	3.0
15	.8	2.3	1.1	1.4	1.0	1.0	1.4	11	14	.3	2.5	3.5
16	.8	2.3	1.2	1.2	.9	1.0	1.5	13	68	.4	2.5	3.5
17	.7	2.0	1.2	1.2	.9	.9	1.5	*16	127	.6	25	3.5
18	.7	1.9	1.2	1.2	.9	.9	1.4	19	148	.5	2.7	3.5
19	.6	1.7	1.2	1.2	.9	.9	1.5	18	*133	4.3	3.7	4.0
20	.1	1.5	1.3	1.2	.9	1.1	2.3	21	119	1.7	3.5	4.3
21	.1	1.4	1.3	1.2	1.0	1.2	3.2	22	113	1.9	3.7	4.0
22	.5	1.4	1.4	1.2	1.1	1.3	4.3	*24	*83	1.5	4.3	4.0
23	.6	1.4	1.4	1.2	1.0	1.3	4.6	24	23	62	4.0	4.0
24	.7	1.5	1.4	1.2	.9	1.1	5.0	22	24	109	4.0	4.0
25	.5	1.5	1.4	1.2	.9	1.0	4.0	19	192	106	3.7	3.7
26	.3	1.5	1.3	1.2	.9	1.0	4.0	17	185	98	3.7	3.7
27	.3	1.4	1.3	1.2	.9	1.2	3.5	15	151	98	3.5	3.5
28	.9	1.5	1.3	1.2	1.1	1.2	3.7	14	54	89	3.5	3.5
29	1.9	1.5	1.3	1.2	-	1.2	5.0	14	4.6	81	3.5	4.3
30	1.7	1.5	1.2	1.2	-----	1.1	6.9	14	4.0	81	3.7	3.7
31	1.9	-----	1.2	1.2	-----	1.1	-----	14	-----	111	3.5	-----
Total	20.6	57.3	40.4	39.7	26.8	31.6	72.4	510	1,607.5	891.7	776.8	93.8
Mean	0.66	1.91	1.30	1.28	0.96	1.02	2.41	16.5	53.6	28.8	25.1	3.13
Ac-ft	41	114	80	79	53	63	144	1,010	3,190	1,770	1,540	186

Calendar year 1964: Max 20 Min 0.1 Mean 2.49 Ac-ft 1,810

Water year 1964-65: Max 192 Min 0.1 Mean 11.4 Ac-ft 8,270

\* Discharge measurement made on this day.

**Note.**--Stage-discharge relation affected by ice Nov. 11, 15-28, Dec. 7-9, 13-31, Jan. 17-26, Feb. 8-11. No gage-height record Jan. 1-10, Feb. 12 to Apr. 4 (stage-discharge relation affected by ice during part of periods).

## FRASER RIVER BASIN

9-265. St. Louis Creek near Fraser, Colo.

Location.--Lat 39°54'30", long 105°52'45", in sec.34, T.1 S., R.76 W., on left bank 300 ft downstream from West St. Louis Creek and 4 miles southwest of Fraser.

Drainage area.--32.8 sq mi.

Records available.--October 1933 to September 1965. Prior to August 1934 monthly discharge only, published in WSP 1313. Records for May 1956 to September 1959, equivalent to earlier records if diversion to Moffat water tunnel is added to flow past station.

Gage.--Water-stage recorder. Datum of gage is 8,980.17 ft above mean sea level, unadjusted.

Extremes.--Maximum discharge during year, 234 cfs June 25 (gage height, 2.10 ft); minimum daily, 2.3 cfs Oct. 18-20.  
1933-65: Maximum discharge, 470 cfs June 15, 1952 (gage height, 2.89 ft); maximum gage height, 3.21 ft June 10, 1952 (backwater from log on control); minimum discharge not determined, probably occurred during January or February 1961.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Transmountain diversion above station to Moffat water tunnel not known since 1959.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 23, 24)

0.5	2.0	1.2	34
.6	3.4	1.5	69
.7	5.8	1.8	124
.9	12	2.2	244
1.0	17		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.1	2.8	3.1	2.7	2.7	2.6	3.2	12	19	40	87	22
2	3.1	2.8	3.1	2.7	2.7	2.5	3.3	14	19	40	82	22
3	3.1	2.7	3.0	2.8	2.8	2.5	3.2	*15	18	*39	82	22
4	2.8	2.8	3.1	2.8	2.8	2.5	3.2	16	19	37	79	21
5	2.6	2.9	3.1	2.8	3.0	2.6	*3.4	15	20	36	74	21
6	2.6	3.0	3.0	2.8	3.0	2.6	3.6	12	19	34	68	20
7	2.7	3.0	2.9	2.8	3.0	2.6	3.6	12	20	33	62	20
8	2.7	3.0	2.9	2.7	*2.8	2.6	3.6	11	19	40	59	20
9	2.6	3.0	*3.0	2.6	2.8	2.6	3.9	10	*19	40	56	18
10	2.8	3.5	3.0	2.6	2.8	2.5	3.6	9.4	21	38	55	17
11	2.8	*7.0	3.0	2.6	2.8	*2.6	3.5	10	22	38	*44	17
12	2.7	5.0	3.0	2.6	2.8	2.6	3.5	10	21	*37	31	17
13	2.7	5.6	2.9	*2.6	2.8	2.8	3.4	11	25	36	30	*17
14	*2.7	6.1	2.8	2.4	2.7	2.8	3.5	10	23	42	29	16
15	2.4	4.8	2.8	2.4	2.7	2.8	3.6	9.4	41	44	25	16
16	2.4	4.4	2.8	2.4	2.7	2.6	3.6	11	74	48	22	15
17	2.4	4.1	3.0	2.4	2.7	2.6	3.9	*14	114	47	22	15
18	2.3	3.6	2.8	2.4	2.7	2.6	3.6	16	184	47	24	15
19	2.3	3.4	3.0	2.4	2.8	2.6	4.1	16	*175	50	27	17
20	2.3	3.3	2.8	2.5	2.9	2.6	5.6	19	169	46	25	17
21	2.4	3.1	2.8	2.5	2.9	2.8	7.9	21	166	46	22	16
22	2.4	3.3	2.8	2.5	2.8	2.8	8.5	23	163	47	22	16
23	2.6	3.6	3.3	2.5	2.7	2.8	8.8	26	*136	87	21	16
24	2.7	3.6	3.1	2.8	2.6	3.0	8.8	24	79	131	21	16
25	2.6	3.6	3.1	2.8	2.7	3.0	6.7	21	220	116	20	16
26	2.5	3.3	3.1	2.8	2.8	3.0	6.1	20	200	104	22	16
27	2.5	3.4	3.2	2.8	2.8	2.8	5.8	19	172	98	24	15
28	2.6	3.3	3.0	2.8	2.7	2.8	8.2	17	116	91	24	15
29	2.6	3.1	2.8	2.7	-	2.6	8.5	18	80	85	24	17
30	2.6	3.1	2.7	2.7	-----	2.6	10	19	45	85	24	15
31	2.8	-----	2.7	2.7	-----	2.6	-----	19	-----	104	22	-----
Total	81.4	110.2	91.7	81.6	78.0	83.0	152.2	479.8	2,418	1,806	1,229	523
Mean	2.63	3.67	2.96	2.63	2.79	2.68	5.07	15.5	80.6	58.3	39.6	17.4
Ac-ft	161	219	182	162	155	165	302	952	4,800	3,580	2,440	1,040

Calendar year 1964: Max 46 Min 2.3 Mean 11.1 Ac-ft 8,030  
Water year 1964-65: Max 220 Min 2.3 Mean 19.5 Ac-ft 14,160

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 19-22, 25-29, Nov. 1, 2, 4-13, Dec. 3, 5-13, Dec. 24 to Jan. 1, Jan. 17-23, Jan. 29 to Feb. 2, Feb. 11-17, Apr. 7, 10-12, 14, 16. No gage-height record Feb. 18 to Apr. 5 (stage-discharge relation affected by ice during most of period).

9-320. Ranch Creek near Fraser, Colo.

Location.--Lat 39°57'00", long 105°45'54", in NW 1/4 sec. 22, T.1 S., R.75 W., on right bank 450 ft downstream from Middle Fork and 2.7 miles east of Fraser.

Drainage area.--19.9 sq mi.

Records available.--August 1934 to September 1965. Records since May 15, 1949, equivalent to earlier records if diversion to Moffat water tunnel is added to flow past station.

Gage.--Water-stage recorder. Altitude of gage is 8,685 ft (from topographic map).

Average discharge.--31 years, 20.9 cfs (15,130 acre-ft per year), including diversion to Moffat water tunnel.

Extremes.--Maximum discharge during year, 242 cfs June 17 (gage height, 2.96 ft); minimum daily, 0.7 cfs Nov. 7, Dec. 7. 1934-65: Maximum discharge, 402 cfs June 28, 1957 (gage height, 3.72 ft); minimum daily, 0.4 cfs Sept. 21, Oct. 6, 1960.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversion above station for irrigation of hay meadows along Fraser River. Transmountain diversion above station to Moffat water tunnel was 13,190 acre-ft during water year 1965.

Cooperation.--Records of flow diverted to Moffat water tunnel furnished by State engineer.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to June 15

June 16 to Sept. 30

0.6	1.0	1.1	11	0.7	2.2	1.6	47
.7	1.9	1.3	24	.8	4.0	2.0	92
.8	3.3	1.7	57	1.0	9.6	2.4	146
1.0	7.4	2.2	118	1.3	24	2.8	212

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.4	2.4	1.0	0.9	1.0	1.0	1.2	9.5	15	10	6.6	4.5
2	1.4	2.4	1.0	.9	1.0	1.0	1.3	12	15	*9.0	5.9	4.5
3	1.4	2.4	.9	.9	1.0	1.0	1.2	*13	15	8.6	6.0	4.5
4	1.4	1.0	.9	.9	1.0	1.0	1.1	14	17	8.3	5.3	4.5
5	1.5	.9	.8	1.0	1.0	1.0	1.1	12	17	8.0	4.9	4.5
6	1.4	.8	.8	1.0	1.0	1.0	1.1	9.5	15	7.4	4.5	4.5
7	1.4	.7	.7	1.0	1.0	1.0	1.2	9.5	15	7.4	4.3	4.2
8	1.5	.8	.8	1.0	*1.0	1.1	*1.2	8.3	12	7.4	4.1	4.2
9	1.5	.9	*.9	1.0	1.0	1.1	1.5	8.0	*12	6.9	3.9	4.0
10	1.7	1.0	.8	1.0	1.0	1.1	1.5	7.1	17	6.0	3.7	3.5
11	1.9	*1.0	.8	1.0	1.0	*1.1	1.3	7.1	29	6.0	*2.5	3.5
12	1.8	1.0	.8	1.0	1.0	1.1	1.2	7.7	24	*6.0	8.0	3.8
13	1.9	1.0	.8	*1.0	1.0	1.0	1.4	9.1	30	5.0	7.4	*3.5
14	*1.7	1.0	.8	1.0	1.0	1.0	1.4	9.1	41	4.2	7.2	3.3
15	1.7	1.0	.8	1.0	1.0	1.0	1.4	8.3	112	3.8	7.2	3.1
16	1.7	1.0	.9	1.0	1.0	1.0	1.8	8.7	175	3.3	6.6	3.1
17	1.6	1.0	.9	1.0	1.0	1.0	2.0	*11	201	3.3	15	3.1
18	1.6	1.0	.9	1.0	1.0	1.0	1.8	12	164	3.3	8.0	3.1
19	1.9	1.0	.9	1.0	1.0	1.0	1.9	14	131	4.5	9.0	3.5
20	2.3	.9	.9	1.0	1.0	1.0	3.3	15	117	4.5	8.6	4.0
21	1.6	.9	.9	1.0	1.0	1.0	4.7	17	91	4.8	6.9	3.5
22	2.3	.9	.9	1.0	1.0	1.0	5.3	26	54	5.0	6.6	3.5
23	2.5	.9	.9	1.0	1.0	1.0	5.9	31	*33	40	6.3	3.5
24	2.5	1.0	.9	1.0	1.0	1.0	5.5	29	46	72	6.6	3.5
25	2.8	1.0	.9	1.0	1.0	1.1	4.9	24	166	76	5.0	3.3
26	2.8	1.0	.9	1.0	1.0	1.5	3.9	21	149	72	5.0	3.1
27	2.8	1.0	.9	1.0	1.0	1.5	3.8	18	131	67	5.0	2.9
28	2.8	1.0	.9	1.0	1.0	1.6	5.7	15	68	62	4.8	3.1
29	2.8	.9	.9	1.0	-	1.7	6.1	14	13	57	4.8	4.0
30	2.7	1.0	.9	1.0	-----	1.1	7.7	15	10	57	5.0	6.9
31	2.8	-----	.9	1.0	-----	1.1	-----	15	-----	82	5.0	-----
Total	61.1	32.8	27.0	30.6	28.0	34.1	83.4	429.9	1,935	717.7	655.0	114.2
Mean	19.7	1.09	0.87	0.99	1.00	1.10	2.78	13.9	64.5	23.2	21.1	3.81
Ac-ft	121	65	54	61	56	68	165	853	3,840	1,420	1,300	227

Calendar year 1964: Max 17 Min 0.6 Mean 2.53 Ac-ft 1,840  
 Water year 1964-65: Max 201 Min 0.7 Mean 11.4 Ac-ft 8,230

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 25-29, Nov. 1 to Dec. 12. No gage-height record Dec. 13 to Jan. 12 (stage-discharge relation affected by ice during most of period).

## COLORADO RIVER MAIN STEM

9-345. Colorado River at Hot Sulphur Springs, Colo.

Location.--Lat 40°05'00", long 106°05'15", in NE¼NE¼ sec.2, T.1 N., R.78 W., on left bank about 1,000 ft north of U. S. Highway 40, 1 mile northeast of Hot Sulphur Springs, and 4½ miles upstream from Beaver Creek.

Drainage area.--825 sq mi.

Records available.--July 1904 to September 1965. Monthly discharge only for some periods, published in WSP 1313. Prior to 1907 and 1914-18, published as Grand River at Hot Sulphur Springs and as Grand River at Sulphur Springs 1907-13.

Gage.--Water-stage recorder. Altitude of gage is 7,670 ft (from railroad elevations). July 28, 1904, to Apr. 16, 1906, staff gage on bridge 1.7 miles downstream at different datum. Apr. 17, 1906, to Sept. 18, 1930, chain gage at bridge 1.4 miles downstream at datum 7,651.26 ft above mean sea level, unadjusted. Supplemental water-stage recorder (staff gage prior to Jan. 1, 1963) at different datum at site 1.7 miles downstream, used for winter records some years.

Extremes.--Maximum discharge during year, 1,760 cfs June 18 (gage height, 2.53 ft); minimum daily, 42 cfs Oct. 2-4.

1904-65: Maximum discharge observed, 10,300 cfs June 15, 1921 (gage height, 8.7 ft, site and datum then in use); minimum daily, 33 cfs Sept. 27, 1956.

Remarks.--Records good except those for Nov. 12 to May 20, which are fair. Flow affected by transmountain diversions, storage reservoirs, and diversions above station for irrigation of about 13,000 acres. Records of chemical analyses and water temperatures for the water year 1965 are published in Part 2 of this report.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 24 to May 18)

Oct. 1 to Nov. 21  
Apr. 17 to Sept. 30

Nov. 22 to Apr. 16

0.1	27	1.5	610	0.3	42
.3	62	2.0	1,020	.6	70
.6	145	2.5	1,620	.8	107
1.0	320			1.2	222

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	48	60	63	64	57	60	72	720	638	419	808	112
2	42	60	64	64	58	60	73	760	* 624	375	598	93
3	42	62	51	64	59	60	79	760	580	358	556	93
4	42	58	59	64	60	60	84	* 768	586	336	550	96
5	44	60	54	64	* 63	60	80	849	610	315	496	101
6	44	60	52	63	63	60	84	720	556	305	454	104
7	44	58	46	63	63	60	* 85	574	580	305	* 414	93
8	51	58	48	63	63	60	* 89	580	586	342	386	98
9	53	55	54	62	63	60	103	550	638	348	375	90
10	53	57	54	62	63	* 60	115	532	808	320	364	80
11	53	* 58	55	62	63	60	110	490	1,010	305	261	78
12	55	b 56	* 55	* 60	63	60	112	490	1,010	* 310	212	85
13	57	b 54	51	62	63	60	133	526	1,120	305	189	83
14	* 57	b 52	55	62	63	60	136	556	* 1,110	216	189	74
15	55	b 50	58	62	63	60	152	532	1,040	238	173	* 74
16	57	b 50	56	60	63	60	193	496	1,280	234	162	78
17	55	b 50	56	59	63	60	b 220	538	1,470	248	150	80
18	55	b 56	53	58	63	60	256	580	1,540	261	200	90
19	55	b 54	50	58	63	60	248	586	1,400	331	261	93
20	55	b 50	52	59	63	63	436	652	1,190	280	285	122
21	51	b 50	54	60	63	63	562	704	1,100	336	194	119
22	51	b 58	57	60	63	63	562	800	912	348	176	115
23	51	69	64	60	63	63	586	1,280	816	442	162	109
24	55	68	63	60	60	63	520	1,490	659	1,000	162	107
25	60	69	59	62	60	63	454	1,270	1,040	957	152	109
26	57	68	60	60	62	63	386	894	1,150	816	138	104
27	57	58	62	59	62	63	342	673	1,040	688	135	101
28	* 57	55	58	60	62	63	392	580	* 824	659	128	96
29	58	63	58	59	-	63	478	544	538	592	128	122
30	60	66	58	56	-----	65	604	544	484	624	135	135
31	62	-----	60	55	-----	66	-----	586	-----	921	135	-----
Total	1,636	1,742	1,739	1,886	1,737	1,901	7,746	21,624	26,939	13,534	8,728	2,934
Mean	52.8	58.1	56.1	60.8	62.0	61.3	258	698	898	437	282	97.8
Ac-ft	3,240	3,460	3,450	3,740	3,450	3,770	15,360	42,890	53,430	26,840	17,310	5,820

Calendar year 1964: Max 673 Min 42 Mean 130 Ac-ft 94,630  
Water year 1964-65: Max 1,540 Min 42 Mean 252 Ac-ft 182,800

\* Discharge measurement made on this day.  
b Stage-discharge relation affected by ice.



9-348. Little Muddy Creek near Parshall, Colo.

Location.--Lat 39°57'47", long 106°04'08", in NW¼ sec.13, T.1 S., R.78 W., on left bank at bridge 0.4 mile upstream from Sylvian Lake ditch headgate and 11.1 miles southeast of Parshall.

Drainage area.--6.50 sq mi.

Records available.--October 1958 to September 1965 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 8,580 ft (from topographic map).

Average discharge.--7 years, 2.95 cfs (2,140 acre-ft per year).

Extremes.--Maximum discharge during year, 80 cfs May 22 (gage height, 3.60 ft); minimum not determined.

1958-65: Maximum discharge, 93 cfs May 12, 1962 (gage height, 3.71 ft); maximum gage height recorded, 4.89 ft Oct. 10, 1960 (backwater from beaver dam); minimum daily discharge determined, 0.1 cfs for some days in each year.

Remarks.--Records fair except those for Sept. 10-30 and those for periods of ice effect or no gage-height record, which are poor. No diversion above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used July 8 to Sept. 30)

2.3	0	2.7	11
2.4	.5	2.9	22
2.5	3.0	3.1	35
2.6	6.5	3.4	58

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	0.4					0.2	7.0	29	3.4	3.7	0.5
2	.1	.4					.3	10	*30	3.0	2.5	.4
3	.1	.5					.3	13	30	2.8	2.8	.4
4	.1	.4					.3	15	29	2.5	2.5	.4
5	.1	.2				0.1	.3	14	28	2.2	2.2	.5
6	.1	.3					.3	13	25	2.0	*1.8	.6
7	.1	.2					.3	15	27	2.0	1.5	.6
8	.1	.3					.3	12	24	2.5	1.2	.6
9	.2	*.2					.3	11	24	2.2	1.2	*.6
10	.5	.2			0.2		.3	9.2	24	2.0	1.0	.4
11	.3	.2					.3	8.8	23	1.2	1.0	.8
12	*.3	.2					.3	11	21	2.2	1.0	1.2
13	.3	.2					.3	12	24	2.2	1.0	.5
14	.2	.2					.3	11	18	*1.2	.8	.3
15	.2	.2	0.2	0.2			.3	10	17	1.0	.8	.2
16	.2	.2					.4	11	16	1.0	.5	.4
17	.3	.2					.5	17	*14	1.0	.8	.5
18	.2	.2					.7	*20	12	1.0	2.0	1.2
19	.2	.2					.9	23	12	2.8	3.7	2.5
20	.2	.2				.2	*1.1	29	10	1.5	2.8	3.0
21	.2	.2					1.4	35	8.8	2.5	1.2	2.5
22	.2	.2					1.4	51	8.3	3.7	1.0	2.5
23	.3	.2					1.3	57	7.8	4.4	.8	2.5
24	.4	.2			.1		1.3	45	7.0	9.2	.5	2.5
25	.3	.2					2.0	36	6.5	7.0	.4	2.8
26	.3	.2					3.4	32	5.8	3.7	.3	2.2
27	.3	.2					4.0	29	4.8	3.0	.3	1.8
28	.2	.2					4.6	27	4.4	2.8	.3	1.8
29	.2	.2					5.0	28	4.0	2.2	.5	1.8
30	.3	.2					6.0	29	*3.7	2.2	1.2	1.5
31	.5	---					---	32	---	5.4	1.5	---
Total	7.1	7.1	6.2	6.2	4.8	5.2	38.4	673.0	498.1	85.8	42.8	37.5
Mean	0.23	0.24	0.2	0.2	0.17	0.17	1.28	21.7	16.6	2.77	1.38	1.25
Ac-ft	14	14	12	12	9.5	10	76	1,330	988	85	85	74

Calendar year 1964: Max 30 Min 0.1 Mean 2.02 Ac-ft 1,470  
Water year 1964-65: Max 57 Min - Mean 3.87 Ac-ft 2,790

Peak discharge (base, 15 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-22	1700	3.60	80	7-24	0045	2.97	20
6-13	0530	3.15	34				

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 16 to Apr. 20 (stage-discharge relation affected by ice during most of period), Sept. 2-9. Stage-discharge relation affected by ice Nov. 15, Apr. 21-25, Apr. 28 to May 4.

## WILLIAMS FORK BASIN

9-360. Williams Fork near Leal, Colo.

Location.--Lat 39°49'55", long 106°03'20", in sec.31, T.2 S., R.77 W., on right bank at downstream side of private bridge, 100 ft downstream from Kinney Creek and 1.7 miles northwest of Leal.

Drainage area.--89.5 sq mi.

Records available.--July 1933 to September 1965. Records since May 10, 1940, equivalent to earlier records if diversion to August P. Gumlick Tunnel (formerly Jones Pass tunnel) is added to flow past station. Prior to October 1958, published as Williams River near Leal.

Gage.--Water-stage recorder (digital). Altitude of gage is 8,790 ft (from topographic map). Prior to Aug. 16, 1953, at site 15 ft downstream at same datum.

Average discharge.--32 years, 102 cfs (73,840 acre-ft per year), including diversions to August P. Gumlick Tunnel.

Extremes.--Maximum discharge during year, 1,250 cfs June 18 (gage height, 3.44 ft); minimum daily, 14 cfs Dec. 17-21.

1933-65: Maximum discharge, 1,720 cfs June 10, 1952 (gage height, 4.23 ft); minimum daily, 13 cfs Dec. 28, 29, 1939, Dec. 7, 1963, Jan. 13, 14, 1964.

Remarks.--Records good except those for Oct. 1 to Feb. 5 and those for periods of ice effect, which are poor. Transmountain diversion above station from tributaries of Williams Fork through August P. Gumlick Tunnel, then by way of Vasquez and Moffat water tunnels to South Boulder Creek in South Platte River basin (see table below). Diversions above station for irrigation of about 200 acres of hay meadows above station and about 40 acres below.

Month	Diversion in acre-feet	Month	Diversion in acre-feet
October.....	185	April.....	0
November.....	112	May.....	491
December.....	105	June.....	766
	- - - - -	July.....	2,720
Calendar year 1964....	9,220	August.....	554
	- - - - -	September.....	611
January.....	59		
February.....	0		
March.....	0	Water year 1964-65....	5,600

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1 to Feb. 5, June 6-27)

0.1	14	1.5	256
.2	22	2.0	450
.5	53	3.0	1,070
1.0	130		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	18	19	15	20	18	20	89	* 208	* 653	250	69
2	18	19	19	16	20	17	20	114	159	664	212	67
3	17	20	19	15	20	17	21	126	174	658	209	69
4	17	18	19	16	21	17	21	*129	180	604	*202	67
5	18	19	19	18	* 20	18	21	119	165	576	189	67
6	18	20	18	19	20	18	22	97	152	554	178	65
7	18	20	*19	19	20	18	21	87	185	422	159	61
8	18	20	19	19	20	19	21	81	200	409	148	62
9	19	*20	18	19	19	17	21	72	239	358	139	58
10	19	21	18	19	19	17	21	66	323	339	131	* 53
11	19	20	17	20	19	*17	20	66	383	302	125	51
12	*20	19	16	19	19	17	20	70	379	335	95	54
13	20	20	16	* 20	18	17	21	83	422	288	90	49
14	20	21	16	19	20	17	19	82	461	*275	90	47
15	19	22	16	20	21	17	*21	67	590	235	81	47
16	19	22	15	19	19	16	21	64	* 763	238	77	46
17	19	21	14	18	20	16	22	78	986	220	100	45
18	19	21	14	18	19	15	23	93	1,040	212	106	46
19	18	21	14	19	19	15	24	*96	976	278	147	49
20	19	20	14	19	19	16	30	121	865	209	167	54
21	19	19	14	18	19	16	46	139	836	238	157	53
22	19	19	15	19	20	17	53	196	809	306	139	52
23	19	19	15	21	19	17	62	259	* 747	302	135	52
24	20	20	16	20	19	16	59	226	776	347	130	54
25	18	20	15	19	19	16	47	184	770	302	120	53
26	18	20	16	19	19	16	42	151	682	275	112	51
27	19	20	16	20	19	16	37	131	622	256	106	49
28	18	20	16	20	19	16	38	125	658	256	104	49
29	18	20	16	20	-	16	48	140	697	220	103	57
30	18	19	16	20	-----	17	64	160	683	206	103	54
31	19	-----	15	20	-----	19	-----	197	-----	285	78	-----
Total	579	598	509	582	545	521	926	3,708	16,130	10,822	4,182	1,650
Mean	18.7	19.9	16.4	18.8	19.5	16.8	30.9	120	538	349	135	55.0
Ac-ft	1,150	1,190	1,010	1,150	1,080	1,030	1,840	7,350	31,990	21,470	8,290	3,270

Calendar year 1964: Max 391 Min 13 Mean 63.0 Ac-ft 45,740  
Water year 1964-65: Max 1,040 Min 14 Mean 112 Ac-ft 80,820

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 12, 13, 17-19, Dec. 29 to Jan. 4, Feb. 11-13, 16, Mar. 2-4, 17-19.

9-372. Skylark Creek near Parshall, Colo.

Location.--Lat 39°54'20", long 106°10'10", in NW¼ sec.6, T.2 S., R.78 W., on left bank 4.3 miles upstream from mouth and 10.8 miles south of Parshall.

Drainage area.--2.41 sq mi.

Records available.--October 1958 to September 1965 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 8,640 ft (from topographic map).

Average discharge.--7 years, 0.72 cfs (521 acre-ft per year).

Extremes.--Maximum discharge during year, 7.3 cfs June 13 (gage height, 1.20 ft); maximum gage height, 4.69 ft about Apr. 23, from recorded range in stage (backwater from ice); minimum daily discharge, 0.2 cfs for many days.

1958-65: Maximum discharge, 13 cfs July 20, 1959 (gage height, 1.70 ft), from rating curve extended above 2.1 cfs; maximum gage height, that of about Apr. 23, 1965; no flow for many days in 1963.

Remarks.--Records poor.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.2	0.4	0.3	0.2	0.2	0.3	0.4	1.1	* 1.6	* 2.4	0.9	0.6
2	.2	.4	.3	.2	.2	.3	.4	1.2	1.7	2.2	.8	.6
3	.3	.4	.3	.2	.2	.3	.4	1.3	1.8	2.2	.8	.6
4	.3	.4	.3	.2	.2	.3	.4	* 1.5	2.0	2.0	* .8	.6
5	.3	.4	.3	.2	* .2	.3	.4	1.5	2.0	1.5	.8	.6
6	.3	.4		.2	.2	.3	.4	1.2	1.9	1.4	.8	.6
7	.3	.4	* .2	.2	.2	.3	.4	1.2	2.2	1.3	.8	.5
8	.4	.4	.2	.2	.2	.3	.4	1.1	2.3	1.2	.8	.5
9	.4	* .4	.2	.2	.2	.3	.4	1.1	3.4	1.2	.7	.5
10	.4	.4	.2	.2	.2	.3	.4	1.1	4.9	1.2	.7	.4
11	.4	.4	.2	.2	.2	.3	.4	1.1	5.3	1.1	.7	* .4
12	* .4	.4	.2	.2	.2	.3	.4	1.0	5.1	1.1	.7	.4
13	.4	.4	.2	* .2	.2	.3	.4	1.0	6.4	1.1	.7	.4
14	.4	.3	.2	.2	.2	.3	.4	1.0	5.3	1.0	.7	.4
15	.4	.3	.2	.2	.2	.3	* .4	1.0	5.3	1.0	.7	.4
16	.4	.3	.2	.2	.2	.3	.4	1.1	* 6.0	1.0	.7	.4
17	.4	.3	.2	.2	.2	.3	.4	1.1	6.4	1.0	.7	.5
18	.4	.3	.2	.2	.2	.3	.4	1.1	6.2	1.0	.8	.5
19	.4	.3	.2	.2	.2	.3	.5	1.2	5.4	1.1	.8	.6
20	.4	.3	.2	.2	.2	.3	.6	1.3	4.9	1.0	.8	.6
21	.4	.3	.2	.2	.2	.3	.7	* 1.5	4.7	1.0	.6	.6
22	.4	.3	.2	.2	.2	.3	.8	1.8	4.4	1.0	.6	.6
23	.4	.3	.2	.2	.2	.3	1.3	2.2	4.2	1.0	.6	.5
24	.4	.3	.2	.2	.2	.3	1.1	1.8	4.1	1.0	.6	.5
25	.4	.3	.2	.2	.2	.3	.9	1.5	4.1	1.0	.6	.5
26	.4	.3	.2	.2	.2	.3	.8	1.4	3.6	1.0	.6	.5
27	.4	.3	.2	.2	.2	.3	.7	1.3	3.5	1.0	.6	.5
28	.4	.3	.2	.2	.2	.3	.8	1.2	3.0	.9	.6	.5
29	.4	.3	.2	.2	-	.3	.8	1.2	2.8	.9	.6	.6
30	.4	.3	.2	.2	-----	.3	.9	1.5	2.7	.9	.6	.5
31	.4	-----	.2	.2	-----	.3	-----	1.6	-----	1.0	.6	-----
Total	11.5	10.3	6.7	6.2	5.6	9.3	17.1	40.2	117.2	37.7	21.8	15.4
Mean	0.37	0.34	0.22	0.20	0.20	0.30	0.57	1.30	3.91	1.22	0.70	0.51
Ac-ft	23	20	13	12	11	18	34	80	232	75	43	31

Calendar year 1964: Max 2.9 Min 0.1 Mean 0.46 Ac-ft 335  
 Water year 1964-65: Max 6.4 Min 0.2 Mean 0.82 Ac-ft 592

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 14 to Apr. 15, Apr. 21 to May 4 (stage-discharge relation affected by ice during most of periods), May 8-21, May 25 to June 1. Stage-discharge relation affected by ice Oct. 25, 26, Nov. 1-9, 11-13, Apr. 16-20.

## WILLIAMS FORK BASIN

9-375. Williams Fork near Parshall, Colo.

Location.--Lat 40°00'01", long 106°10'45", in SW¼SW¼ sec.31, T.1 N., R.78 W., on right bank 150 ft downstream from bridge on State Highway 286, 3.7 miles downstream from Skylark Creek, 3.9 miles south of Parshall, and 4.2 miles upstream from Williams Fork Reservoir Dam.

Drainage area.--186 sq mi.

Records available.--July 1904 to September 1924, June 1933 to September 1965. Records since May 10, 1940, equivalent to earlier records if diversion to August P. Gumlick Tunnel (formerly Jones Pass tunnel) is added to flow past station. Published as "near (Hot) Sulphur Springs" 1904-12, and as Williams River near Parshall June 1933 to September 1958.

Gage.--Water-stage recorder. Datum of gage is 7,808.95 ft above mean sea level (datum of Denver Board of Water Commissioners). Prior to Oct. 18, 1919, staff gage and Oct. 18, 1919, to Sept. 30, 1924, water-stage recorder, at site 1½ miles downstream at different datum. June 19, 1933, to Aug. 8, 1938, water-stage recorder at bridge 150 ft upstream at datum 1.00 ft higher.

Average discharge.--52 years, 144 cfs (104,300 acre-ft per year), including diversion to August P. Gumlick Tunnel.

Extremes.--Maximum discharge during year, 1,240 cfs June 18 (gage height, 4.48 ft); minimum daily, 12 cfs Oct. 12-15.

1904-24, 1933-65: Maximum discharge observed, 2,620 cfs June 14, 1918 (gage height, 6.05 ft, site and datum then in use), from rating curve extended above 1,400 cfs; minimum daily, 10 cfs Sept. 15-17, 1934, Sept. 22, 23, 1959.

Remarks.--Records good except those for periods of ice effect, which are fair. Transmountain diversion above station from tributaries of Williams Fork through August P. Gumlick Tunnel (see record of diversion published with records for Williams Fork near Leal), then by way of Vasquez and Moffat water tunnels to South Boulder Creek in South Platte River basin. Diversions above station for irrigation of about 1,300 acres above station and about 2,500 acres below. About 150 acres above station irrigated by diversions into the drainage area.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.2	9.0	2.5	166
1.4	18	3.0	295
1.6	30	3.5	500
1.8	47	4.0	795
2.0	70	4.5	1,260

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	39	34	36	26	32	32	36	200	*220	*535	295	99
2	20	36	36	27	32	30	37	230	180	556	252	75
3	14	37	34	25	34	30	38	228	185	556	248	72
4	14	32	34	27	*35	30	39	*232	192	525	*255	69
5	14	35	34	28	32	35	39	212	198	455	240	75
6	14	37	31	28	31	35	*40	171	180	430	228	88
7	13	37	*31	28	31	35	42	130	205	322	210	84
8	13	37	31	28	31	35	39	99	230	289	195	83
9	13	36	31	28	31	38	39	80	274	250	171	*78
10	13	*36	31	28	31	*36	40	29	460	250	148	75
11	13	35	27	31	31	36	39	27	600	210	151	75
12	12	33	27	28	31	36	39	28	623	225	146	76
13	*12	36	27	28	32	36	38	36	659	260	134	73
14	12	36	27	*30	30	36	42	36	659	252	120	69
15	12	37	27	25	34	35	38	35	760	202	108	66
16	24	43	25	28	30	30	43	16	*859	180	97	66
17	34	47	25	26	32	32	45	27	1,030	195	99	65
18	32	39	25	26	35	32	43	66	*1,030	218	136	69
19	29	41	25	26	33	32	46	*70	920	258	190	78
20	32	41	25	29	33	34	60	118	811	202	215	93
21	33	42	25	28	33	34	90	168	781	210	185	93
22	34	38	27	29	31	34	108	232	746	258	166	86
23	35	43	27	31	35	37	126	310	*707	280	159	86
24	36	45	30	32	33	37	136	286	683	388	155	84
25	33	49	25	29	33	34	116	210	701	325	151	88
26	33	41	27	29	33	34	102	225	641	220	144	81
27	36	35	27	29	33	34	90	268	578	178	138	76
28	36	45	27	33	33	34	88	248	572	176	134	75
29	36	41	27	31	-	34	112	144	578	215	132	91
30	37	37	26	32	-----	34	144	142	572	245	134	86
31	38	-----	24	32	-----	35	-----	190	-----	313	114	-----
Total	766	1,161	881	885	905	1,056	1,934	4,493	16,834	9,178	5,250	2,374
Mean	24.7	38.7	28.4	28.5	32.3	34.1	64.5	145	561	296	169	79.1
Ac-ft	1,520	2,300	1,750	1,760	1,800	2,090	3,840	8,910	33,390	18,200	10,410	4,710

Calendar year 1964: Max 425 Min 12 Mean 58.0 Ac-ft 42,100  
 Water year 1964-65: Max 1,030 Min 12 Mean 125 Ac-ft 90,680

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 1, Dec. 3 to Apr. 4 (no gage-height record Feb. 26 to Mar. 28).

9-380. Williams Fork Reservoir near Parshall, Colo.

Location.--Lat 40°02'06", long 106°12'17", in SE¼ sec.23, T.1 N., R.79 W., at dam on Williams Fork, 2.1 miles upstream from mouth and 2.2 miles southwest of Parshall.

Drainage area.--234 sq mi.

Records available.--April 1939 to September 1965. Prior to October 1948, published in WSP 1313.

Gage.--Mercury manometer gage read once daily. Datum of gage is at mean sea level (levels by city engineer of Denver). Prior to Sept. 2, 1959, tape-weight gage at same site and datum.

Extremes.--Maximum contents observed during year, 81,490 acre-ft Aug. 26 (elevation, 7,800.84 ft); minimum observed, 15,190 acre-ft Mar. 25 (elevation, 7,726.30 ft).

1939-65: Maximum contents observed, 97,130 acre-ft July 9, 1962 (elevation, 7,811.19 ft); no contents Oct. 14 to Dec. 2, 1958, caused by construction operations at dam.

Remarks.--Reservoir is formed by concrete-arch dam. Dam completed in October 1938; storage began in April 1939; dam was enlarged Dec. 5, 1956, to Apr. 22, 1959. Enlarged capacity of reservoir, 96,820 acre-ft between elevations 7,634 (invert of outlet pipes) and 7,811 ft (top of radial gates on spillway). No dead storage. Figures given herein represent usable contents. Reservoir is used for power development and storage for replacement of water diverted through August P. Gumlick Tunnel (formerly Jones Pass tunnel) (see records of diversion published with records for Williams Fork near Lead) during periods when flow of Colorado River is insufficient to supply decreed prior water rights below Williams Fork.

Cooperation.--Records furnished by Denver Board of Water Commissioners.

Month-end elevation and contents, water year October 1964 to September 1965

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	7,739.08	22,000	-
Oct. 31.....	7,733.84	19,000	-3,000
Nov. 30.....	7,731.51	17,770	-1,230
Dec. 31.....	7,729.80	16,890	-880
Calendar year 1964.....	-	-	-6,350
Jan. 31.....	7,727.44	15,730	-1,160
Feb. 28.....	7,726.61	15,340	-390
Mar. 31.....	7,726.35	15,220	-120
Apr. 30.....	7,734.30	19,260	+4,040
May 31.....	7,748.70	28,260	+9,000
June 30.....	7,788.50	65,400	+37,140
July 31.....	7,798.52	78,280	+12,880
Aug. 31.....	7,800.80	81,430	+3,150
Sept. 30.....	7,798.98	78,910	-2,520
Water year 1964-65.....	-	-	+56,910

† Elevation at 0800.

## WILLIAMS FORK BASIN

9-385. Williams Fork below Williams Fork Reservoir, Colo.

Location.--Lat 40°02'07", Long 106°12'17", in SE¼ sec.23, T.1 N., R.79 W., on left bank 400 ft downstream from Williams Fork Reservoir, 2.1 miles upstream from mouth, and 2.1 miles southwest of Parshall.

Drainage area.--234 sq mi.

Records available.--October 1948 to September 1954, August 1958 to September 1965. Monthly discharge only for some periods, published in WSP 1313. Prior to October 1958, published as Williams River below Williams Fork Reservoir.

Gage.--Water-stage recorder (digital) and concrete control. Datum of gage is 7,615.0 ft above mean sea level (datum of Denver Board of Water Commissioners). Oct. 1, 1948, to Sept. 30, 1954, at site a quarter of a mile downstream at different datum. Aug. 1, 1958, to Oct. 20, 1959, at site half a mile downstream at different datum.

Average discharge.--13 years, 127 cfs (91,940 acre-ft per year), adjusted for storage in Williams Fork Reservoir.

Extremes.--Maximum discharge during year, 242 cfs July 1, 2 (gage height, 2.26 ft); minimum daily, 14 cfs Apr. 13-19.

1948-54, 1958-65: Maximum discharge, 2,640 cfs June 20, 1953 (gage height, 8.50 ft, site and datum then in use), from rating curve extended above 1,500 cfs; minimum daily, 0.3 cfs May 14, 1963.

Remarks.--Records excellent except Oct. 31 to Feb. 16, which are fair. Flow regulated by Williams Fork Reservoir (see preceding page). Transmountain diversion above station from tributaries of Williams Fork through August P. Gumlick Tunnel (formerly Jones Pass tunnel), then by way of Vasquez and Moffat water tunnels to South Boulder Creek in South Platte River basin (see records of diversion published with records for Williams Fork near Leal). Diversions above station for irrigation of about 3,200 acres above station and about 100 acres below. About 450 acres above station irrigated by diversion into the drainage area.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	186	74	61	68	60	41	39	17	15	*138	132	134
2	185	74	61	67	60	41	39	17	16	138	132	134
3	139	74	61	66	60	41	39	17	16	138	129	134
4	81	74	62	66	*60	41	39	17	*16	137	*131	134
5	81	74	62	68	57	41	39	*22	16	136	132	134
6	82	74	62	68	54	41	40	17	16	135	133	134
7	81	75	62	68	54	41	*40	16	16	135	133	133
8	82	75	62	68	54	41	40	16	16	136	133	133
9	83	74	61	68	54	*41	40	16	16	135	133	134
10	84	*74	61	67	53	40	40	16	16	136	132	133
11	84	74	*61	67	54	40	40	16	16	135	133	*134
12	84	74	61	67	49	40	24	16	16	133	133	133
13	*85	75	61	67	48	40	14	16	16	135	132	134
14	84	76	61	*68	47	40	14	16	16	135	134	134
15	83	75	61	69	47	40	*14	16	17	134	133	134
16	86	75	61	69	47	39	14	17	18	134	133	134
17	48	75	61	69	42	39	14	17	18	135	133	134
18	48	73	61	68	40	39	14	17	*17	134	133	135
19	62	70	61	68	40	39	14	17	17	134	133	135
20	71	68	61	69	40	39	16	17	17	134	132	135
21	71	66	61	68	40	39	17	*17	16	133	132	134
22	71	66	61	63	40	39	17	16	15	133	133	134
23	71	66	61	60	40	39	17	16	15	135	133	135
24	72	66	61	60	40	39	17	16	16	135	132	134
25	72	63	61	60	41	39	17	*16	17	132	132	134
26	72	61	61	60	41	39	17	16	17	132	133	133
27	72	61	61	60	41	39	17	16	17	130	133	133
28	72	61	61	60	41	39	17	16	17	133	134	133
29	72	61	63	60	-----	39	17	16	17	133	134	135
30	72	61	65	60	-----	39	17	16	*18	132	134	135
31	74	-----	68	60	-----	39	-----	16	-----	132	134	-----
TOTAL	2,610	2,109	1,909	2,026	1,344	1,233	743	513	492	4,167	4,113	4,019
MEAN	84.2	70.3	61.6	65.4	48.0	39.8	24.8	16.5	16.4	134	133	134
AC-FT	5,180	4,180	3,790	4,020	2,670	2,450	1,470	1,020	976	8,270	8,160	7,970

CALENDAR YEAR 1964 MAX 284 MIN 16 MEAN 81.4 AC-FT 59,090  
 WATER YEAR 1964-65 MAX 186 MIN 14 MEAN 69.3 AC-FT 50,160

\* Discharge measurement made on this day.

9-390. Troublesome Creek near Pearmont, Colo.

Location.--Lat 40°13'03", long 106°18'45", in SE¼ sec.14, T.3 N., R.80 W., on left bank 45 ft downstream from small tributary, 3 miles north of Pearmont, 4 miles downstream from Rabbit Ear Creek, 5½ miles upstream from East Fork, and 12 miles northeast of Kremmling.

Drainage area.--44.6 sq mi.

Records available.--October 1953 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 8,049 ft (from topographic map).

Average discharge.--12 years, 28.5 cfs (20,630 acre-ft per year).

Extremes.--Maximum discharge recorded during year, 222 cfs June 17 (gage height, 2.27 ft); maximum gage height, 3.93 ft Mar. 31 (back-water from ice); minimum daily discharge, 5.4 cfs Mar. 3.

1953-65: Maximum discharge, 503 cfs June 7, 1957 (gage height, 3.48 ft); maximum gage height, that of Mar. 31, 1965; minimum daily discharge, that of Mar. 3, 1965.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. One diversion above station for irrigation of about 250 acres below. Flow partly regulated during irrigation season by one reservoir (capacity, 1,070 acre-ft) above station.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 25-31)

Oct. 1 to May 10		May 11 to Sept. 30	
0.5	7.0	0.6	12
.8	20	.7	18
1.1	43	1.0	44
1.5	86	1.5	106
		2.0	180
		2.3	230

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	11	7.4	8.0	8.0	6.0	10	41	150	86	32	16
2	12	11	7.4	7.6	8.4	6.0	11	52	160	84	18	16
3	12	11	7.0	8.6	9.0	5.4	11	54	*170	79	18	16
4	12	10	7.0	8.6	*9.0	6.0	11	53	180	75	18	17
5	11	11	7.0	8.0	9.6	6.8	12	*48	150	73	16	18
6	11	11	6.4	8.0	9.6	6.8	*10	39	120	71	*16	20
7	11	11	6.4	8.0	9.0	6.8	12	36	130	71	15	18
8	11	11	6.4	8.0	9.0	6.8	12	35	140	63	15	18
9	11	10	6.4	8.0	9.0	7.0	12	32	150	57	15	17
10	12	*11	6.6	9.0	8.0	*7.4	11	31	160	53	15	16
11	12	11	6.6	9.0	8.0	7.0	10	30	140	52	15	*16
12	11	11	*6.6	9.0	8.0	7.0	10	34	140	55	16	16
13	12	11	6.4	8.2	7.2	7.0	13	45	170	52	16	15
14	*11	12	6.4	*8.2	7.4	7.2	16	47	190	*47	18	15
15	11	13	7.0	7.8	8.0	8.0	12	46	*210	44	18	15
16	11	10	7.0	7.4	7.6	9.0	14	54	210	39	16	15
17	11	10	6.8	7.0	7.2	10	15	83	218	40	16	16
18	11	10	6.6	7.4	7.4	11	15	109	213	41	20	18
19	9.8	10	6.6	7.2	8.0	11	16	123	198	41	22	19
20	11	10	7.0	7.2	8.4	13	20	*134	180	37	19	18
21	11	10	7.6	7.4	9.0	12	27	142	154	36	16	17
22	11	9	8.0	7.6	9.0	12	30	142	136	36	16	18
23	11	8	8.6	8.0	8.6	12	33	146	123	36	16	17
24	11	8	8.6	8.0	8.2	11	33	149	119	34	18	16
25	11	8.2	8.2	8.0	8.2	11	26	*150	116	35	15	17
26	10	7.8	8.2	7.4	8.6	11	23	142	110	32	15	16
27	11	7.0	8.8	7.6	9.0	11	20	127	100	32	15	16
28	11	7.0	9.0	7.6	8.4	11	20	110	89	33	15	16
29	11	7.0	8.6	7.8	-	10	25	105	88	32	16	19
30	11	7.0	8.2	7.8	-----	10	33	114	*87	32	18	17
31	11	-----	8.2	8.2	-----	8.9	-----	135	-----	38	16	-----
Total	345.8	295.0	227.0	245.6	234.8	275.1	523	2,588	4,501	1,536	530	504
Mean	11.2	9.83	7.32	7.92	8.39	8.87	17.4	83.5	150	49.5	17.1	16.8
Ac-ft	686	585	450	487	466	546	1,040	5,130	8,930	3,050	1,050	1,000

Calendar year 1964: Max 113 Min 6.4 Mean 21.6 Ac-ft 15,690  
Water year 1964-65: Max 218 Min 5.4 Mean 32.3 Ac-ft 23,420

\* Discharge measurement made on this day.

Note.--No gage-height record June 1-17. Stage-discharge relation affected by ice Nov. 16-24, 27, 28, Dec. 1, 3-29 (no gage-height record Dec. 10-13), Dec. 31 to Jan. 12, Jan. 19-29, Jan. 31 to Mar. 17, Mar. 30 to Apr. 12.

## TROUBLESOME CREEK BASIN

9-400. East Fork Troublesome Creek near Troublesome, Colo.

Location.--Lat 40°09'27", long 106°16'58", in NW¼ sec.7, T.2 N., R.79 W., on right bank 300 ft upstream from mouth and 6½ miles north of Troublesome.

Drainage area.--76.0 sq mi.

Records available.--April 1937 to September 1943, October 1953 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 7,670 ft (from topographic map). Apr. 18, 1937, to May 13, 1941, staff gage at site 100 ft upstream at different datum. May 13 to Aug. 8, 1941, staff gage and Aug. 8, 1941, to Sept. 30, 1943, chain gage, at same site at different datum. Datum differences for all sites not more than 0.4 ft.

Average discharge.--18 years, 27.5 cfs (19,910 acre-ft per year).

Extremes.--Maximum discharge during year, 463 cfs May 23 (gage height, 4.82 ft); minimum daily, 2.6 cfs Mar. 3.

1937-43, 1953-65: Maximum discharge, 720 cfs May 9, 1962; maximum gage height, 5.19 ft June 6, 1957; minimum daily discharge, 0.2 cfs Oct. 3, 1941, Sept. 2, 3, 26, 27, 1942.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for irrigation.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 10-31, Apr. 29 to May 7, May 27  
to June 11, June 24 to July 6)

Oct. 1 to May 22				May 23 to Sept. 30			
1.7	2.6	2.7	76	2.0	3.8	3.5	138
1.8	4.2	3.0	118	2.1	6.0	4.0	225
2.0	10	3.5	201	2.3	15	4.5	345
2.1	15	4.0	305	2.5	30	4.9	495
2.2	22	4.5	455	3.0	75		
2.4	41						

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.1	3.9	4.2	3.5	4.4	4.0	5.4	147	259	53	14	7.2
2	2.8	3.7	3.8	3.2	4.4	3.6	5.0	164	231	50	12	7.2
3	2.8	4.0	3.6	3.2	4.4	2.6	5.0	181	*239	48	14	7.2
4	2.9	4.0	3.4	3.7	*4.6	2.8	5.4	188	237	45	14	8.8
5	2.9	3.6	3.2	3.7	4.4	2.8	5.8	*185	215	43	12	8.4
6	3.1	3.6	3.2	3.7	4.4	2.8	*6.0	156	186	40	*10	11
7	3.1	3.9	3.2	3.0	4.4	3.2	6.3	136	201	38	8.8	8.4
8	3.2	4.0	3.2	3.0	4.0	3.4	8.1	124	209	35	8.4	8.0
9	3.2	3.9	3.2	3.0	4.0	*4.0	8.4	106	239	30	8.4	7.2
10	3.6	3.7	3.5	3.0	4.0	4.2	8.4	95	247	29	8.0	6.4
11	3.7	*3.7	3.5	3.4	3.8	4.4	9.7	89	245	30	8.8	*6.0
12	3.7	4.7	*3.5	*3.4	3.8	4.6	8.4	93	196	31	8.0	6.0
13	3.4	3.9	3.3	3.4	4.0	4.6	9.7	116	186	30	9.6	5.6
14	*3.6	4.5	3.3	3.4	4.0	4.6	8.1	128	165	*27	12	5.1
15	3.4	4.0	3.9	3.2	4.0	4.6	11	121	*158	21	11	5.3
16	3.4	3.8	3.6	3.2	3.6	4.6	10	120	157	19	10	5.6
17	3.6	3.8	3.2	3.2	3.6	4.6	13	156	172	18	14	5.8
18	3.6	3.8	3.1	3.0	3.6	4.6	14	197	166	21	17	8.8
19	3.4	3.6	3.7	3.2	3.8	4.0	14	214	142	27	24	12
20	3.1	4.0	3.9	3.2	4.0	4.0	30	*256	107	17	17	12
21	3.2	3.6	3.6	3.4	4.0	4.4	57	308	88	14	12	12
22	3.4	3.6	3.6	3.4	4.0	5.0	81	360	83	15	10	10
23	3.6	3.8	4.0	3.4	4.0	5.0	93	414	77	14	9.2	10
24	3.9	3.8	4.0	3.6	3.8	5.0	103	340	75	14	12	11
25	3.7	4.0	3.7	3.6	3.6	4.6	93	*300	74	15	9.2	11
26	3.6	4.2	3.7	3.4	3.6	4.6	80	240	72	14	7.6	9.6
27	3.2	5.0	3.9	3.4	3.8	5.0	66	220	67	12	6.8	8.4
28	3.4	5.0	3.9	3.4	4.0	5.2	62	210	63	10	6.4	8.4
29	3.6	4.5	3.9	3.4	-	5.4	85	200	61	10	6.8	14
30	3.7	4.5	3.4	3.4	-----	5.4	118	220	*53	10	12	13
31	4.5	-----	3.4	3.4	-----	5.4	-----	240	-----	17	9.2	-----
Total	105.4	120.1	110.6	103.4	112.0	133.0	1029.7	6024	4670	797	342.2	259.4
Mean	3.40	4.00	3.57	3.34	4.00	4.29	34.3	194	156	25.7	11.0	8.65
Ac-ft	209	238	219	205	222	264	2,040	11,950	9,260	1,580	679	515

Calendar year 1964: Max 183 Min 2.2 Mean 17.2 Ac-ft 12,510  
Water year 1964-65: Max 414 Min 2.6 Mean 37.8 Ac-ft 27,380

Peak discharge (base, 170 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-4	2315	3.43	216	6-10	0215	4.06	265
5-23	2315	4.82	463				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 15-24, Dec. 2-14. No gage-height record Dec. 30 to Apr. 6 (stage-discharge relation affected by ice during most of period), May 24-31, July 2-14.



9-410. Muddy Creek near Kremmling, Colo.

Location.--Lat 40°17'37", long 106°28'59", in SE¼ sec.20, T.4 N., R.81 W., on left bank a quarter of a mile upstream from Lindsey Creek, half a mile upstream from bridge on U. S. Highway 40, 3 miles downstream from Albert Creek, and 17 miles northwest of Kremmling.

Drainage area.--87.4 sq mi.

Records available.--September 1937 to September 1943, October 1955 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 7,856 ft (from topographic map). September 1937 to Sept. 30, 1943, staff gage at site 3 miles upstream at different datum.

Average discharge.--16 years, 53.1 cfs (38,440 acre-ft per year).

Extremes.--Maximum discharge during year, 567 cfs May 23 (gage height, 5.05 ft); minimum daily, 3.0 cfs Oct. 3-6, Mar. 4. 1937-43, 1955-65: Maximum discharge, 992 cfs May 9, 1957 (gage height, 6.46 ft); maximum gage height, 6.72 ft Apr. 17, 1962 (backwater from ice); minimum daily discharge, 0.1 cfs Aug. 19, 24, 1940.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Some regulation by Barber Reservoir (capacity, 4,290 acre-ft). Diversions for irrigation of about 900 acres above station.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 7

Apr. 8 to Sept. 30

2.3	2.8	2.3	4.1	3.3	83
2.4	4.3	2.4	6.1	3.6	138
2.5	7.2	2.5	9.4	4.0	236
2.6	11	2.7	20	4.5	387
2.7	15	3.0	43	5.0	547

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.2	4.7	5.0	4.0	4.0	3.8	8.0	256	356	83	33	8.2
2	3.1	4.7	5.4	4.0	4.0	3.4	8.0	294	334	85	26	7.0
3	3.0	5.0	5.4	4.5	4.0	3.2	8.0	291	* 344	68	* 26	6.7
4	3.0	3.9	* 5.2	4.5	3.8	3.0	7.5	319	344	61	26	7.0
5	3.0	3.9	5.0	4.5	* 3.8	3.2	7.0	310	313	57	22	9.4
6	3.0	4.3	4.8	4.2	3.6	3.6	7.0	250	322	52	23	19
7	3.1	4.3	4.4	4.0	3.8	3.4	7.0	210	381	48	21	12
8	3.2	4.3	4.6	4.0	4.0	3.8	* 7.0	200	402	50	19	9.4
9	* 3.3	* 5.0	4.8	4.0	4.2	4.4	9.0	184	406	53	18	* 14
10	4.1	5.3	5.0	4.2	4.2	5.0	18	160	406	52	16	11
11	3.5	4.7	4.8	4.2	4.0	* 5.5	17	174	412	52	17	8.2
12	3.9	3.7	4.8	4.2	3.8	5.5	16	215	406	53	17	7.6
13	3.9	4.7	4.6	4.0	3.6	5.5	17	247	495	* 51	14	6.7
14	3.9	5.0	4.6	3.8	3.6	5.5	19	228	418	41	11	6.4
15	3.9	3.9	5.0	3.6	3.6	5.5	20	210	356	34	11	5.6
16	4.1	5.9	5.2	3.4	3.8	5.5	22	247	* 322	30	9.8	5.3
17	3.7	5.0	4.5	3.4	4.0	5.4	20	325	322	28	9.4	5.8
18	3.9	5.0	5.0	3.4	4.0	5.2	20	350	303	30	17	6.4
19	4.7	5.0	5.2	3.4	4.0	5.2	23	384	258	35	26	9.8
20	3.9	4.5	5.2	3.6	3.6	5.2	33	415	220	33	26	18
21	3.7	4.3	5.0	3.6	3.8	6.0	68	437	202	32	16	14
22	6.5	4.5	5.0	3.6	4.0	7.0	* 90	463	187	34	16	15
23	12	4.1	5.4	3.4	4.0	7.0	130	534	167	36	16	17
24	5.9	4.7	5.4	3.4	3.8	6.5	130	469	156	44	17	19
25	4.3	5.3	5.0	3.4	3.6	6.5	110	390	153	45	12	3.2
26	4.1	5.6	5.0	3.6	3.6	6.5	90	* 328	130	38	9.4	24
27	4.1	5.3	5.2	3.8	3.6	7.0	80	282	110	31	8.2	18
28	4.1	5.6	5.2	3.8	3.8	7.5	92	244	96	28	7.6	15
29	4.3	5.6	5.2	3.8	-	7.0	123	239	* 90	26	8.6	19
30	4.5	5.4	5.0	3.8	-----	7.0	179	291	85	23	14	23
31	5.0	-----	4.5	3.8	-----	7.0	-----	334	-----	30	12	-----
Total	129.9	143.2	154.4	118.9	107.6	165.8	1,385.5	9,280	8,496	1,363	525.0	379.5
Mean	4.19	4.77	4.98	3.84	3.84	5.35	46.2	299	283	44.0	16.9	12.6
Ac-ft	258	284	306	236	213	329	2,750	18,410	16,850	2,700	1,040	753

Calendar year 1964: Max 470 Min 2.8 Mean 42.1 Ac-ft 30,560  
 Water year 1964-65: Max 534 Min 3.0 Mean 61.0 Ac-ft 44,130

Peak discharge (base, 300 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5- 2	2030	4.57	412	6-13	1530	4.99	544
5-23	0815	5.05	567				

\* Discharge measurement made on this day.  
 Note.--Stage-discharge relation affected by ice Nov. 30 to Apr. 27 (no gage-height record Dec. 28 to Apr. 8).

9-411. Antelope Creek near Kremmling, Colo.

Location.--Lat 40°14'26", long 106°22'23", in N½ sec.8, T.3 N., R.80 W., on right bank 5.8 miles upstream from mouth and 12½ miles north of Kremmling.

Drainage area.--11.5 sq mi.

Records available.--October 1955 to September 1965.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,933 ft (from topographic map).

Average discharge.--10 years, 2.12 cfs (1,530 acre-ft per year).

Extremes.--Maximum discharge during year, 21 cfs May 1 (gage height, 1.62 ft), from rating curve extended above 9.5 cfs; minimum daily, 0.2 cfs Aug. 28.

1955-65: Maximum discharge, 148 cfs Mar. 27, 1960 (gage height, 2.70 ft, from floodmarks), by slope-area measurement of peak flow; maximum gage height, 3.32 ft Apr. 10, 1962 (backwater from plugged culvert); no flow July 28 to Aug. 1, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion or regulation above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 8 to Apr. 27)

0.9	0.1	1.3	7.2
1.0	.6	1.4	10
1.1	2.0	1.6	17
1.2	4.3		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.3	0.5	0.5	0.5	0.7	0.7	1.3	14	10	2.0	1.3	0.4
2	.3	.6	.5	.5	.7	.7	1.3	16	9.4	2.2	.6	.3
3	.3	.5	.5	.5	.7	.7	1.3	*1.7	9.1	1.7	*.9	.4
4	.4	.4	*.5	.5	.7	.7	1.3	1.6	9.1	1.3	1.0	.6
5	.4	.4	.5	.6	.7	.7	1.5	15	8.5	1.3	.8	.6
6	.3	.5	.5	.6	.7	.7	1.6	12	7.8	1.1	.6	1.0
7	.4	.6	.5	.6	.7	.7	1.7	12	8.8	1.1	.6	.6
8	.4	.6	.5	.6	.6	.7	1.7	11	*9.1	1.3	.6	.5
9	*.4	*.5	.5	.6	.6	.7	*1.7	10	8.2	1.5	.5	*.6
10	.5	.6	.5	.6	.6	.7	1.8	8.8	9.1	1.5	.6	.6
11	.4	.5	.5	.6	.6	.7	2.0	8.8	9.4	1.1	.5	.6
12	.5	b.4	.5	.6	.6	*.7	1.8	10	9.4	1.5	.5	.6
13	.4	b.4	.5	.6	.6	.8	1.8	13	11	*1.7	1.0	.6
14	.4	b.4	.5	*.6	.6	.9	1.8	12	9.8	.9	.6	.6
15	.4	b.4	.6	.6	.6	.9	2.2	11	8.2	.8	.9	.6
16	.4	b.4	.6	.6	.6	.9	b.3.4	12	*8.2	.6	.8	.6
17	.4	b.4	.6	.6	.6	.9	b.4.1	14	7.8	.6	1.3	.6
18	.4	b.4	.6	.6	.6	.9	4.1	*14	6.6	.6	2.0	1.1
19	.4	b.4	.6	.6	.7	.9	4.6	14	6.0	.9	2.2	1.5
20	.4	b.4	.6	.6	.7	.9	6.3	15	5.1	1.0	1.5	1.1
21	.4	b.4	.6	.6	.7	.9	7.5	15	4.6	.9	.9	1.1
22	.4	b.4	.6	.6	.6	.9	7.5	15	4.1	.9	.8	1.1
23	.4	b.4	.6	.7	.6	.9	7.8	15	3.6	1.3	.8	1.1
24	.4	b.4	.6	.7	.6	.9	7.5	13	3.6	.9	1.0	1.1
25	.4	.5	.6	.7	.7	.9	7.2	11	3.6	1.1	.6	1.1
26	.4	.5	.6	.7	.7	1.0	6.6	*9.8	3.2	.9	.5	1.0
27	.4	.5	.6	.7	.7	1.1	5.7	8.8	2.9	.6	.3	.9
28	.4	.5	.6	.7	.7	1.1	6.3	7.8	2.9	.6	.6	1.0
29	.5	.5	.5	.7	-	1.2	9.1	8.2	*2.4	.5	.6	2.0
30	.4	.5	.5	.7	-----	1.3	12	9.8	2.2	.6	1.1	1.7
31	.6	-----	.5	.7	-----	1.5	-----	10	-----	1.7	.6	-----
Total	12.5	13.6	16.9	19.1	18.2	27.0	124.5	379.0	203.7	34.7	26.2	25.6
Mean	0.40	0.45	0.55	0.62	0.65	0.87	4.15	12.2	6.79	1.12	0.85	0.85
Ac-ft	25	27	34	38	36	54	247	752	404	69	52	51

Calendar year 1964: Max 13 Min 0.1 Mean 1.31 Ac-ft 949

Water year 1964-65: Max 17 Min 0.2 Mean 2.47 Ac-ft 1,790

Peak discharge (base, 15 cfs).--May 1 (2345) 21 cfs (1.62 ft); May 21 (2200) 18 cfs (1.58 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 18-29, Nov. 25 to Mar. 12, Mar. 15 to Apr. 8 (stage-discharge relation affected by ice during part of periods).

9-412. Red Dirt Creek near Kremmling, Colo.

Location.--Lat 40°09'41", long 106°33'32", in NE¼NE¼ sec.10, T.2 N., R.82 W., on left bank three-quarters of a mile upstream from Snow Shoe Ranch, 2 miles downstream from McMahon (Red Dirt) Reservoir, 9½ miles upstream from mouth, and 11½ miles northwest of Kremmling.

Drainage area.--19.0 sq mi (includes 1.4 sq mi in Yampa River basin).

Records available.--October 1955 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 8,961 ft (from topographic map).

Average discharge.--10 years, 20.1 cfs (14,550 acre-ft per year).

Extremes.--Maximum discharge during year, 174 cfs June 15 (gage height, 2.53 ft); minimum daily, 2.6 cfs Mar. 5. 1955-65: Maximum discharge, 343 cfs June 13, 1957 (gage height, 3.01 ft); minimum not determined.

Remarks.--Records good except those for periods of backwater from beaver dams or no gage-height record, which are poor. No diversion above station. Flow regulated by McMahon (Red Dirt) Reservoir (capacity, about 4,500 acre-ft).

Rating table, except periods of ice effect and backwater from beaver dams  
(gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used June 12-23)

0.5	2.4	1.3	27
.6	3.4	1.6	53
.8	6.7	2.0	105
1.0	13	2.5	211

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	c 4.4	3.7	4.0	3.4	4.0	3.8	4.2	25	92	65	12	13
2	c 4.2	3.7	4.0	3.6	4.0	3.6	4.6	41	93	65	12	13
3	c 4.2	3.7	4.0	3.6	4.0	3.4	4.6	44	*98	64	*12	13
4	c 4.2	3.7	4.0	3.8	4.2	3.0	4.6	48	99	64	12	13
5	c 4.2	3.5	3.8	3.8	4.2	2.6	4.6	47	84	64	12	13
6	c 4.2	3.5	3.6	4.0	4.2	3.0	4.6	44	45	64	*12	13
7	c 4.0	3.5	3.4	4.0	4.0	3.0	5.0	46	50	63	12	12
8	c 4.0	*3.5	3.4	4.0	3.8	3.0	5.0	43	51	64	12	13
9	*4.0	3.7	3.4	3.8	3.6	3.2	5.0	40	52	64	12	*13
10	4.0	3.7	3.6	3.4	3.4	3.4	5.0	40	58	63	12	13
11	4.0	4.1	3.6	3.4	3.4	3.6	5.0	39	55	62	12	13
12	4.0	5.0	3.6	3.8	3.4	4.0	4.6	42	50	62	12	12
13	4.0	3.8	3.6	3.8	3.6	4.0	4.6	45	76	*62	12	12
14	3.8	4.1	3.4	4.0	3.8	4.0	4.6	43	122	61	12	12
15	3.8	4.8	3.4	4.0	3.8	4.0	4.6	44	158	61	12	12
16	4.0	4.2	3.4	4.0	3.8	3.6	4.6	50	*160	58	12	12
17	4.0	3.8	3.2	3.6	3.6	3.2	5.0	57	149	58	12	13
18	3.8	3.8	3.2	3.4	3.6	3.2	5.4	*64	138	58	13	14
19	3.8	3.8	3.2	3.4	3.6	3.2	6.0	72	127	58	13	14
20	3.7	3.8	3.6	3.4	3.6	3.2	7.0	79	115	58	13	14
21	3.5	3.4	3.8	3.6	3.6	3.6	9.0	86	105	57	12	14
22	3.5	3.4	3.8	3.6	3.6	4.2	12	93	94	56	12	14
23	3.7	3.6	3.8	3.6	3.6	4.2	19	98	84	56	12	15
24	3.7	3.8	3.6	3.6	3.6	4.2	18	90	80	56	13	15
25	3.7	3.8	3.2	3.6	3.6	4.2	*16	83	76	35	12	15
26	3.4	3.8	3.2	3.6	3.6	4.2	15	*80	75	13	12	15
27	3.4	3.6	3.2	3.6	3.6	4.4	15	76	69	12	12	14
28	3.4	3.6	3.2	4.0	3.8	4.4	15	74	68	12	12	14
29	3.4	3.8	3.2	4.0	-	4.4	16	76	*66	12	13	15
30	3.8	4.0	3.2	4.0	-----	4.4	19	83	65	13	13	14
31	3.7	-----	3.2	4.0	-----	4.4	-----	90	-----	14	12	-----
Total	119.5	114.2	108.8	115.4	104.6	114.6	252.6	1882	2,654	1,574	378	402
Mean	3.85	3.81	3.51	3.72	3.74	3.70	8.42	60.7	88.5	50.8	12.2	13.4
Ac-ft	237	227	216	229	207	227	501	3,730	5,260	3,120	750	797

Calendar year 1964: Max 147 Min 0.3 Mean 15.7 Ac-ft 11,380  
Water year 1964-65: Max 160 Min 2.6 Mean 21.4 Ac-ft 15,500

\* Discharge measurement made on this day.

c Backwater from beaver dam.

Note.--No gage-height record Nov. 20 to Apr. 25 (stage-discharge relation affected by ice during most of period).

## MUDDY CREEK BASIN

9-413. Pass Creek near Kremmling, Colo.

Location.--Lat 40°08'00", long 106°29'20", in NW¼NE¼ sec.20, T.2 N., R.81 W., on left bank half a mile downstream from Burke Spring Creek, 6 miles upstream from mouth, and 7½ miles northwest of Kremmling.

Drainage area.--17.8 sq mi.

Records available.--October 1957 to September 1965.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,840 ft (from topographic map).

Average discharge.--8 years, 9.16 cfs (6,630 acre-ft per year).

Extremes.--Maximum discharge during year, 142 cfs May 22 (gage height, 3.66 ft); minimum daily, 1.3 cfs Mar. 4.

1957-65: Maximum discharge, 204 cfs May 11, 1962 (gage height, 3.63 ft), from rating curve extended above 75 cfs; maximum gage height, 4.18 ft Apr. 2, 1964 (ice jam); minimum daily discharge, 0.6 cfs Aug. 2, 8, 12-14, 1958.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Some regulation by small reservoir on Spring Creek above station. Several small diversions above station for irrigation.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

2.2	0.9	2.8	20
2.3	1.8	3.1	45
2.4	3.4	3.4	87
2.6	9.4	3.6	130

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.4	2.1	2.2	1.5	2.4	2.0	2.6	47	57	17	7.0	3.2
2	1.4	2.1	2.2	1.6	2.4	1.7	2.8	53	* 53	16	4.9	3.2
3	1.5	2.4	2.2	1.7	2.4	1.6	2.8	50	51	14	* 6.1	3.4
4	1.5	2.1	* 2.0	1.8	2.4	1.3	2.8	50	51	13	6.1	3.9
5	1.5	1.8	1.9	1.9	* 2.4	1.5	2.8	49	46	12	4.9	6.1
6	1.5	2.1	1.7	1.9	2.3	1.5	2.8	*44	41	10	4.1	6.4
7	1.5	2.1	1.6	1.9	2.3	1.5	2.8	37	45	9.9	3.4	4.6
8	1.5	* 2.6	1.7	1.9	2.4	1.6	3.2	36	46	8.0	5.8	4.4
9	1.6	2.2	1.8	1.7	2.5	1.7	* 4.8	34	53	7.0	2.8	* 3.9
10	1.6	2.1	1.9	1.7	2.5	1.9	4.8	33	55	7.0	4.9	3.6
11	1.5	2.2	1.9	1.7	2.5	* 2.0	4.6	33	55	6.4	2.6	3.6
12	1.5	2.0	1.9	1.8	2.3	2.2	4.4	36	53	6.7	2.6	3.6
13	1.5	2.4	1.8	1.8	2.2	2.2	4.4	44	63	* 7.7	3.0	3.4
14	* 1.5	2.2	1.7	1.9	2.2	2.2	4.4	45	45	6.1	2.8	3.2
15	1.5	2.0	1.6	* 1.9	2.2	2.0	4.4	41	* 37	5.5	2.8	3.2
16	1.5	2.0	1.5	1.9	2.4	2.0	6.1	46	33	5.2	2.8	2.8
17	1.5	2.0	1.5	1.8	2.4	2.0	7.0	61	30	4.9	3.4	3.0
18	1.5	1.8	1.5	1.7	2.4	2.0	7.0	* 71	26	5.8	6.1	4.4
19	1.4	1.6	1.6	1.7	2.4	2.0	9.0	79	29	7.3	9.0	6.4
20	1.5	1.6	1.8	1.7	2.2	2.0	16	91	26	6.4	5.8	6.1
21	1.6	1.7	1.9	1.8	2.2	2.0	20	99	23	6.4	4.6	5.5
22	1.6	1.9	1.9	1.9	2.3	2.3	22	118	20	6.4	4.1	5.8
23	1.6	2.0	1.9	2.0	2.3	2.3	24	116	17	6.1	4.4	6.7
24	2.0	2.0	1.8	2.0	2.2	2.2	22	95	18	6.1	4.6	7.0
25	1.8	2.0	1.6	2.0	2.1	2.2	20	82	16	6.4	3.6	7.0
26	1.6	1.9	1.5	2.0	2.1	2.4	17	* 71	16	5.5	3.4	6.4
27	1.8	1.9	1.5	2.0	2.1	2.6	14	58	16	4.6	3.2	5.5
28	1.8	2.0	1.5	2.2	2.3	2.6	15	52	17	4.4	3.2	5.2
29	2.0	2.2	1.5	2.4	-	2.6	22	50	* 17	3.9	3.4	8.0
30	2.1	2.2	1.5	2.4	-----	2.4	32	53	17	4.1	3.6	6.1
31	2.2	-----	1.5	2.4	-----	2.4	-----	58	-----	9.0	3.6	-----
Total	50.0	61.2	54.1	58.6	64.8	62.9	307.5	1,832	1,072	238.8	132.6	145.6
Mean	1.61	2.04	1.75	1.89	2.31	2.03	10.2	59.1	35.7	7.70	4.28	4.85
Ac-ft	99	121	107	116	129	125	610	3,630	2,130	474	263	289

Calendar year 1964: Max 74 Min 1.1 Mean 6.27 Ac-ft 4,560  
 Water year 1964-65: Max 118 Min 1.3 Mean 11.2 Ac-ft 8,090

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 14 to Dec. 7. No gage-height record Dec. 8 to Apr. 14 (stage-discharge relation affected by ice during most of period).

9-419. Monte Cristo diversion near Hoosier Pass, Colo.

Location.--Lat 39°22'50", long 106°04'10", in NE¼SE¼ sec.2, T.8 S., R.78 W., on left bank at entrance to Hoosier Pass tunnel, 2,000 ft downstream from diversion point, 1½ miles northwest of Hoosier Pass, and 7 miles southwest of Breckenridge.

Records available.--October 1957 to September 1965.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 10,986 ft (from State engineer).

Extremes.--1957-65: Maximum daily discharge, 70 cfs June 20, 1965; no flow for most of each year.

Remarks.--Records good. This is a transmountain diversion from Monte Cristo Creek in Blue River basin through Hoosier Pass tunnel to South Platte River basin whence it is again diverted to South Catamount Creek in the Arkansas River basin. Water is for municipal use by city of Colorado Springs. Diversion point is in SW¼NE¼ sec.2, T.8 S., R.78 W. The entire flow is regulated by diversion gates.

Cooperation.--Gage-height record furnished by city of Colorado Springs.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								0	*8.7	7.5	0	8.1
2								0	32	*9.1	0	7.3
3								*0	27	8.9	0	7.9
4								0	*13	8.9	*0	7.7
5								0	9.8	8.7	0	7.5
6								0	9.5	8.7	0	7.5
7								0	11	4.4	0	8.1
8								0	16	.5	0	7.9
9								0	19	.5	0	7.7
10								0	19	.5	7.4	7.1
11								.7	19	.5	18	6.9
12								2.8	14	.4	17	5.7
13								4.3	21	.4	15	5.9
14								4.4	27	.4	15	5.2
15								3.1	*29	.4	17	4.8
16								3.7	65	.4	17	4.3
17								6.7	55	2.6	7.2	2.2
18								6.9	42	8.9	0	*0
19								8.3	54	22	0	0
20								9.8	70	27	0	0
21								10	68	28	0	0
22								17	64	12	0	0
23								11	56	0	0	0
24								6.5	47	0	0	0
25								5.2	32	0	0	0
26								4.2	9.8	0	0	0
27								3.4	0	0	4.9	0
28								4.0	0	0	9.8	0
29								5.2	.9	0	11	0
30								9.1	3.7	0	12	0
31								11		0	9.5	
Total	0	0	0	0	0	0	0	137.3	842.4	160.7	160.8	111.8
Mean	0	0	0	0	0	0	0	4.43	28.1	5.18	5.19	3.73
Ac-ft	0	0	0	0	0	0	0	272	1,670	319	319	222

Calendar year 1964: Max 36 Min 0 Mean 4.19 Ac-ft 3,040  
 Water year 1964-65: Max 70 Min 0 Mean 3.87 Ac-ft 2,800

\* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record Oct. 14 to May 10, May 27, 28, Aug. 5-9, 24, 25.

## BLUE RIVER BASIN

9-443. Bemrose-Hoosier diversion near Hoosier Pass, Colo.

Location.--Lat 39°22'50", long 106°04'10", in NE¼SE¼ sec.2, T.8 S., R.78 W., on right bank at entrance to Hoosier Pass tunnel, 1½ miles northwest of Hoosier Pass, about 2 miles downstream from diversion point on Bemrose Creek, and 7 miles southwest of Breckenridge.

Records available.--October 1957 to September 1965.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 10,986 ft (from State engineer).

Extremes.--1957-65: Maximum daily discharge, 44 cfs June 21, 1965; no flow for most of each year.

Remarks.--Records good. This is a transmountain diversion from Bemrose and Hoosier Creeks in Blue River basin through Hoosier Pass tunnel to South Platte River basin whence it is again diverted to South Catamount Creek in the Arkansas River basin. Water is for municipal use by city of Colorado Springs. Diversion points are in SW¼SW¼ sec.6, T.8 S., R.77 W., and in sec.12, T.8 S., R.78 W. The entire flow is regulated by diversion gates.

Cooperation.--Gage-height record furnished by city of Colorado Springs.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								0	*7.8	23	0	4.7
2								0	7.4	*23	0	4.7
3								*0	8.0	22	0	4.7
4								0	*6.7	21	*0	4.7
5								0	5.6	20	0	4.5
6								0	6.1	8.6	0	4.1
7								0	7.0	2.9	0	4.1
8	(*)							0	8.6	2.6	0	4.1
9								0	9.3	2.3	4.4	3.7
10								0	13	2.6	7.6	3.7
11								0	13	2.7	7.2	3.5
12								0	12	2.7	6.7	3.3
13								.4	14	2.6	6.3	3.2
14								1.4	20	2.7	6.1	3.2
15								1.2	*26	2.6	5.9	3.0
16								1.6	40	2.5	5.9	2.9
17								3.2	42	5.9	7.6	2.7
18								4.0	35	12	7.6	*2.5
19								4.7	39	7.1	4.3	2.7
20								5.2	40	.5	1.0	2.9
21								5.6	44	.4	.5	2.7
22							(*)	8.4	40	.3	.5	2.7
23								6.5	16	.2	.4	3.0
24								5.4	3.5	.2	.7	3.2
25								4.5	2	.1	2.7	3.0
26								3.8	14	.1	5.7	2.9
27								3.5	22	.1	5.6	2.9
28								3.7	22	.1	5.4	2.9
29					-			5.6	23	0	5.7	2.7
30					-----			7.4	23	0	4.8	2.6
31		-----			-----			8.6	-----	0	2.9	-----
Total	0	0	0	0	0	0	0	84.7	568.2	170.8	105.5	101.5
Mean	0	0	0	0	0	0	0	2.73	18.9	5.51	3.40	3.38
Ac-ft	0	0	0	0	0	0	0	168	1,130	339	209	201

Calendar year 1964: Max 13 Min 0 Mean 1.44 Ac-ft 1,050  
 Water year 1964-65: Max 44 Min 0 Mean 2.82 Ac-ft 2,050

\* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record Oct. 1 to May 12, May 28.

9-448. McCullough-Spruce-Crystal diversion near Hoosier Pass, Colo.

Location.--Lat 39°22'50", long 106°04'10", in NE¼SE¼ sec.2, T.8 S., R.78 W., on left bank at entrance to Hoosier Pass tunnel, 1½ miles northwest of Hoosier Pass, about 2 miles downstream from diversion point on McCullough Gulch, and 7 miles southwest of Breckenridge.

Records available.--October 1957 to September 1965. Prior to October 1961, published as McCullough diversion near Hoosier Pass.

Gage.--Water-stage recorder and Parshall flume. Altitude of gage is 10,986 ft (from State engineer).

Extremes.--1957-65: Maximum daily discharge, 102 cfs June 21, 1965; no flow for most of each year.

Remarks.--Records good. This is a transmountain diversion from McCullough Gulch, Spruce and Crystal Creeks in Blue River basin through Hoosier Pass tunnel to South Platte River basin whence it is again diverted to South Catamount Creek in the Arkansas River basin. Water is for municipal use by City of Colorado Springs. Diversion points are in secs.14, 23, 26, T.7 S., R.78 W. the entire flow is regulated by diversion gates.

Cooperation.--Gage-height record furnished by city of Colorado Springs.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								0	*20	0.7	0.7	11
2								0	15	*.6	.7	10
3								*0	17	.7	.6	11
4								0	*16	.8	*.6	12
5								0	10	.8	.7	11
6								0	9.0	.9	.7	10
7								0	12	.9	.7	10
8		(*)						0	15	.8	.7	10
9								0	22	.7	.7	10
10								0	24	.7	.7	9.2
11								0	26	.7	3.2	8.8
12								0	19	.7	9.5	8.1
13								0	24	.7	8.8	7.6
14								0	36	.7	8.1	7.0
15								0	*46	.7	8.1	6.5
16								0	93	.7	7.8	5.9
17								1.2	88	.7	20	6.1
18								4.0	74	.7	40	*5.9
19								4.9	78	.7	35	6.3
20								5.8	88	.7	14	6.5
21								6.3	102	.7	.7	5.9
22							(*)	1.5	95	.7	.7	5.8
23								9.8	82	.7	.6	5.6
24								7.8	50	.7	5.8	5.9
25								6.5	7.4	.7	10	5.9
26								4.7	.7	.7	12	5.4
27								3.8	.7	.7	14	5.0
28								3.6	.6	.7	13	5.2
29								5.2	.6	.7	16	5.6
30								11	.6	.7	16	4.9
31								19		.7	13	
Total	0	0	0	0	0	0	0	106.6	1,071.6	22.3	263.1	228.1
Mean	0	0	0	0	0	0	0	3.44	35.7	0.72	8.49	7.60
Ac-ft	0	0	0	0	0	0	0	211	2,130	44	522	452

Calendar year 1964: Max 70 Min 0 Mean 7.34 Ac-ft 5,330

Water year 1964-65: Max 102 Min 0 Mean 4.63 Ac-ft 3,360

\* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record Oct. 1 to May 16.

## BLUE RIVER BASIN

9-466. Blue River near Dillon, Colo.

Location.--Lat 39°32'58", long 106°02'22", in NW¼NE¼ sec.7, T.6 S., R.77 W., on right bank 0.3 mile downstream from Swan River and 4½ miles south of Dillon.

Drainage area.--120 sq mi, approximately.

Records available.--October 1957 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 9,120 ft (from topographic map).

Average discharge.--8 years, 97.4 cfs (70,510 acre-ft per year), including diversion to Hoosier Pass tunnel.

Extremes.--Maximum discharge during year, 1,250 cfs June 17 (gage height, 5.38 ft), from rating curve extended above 610 cfs; minimum daily, 19 cfs Mar. 3-17, 29-31.  
1957-65: Maximum discharge, that of June 17, 1965; minimum daily, 17 cfs Mar. 21, 1961.

Remarks.--Records good. Transmountain diversion above station by Boreas Pass ditch and Hoosier Pass tunnel (see elsewhere in this report).

Rating table (gage height, in feet, and discharge,  
in cubic feet per second)  
(Stage-discharge relation affected by ice Mar. 3)

2.3	16	3.1	120
2.4	20	3.5	250
2.5	25	4.0	465
2.6	34	5.0	1,010
2.8	64	5.4	1,260

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	43	32	27	25	24	20	20	74	282	535	545	122
2	41	32	27	25	24	20	20	97	290	*545	452	115
3	40	32	27	25	24	19	20	*128	290	540	420	113
4	38	31	27	25	23	19	20	152	*302	535	*380	113
5	37	31	27	25	23	19	20	158	306	525	330	115
6	37	30	26	25	23	19	20	155	298	515	298	106
7	35	30	26	24	23	19	*20	148	294	510	278	102
8	35	31	25	24	*23	19	20	145	306	506	264	99
9	34	*31	25	25	23	19	20	130	310	506	243	97
10	35	31	*25	25	23	*19	21	115	362	478	235	93
11	38	31	26	24	22	19	21	108	488	465	224	92
12	*40	30	26	24	22	19	21	113	510	483	202	90
13	38	30	26	24	22	19	22	125	465	474	196	88
14	35	30	25	24	22	19	22	140	488	438	188	84
15	35	30	25	24	22	19	22	140	*530	406	178	81
16	38	30	25	24	22	19	22	130	680	388	168	77
17	40	30	25	24	21	19	22	*135	1,140	*366	168	77
18	37	30	25	24	21	20	22	165	1,050	388	196	*76
19	34	30	25	24	21	20	22	192	926	452	220	76
20	32	30	25	24	21	20	24	202	830	398	282	79
21	32	29	25	24	20	20	26	232	770	362	258	84
22	31	28	25	24	20	20	30	274	675	362	239	86
23	31	28	25	24	20	20	37	380	625	411	224	83
24	31	28	26	24	20	20	47	411	*620	776	210	81
25	30	28	26	24	20	20	52	318	660	635	196	81
26	30	28	25	24	20	20	53	274	645	530	171	79
27	30	28	25	24	20	20	52	254	585	452	152	76
28	30	27	26	24	20	20	48	224	560	420	140	74
29	30	27	25	24	-	19	50	210	560	366	128	74
30	30	27	25	24	-----	19	58	224	565	330	128	76
31	32	-----	25	24	-----	19	-----	243	-----	501	125	-----
Total	1,079	890	793	752	609	602	874	5,796	16,412	14,598	7,438	2,689
Mean	34.8	29.7	25.6	24.3	21.8	19.4	29.1	187	547	471	240	89.6
Ac-ft	2,140	1,770	1,570	1,490	1,210	1,190	1,730	11,500	32,550	28,950	14,750	5,330

Calendar year 1964: Max 246 Min 18 Mean 59.7 Ac-ft 43,200  
Water year 1964-65: Max 1,140 Min 19 Mean 144 Ac-ft 104,200

Peak discharge (base, 500 cfs)

\* Discharge measurement made on this day.

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-17	0600	5.38	1,250	8-1	0230	4.34	630
7-24	0900	4.77	872				



9-475. Snake River near Montezuma, Colo.

Location.--Lat 39°36'20", long 105°56'33", in NW¼ sec.19, T.5 S., R.76 W. (projected), on right bank 200 ft downstream from North Fork and 4½ miles northwest of Montezuma.

Drainage area.--58.9 sq mi.

Records available.--July 1942 to September 1946, October 1951 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 9,320 ft (from topographic map). Prior to Oct. 14, 1943, staff gage at same site and datum.

Average discharge.--18 years, 61.2 cfs (44,310 acre-ft per year).

Extremes.--Maximum discharge during year, 900 cfs June 17 (gage height, 3.60 ft); minimum daily, 7 cfs Mar. 20.  
1942-46, 1951-65: Maximum discharge, 1,250 cfs June 10, 1952 (gage height, 3.51 ft); minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Small diversions above station for irrigation and domestic use.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 9-15, June 4-10, 17-24, Aug. 2-9)

0.9	8.0	2.0	140
1.1	17	2.5	275
1.3	32	3.0	480
1.6	67	3.5	760

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	14	12	12	12	11	10	40	140	455	286	72
2	19	14	13	13	12	10	10	47	136	475	*264	70
3	18	15	13	13	12	9	9	*48	152	450	251	70
4	18	13	14	13	12	10	9	51	*168	421	224	69
5	*18	11	14	12	12	11	9	45	156	408	197	66
6	18	11	13	13	12	11	10	38	152	394	178	61
7	17	12	12	13	12	11	*10	37	165	377	156	61
8	17	12	11	12	*12	11	10	34	185	361	144	61
9	17	*10	12	11	13	10	10	32	218	342	140	56
10	18	10	*12	10	13	*9	10	30	272	338	130	54
11	18	10	12	10	12	8	9	32	292	331	120	52
12	16	10	11	10	11	8	8	34	245	349	113	52
13	16	11	11	11	12	9	*8.4	41	269	310	113	50
14	16	11	11	11	12	9	8	40	*331	289	111	48
15	16	11	11	*11	11	8	8.4	34	390	272	107	48
16	16	12	11	11	11	8	10	34	570	251	100	48
17	16	12	12	11	12	8	10	*47	755	*269	115	48
18	16	12	12	12	12	8	9.6	60	*700	286	130	*47
19	15	11	12	12	12	8	10	64	676	292	156	48
20	15	11	12	12	11	7	14	82	664	286	150	51
21	15	11	13	12	11	8	21	104	640	296	128	50
22	15	12	13	12	11	8	27	144	628	365	120	48
23	16	13	13	12	12	8	28	162	580	361	111	48
24	16	13	13	12	12	8	28	140	*553	403	104	51
25	15	12	12	12	12	8	26	115	505	416	97	48
26	14	12	12	11	12	8	22	98	450	342	91	45
27	14	12	12	11	11	8	20	84	412	300	86	42
28	14	12	13	11	11	8	23	82	*430	272	82	41
29	14	12	13	12	-	8	25	84	465	236	86	44
30	15	12	12	12	-----	9	31	104	465	230	82	41
31	15	-----	11	12	-----	10	-----	134	-----	353	74	-----
Total	503	354	378	362	330	275	443.4	2,121	11,764	10,530	4,246	1,590
Mean	16.2	11.8	12.2	11.7	11.8	8.87	14.8	68.4	392	340	137	53.0
Ac-ft	998	702	750	718	655	545	879	4,210	23,330	20,890	8,420	3,150

Calendar year 1964: Max 239 Min 5 Mean 42.9 Ac-ft 31,140  
Water year 1964-65: Max 755 Min 7 Mean 90.1 Ac-ft 65,250

Peak discharge (base, 500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-17	1900	3.60	900	7-23	2000	3.30	640
6-29	2000	3.25	570				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 19, 20, 25-28, Nov. 2, 4-17, Dec. 6-14, Apr. 14, 16. No gage-height record Nov. 18 to Dec. 5, Dec. 15 to Apr. 12 (stage-discharge relation affected by ice during most of periods).

## BLUE RIVER BASIN

9-477. Keystone Gulch near Dillon, Colo.

Location.--Lat 39°35'40", long 105°58'19", in NE¼ sec.26, T.5 S., R.77 W., on right bank 0.7 mile upstream from mouth and 4.7 miles southeast of Dillon.

Drainage area.--8.80 sq mi.

Records available.--October 1957 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 9,350 ft (from topographic map).

Average discharge.--8 years, 5.48 cfs (3,970 acre-ft per year).

Extremes.--Maximum discharge during year, 85 cfs June 17 (gage height, 2.65 ft); minimum daily, 1.6 cfs Mar. 20.

1957-65: Maximum discharge, 90 cfs June 5, 1958 (gage height, 2.75 ft), from rating curve extended above 28 cfs; minimum not determined.

Remarks.--Records good except those for periods of no gage-height record, which are poor. No known diversion above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used July 5-30, Sept. 6-19)

1.5	1.7
1.6	3.0
1.7	6.0
1.8	11
2.0	24
2.5	70

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.4	2.4	2.4	1.9	2.0	2.1	1.9	6.0	26	33	15	9.5
2	2.4	2.5	2.4	2.0	1.9	2.0	1.9	8.0	26	31	*14	9.0
3	2.4	2.6	2.4	2.1	1.9	1.8	1.8	*10	27	30	14	9.0
4	2.4	2.7	2.4	2.1	2.0	1.7	1.7	10	*26	27	13	9.0
5	2.4	2.8	2.3	2.1	2.0	1.7	1.7	9.5	26	24	13	8.5
6	2.4	*2.8	2.2	2.0	2.0	1.8	1.7	7.5	26	21	13	8.0
7	2.4	2.8	2.1	2.0	1.9	1.9	*1.7	7.5	27	19	12	7.5
8	2.4	2.7	2.0	1.9	1.9	1.9	1.8	7.5	31	19	12	7.0
9	2.4	2.6	2.0	1.8	1.9	1.9	1.8	6.5	35	18	12	7.0
10	2.4	2.5	*1.9	1.8	1.8	*1.9	1.7	6.0	39	18	12	7.0
11	2.2	2.4	1.9	1.9	1.7	1.9	1.7	6.0	41	18	12	7.0
12	*2.4	2.4	1.9	1.9	1.7	1.9	1.8	7.0	39	17	12	7.0
13	2.4	2.4	1.9	1.9	1.7	2.0	1.9	7.5	40	17	14	6.5
14	2.4	2.5	2.0	2.0	1.7	2.0	2.0	7.5	*44	16	13	6.5
15	2.4	2.6	2.0	*2.0	1.8	1.9	2.2	6.0	49	16	12	7.0
16	2.4	2.6	2.0	2.0	1.9	1.8	2.4	6.0	55	16	12	6.5
17	2.4	2.6	1.9	1.9	2.0	1.7	2.5	*8.0	60	*15	12	6.5
18	2.2	2.5	1.9	1.8	2.0	1.7	2.4	9.0	65	14	13	*6.5
19	1.8	2.3	2.0	1.8	2.0	1.7	2.7	10	65	14	15	7.0
20	2.2	2.3	2.0	1.8	2.0	1.6	3.0	13	58	15	14	7.0
21	2.4	2.4	2.1	1.8	2.1	1.7	3.6	16	52	15	12	7.0
22	2.4	2.5	2.1	1.8	2.1	1.8	*4.8	22	50	15	12	7.0
23	2.2	2.6	2.1	1.9	2.0	1.8	5.4	28	50	18	12	7.0
24	2.4	2.6	2.0	1.9	2.0	1.8	5.1	29	*51	15	11	7.0
25	2.2	2.5	2.0	1.9	2.1	1.8	3.6	25	46	15	10	7.0
26	2.5	2.4	2.0	1.8	2.2	1.8	3.3	23	45	14	10	6.5
27	2.6	2.3	2.0	1.8	2.2	1.8	3.0	22	38	13	10	6.0
28	2.6	2.3	2.1	1.9	2.2	1.8	3.3	21	*37	13	10	5.7
29	2.4	2.4	2.1	2.0	-	1.8	3.9	21	36	13	10	6.0
30	2.4	2.4	2.0	2.0	-----	1.8	5.1	25	36	13	10	5.7
31	2.4	-----	1.9	2.0	-----	1.9	-----	26	-----	16	10	-----
Total	73.3	75.4	64.0	59.5	54.7	56.7	81.4	416.5	1246	558	376	213.9
Mean	2.36	2.51	2.06	1.92	1.95	1.83	2.71	13.4	41.5	18.0	12.1	7.13
Ac-ft	145	150	127	118	108	112	161	826	2,470	1,110	746	424

Calendar year 1964: Max 16 Min 1.1 Mean 3.41 Ac-ft 2,470  
Water year 1964-65: Max 65 Min 1.6 Mean 8.97 Ac-ft 6,500

Peak discharge (base, 35 cfs).--June 17 (2230) 85 cfs (2.65 ft); July 23 (1945) 51 cfs (2.14 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 3 to Apr. 21 (stage-discharge relation affected by ice during most of period), June 16, 17, Aug. 11, 12, Aug. 23 to Sept. 11.

9-501. Tenmile Creek below North Fork, at Frisco, Colo.

Location.--Lat 39°34'35", long 106°06'30", in SW¼NE¼ sec.34, T.5 S., R.78 W., on left bank 500 ft downstream from North Fork, 800 ft downstream from bridge on U. S. Highway 6, and 0.6 mile west of Frisco.

Drainage area.--93.3 sq mi.

Records available.--October 1957 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 9,090 ft (from topographic map).

Average discharge.--8 years, 90.7 cfs (65,660 acre-ft per year).

Extremes.--Maximum discharge during year, 1,910 cfs June 16 (gage height, 6.15 ft), from rating curve extended above 750 cfs; minimum daily, 11 cfs Mar. 21.

1957-65: Maximum discharge, that of June 16, 1965; minimum daily, 7 cfs Mar. 8, 14, 1960.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Natural flow of stream affected by a few small diversions above station for irrigation and municipal use and transbasin diversion from Robinson Reservoir (capacity, 2,520 acre-ft) in Eagle River basin.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Aug. 27 to Sept. 28)

2.3	11	3.8	180
2.7	26	4.3	370
3.0	46	5.0	840
3.4	98	6.0	1,760

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	23	19	14	13	15	13	14	105	376	527	320	63
2	22	19	14	14	14	13	14	133	330	*539	308	64
3	22	19	15	14	15	12	14	*148	*381	545	320	70
4	21	19	15	14	15	12	13	162	370	521	*276	76
5	21	20	14	15	15	12	12	160	308	497	234	69
6	21	20	14	15	15	12	12	139	288	479	198	64
7	20	18	13	15	15	13	*13	145	381	455	180	58
8	21	20	14	15	*15	13	14	154	443	461	173	58
9	20	*19	14	14	15	13	14	126	503	408	160	59
10	20	17	*14	15	15	*13	15	118	610	398	150	57
11	20	16	14	15	15	12	16	120	617	386	135	*54
12	*19	14	14	15	14	12	16	126	533	420	118	57
13	21	14	13	15	14	12	*16	152	624	376	116	50
14	19	14	14	16	14	13	16	150	624	316	122	46
15	18	15	14	*16	14	13	17	120	*856	296	124	44
16	18	16	14	16	13	13	18	118	1,390	*280	112	44
17	19	16	14	15	13	12	19	160	1,480	269	114	44
18	18	16	13	16	14	12	19	*210	1,320	280	135	44
19	17	15	14	16	14	12	20	234	1,210	312	167	46
20	17	14	14	16	14	12	24	296	1,140	273	180	49
21	18	13	14	16	12	11	27	386	1,050	269	148	49
22	18	13	14	16	12	12	25	521	929	284	139	48
23	19	14	15	15	13	12	38	539	800	316	131	45
24	18	14	15	14	14	12	44	431	760	443	120	48
25	17	15	14	15	14	12	46	335	704	335	109	49
26	17	15	14	14	14	13	52	273	638	276	92	47
27	18	14	14	14	14	13	50	237	571	244	76	44
28	19	14	14	14	13	13	49	207	597	213	73	43
29	20	14	14	15	-	13	61	220	610	198	76	45
30	21	14	13	15	-----	13	82	273	552	198	76	44
31	22	-----	13	15	-----	14	-----	360	-----	381	69	-----
Total	604	480	433	463	394	387	790	6,858	20,995	11,195	4,751	1,578
Mean	19.5	16.0	14.0	14.9	14.1	12.5	26.3	221	700	361	153	52.6
Ac-ft	1,200	952	859	918	781	768	1,570	13,600	41,640	22,200	9,420	3,130

Calendar year 1964: Max 631 Min 9.0 Mean 76.6 Ac-ft 55,600  
Water year 1964-65: Max 1,480 Min 11 Mean 134 Ac-ft 97,040

Peak discharge (base, 700 cfs).--June 16 (1915) 1,910 cfs (6.15 ft); July 23 (2130) 760 cfs (4.84 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3, 5, Nov. 12 to Jan. 13, Jan. 17-26. No gage-height record Jan. 27 to Apr. 13 (stage-discharge relation affected by ice during most of period).

## BLUE RIVER BASIN

9-506. Dillon Reservoir at Dillon, Colo.

Location.--Lat 39°37'15", long 106°03'55", in NE¼ sec.13, T.5 S., R.78 W., in gatehouse at dam on Blue River, 0.8 mile upstream from Straight Creek, about 1 mile southwest of Dillon, and 3.5 miles northeast of Frisco.

Drainage area.--335 sq mi.

Records available.--September 1963 to September 1965.

Gage.--Electric tape gage read once daily. Datum of gage is at mean sea level (levels by Denver Board of Water Commissioners).

Extremes.--Maximum contents observed during year, 257,500 acre-ft Aug. 6, 7 (elevation, 9,018.05 ft); minimum observed, 45,310 acre-ft Apr. 20 (elevation, 8,904.16 ft).  
1963-65: Maximum contents observed, that of Aug. 6, 7, 1965; minimum observed since appreciable storage was attained in July 1964, that of Apr. 20, 1965.

Remarks.--Reservoir is formed by earth- and rock-fill dam. Dam completed and storage began Sept. 3, 1963, dead storage pool filled Sept. 12, 1963. Capacity, 254,000 acre-ft between elevations 8,829.00 (invert of valves in outlet to Blue River) and 9,017.00 ft (crest of spillway). Dead storage, 3,270 acre-ft. Reservoir is used to store water for transmountain diversion to South Platte River basin through Harold D. Roberts tunnel (see elsewhere in this report) for municipal use by City of Denver. Figures given herein represent usable contents.

Cooperation.--Records furnished by Denver Board of Water Commissioners.

Month-end elevation and contents, water year October 1964 to September 1965

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	8,920.97	63,860	-
Oct. 31.....	8,917.25	59,490	-4,370
Nov. 30.....	8,911.58	53,130	-6,360
Dec. 31.....	8,908.75	50,080	-3,050
Calendar year 1964.....	-	-	+37,170
Jan. 31.....	8,905.86	47,050	-3,030
Feb. 28.....	8,905.32	46,490	-560
Mar. 31.....	8,905.32	46,490	0
Apr. 30.....	8,906.05	47,240	+750
May 31.....	8,933.47	79,600	+32,360
June 30.....	8,990.52	179,900	+100,300
July 31.....	9,016.18	251,400	+71,500
Aug. 31.....	9,017.58	255,900	+4,500
Sept. 30.....	9,017.45	255,500	-400
Water year 1964-65.....	-	-	+191,640

† Elevation at 0800 on first day of following month.

9-507. Blue River below Dillon, Colo.

Location.--Lat 39°37'30", long 106°04'05", in SE¼ sec.12, T.5 S., R.78 W., on right bank half a mile downstream from Dillon dam, 0.5 mile upstream from Straight Creek, 1.1 miles northwest of Dillon, and 1.2 miles downstream from Tenmile Creek.

Drainage area.--335 sq mi.

Records available.--January 1960 to September 1965.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 8,760 ft (from topographic map). Supplementary water-stage recorder and Parshall flume on Valear ditch about 600 ft downstream from point of diversion.

Extremes.--Maximum discharge during year, 655 cfs Aug. 7 (gage height, 2.29 ft); minimum daily, 23 cfs May 18, June 10, 12-14.  
1960-65: Maximum discharge, 1,720 cfs June 17, 1960; maximum gage height, 3.60 ft June 14, 1962; no flow Sept. 4 to Nov. 19, 1963.

Remarks.--Records good. Records show combined flow of river and Valear ditch. Flow completely regulated by Dillon Reservoir (see preceding page). Natural flow of stream affected by transmountain diversions, transbasin diversions, and diversions above station for irrigation of about 400 acres of hay meadows. Valear ditch diverts water just below Dillon dam for irrigation below station. Part of natural flow of Snake River above station diverted through old power canal Sept. 1 to Nov. 20, 1963, and returned to river below this station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	246	72	72	56	79	67	55	24	24	63	301	276
2	95	76	89	63	67	63	72	24	24	63	* 350	256
3	95	76	95	63	56	58	79	* 24	24	63	165	244
4	96	76	79	63	56	58	65	24	* 24	63	* 339	236
5	90	72	63	70	65	58	65	24	24	63	481	232
6	89	70	63	76	70	53	67	24	24	64	583	224
7	74	76	63	76	70	51	60	24	24	66	649	217
8	66	81	63	70	70	* 51	56	24	24	64	637	210
9	60	* 81	63	60	70	51	56	24	24	66	631	206
10	58	87	60	65	70	58	63	24	23	64	601	* 199
11	58	92	60	72	70	63	63	24	24	64	565	199
12	* 65	98	74	72	63	63	36	24	23	64	525	192
13	74	98	76	72	58	63	* 25	24	23	64	497	181
14	76	98	65	72	58	67	25	24	23	63	481	152
15	79	98	65	65	58	70	25	24	29	62	461	127
16	81	98	53	58	60	55	25	24	37	64	446	107
17	74	89	55	58	60	58	25	24	35	65	436	107
18	70	79	60	58	60	58	25	* 23	* 35	65	456	117
19	70	74	60	56	60	55	25	24	35	65	513	135
20	70	60	60	55	60	51	25	24	37	63	595	152
21	70	53	60	58	60	51	25	24	37	62	607	167
22	70	53	74	58	60	51	24	24	37	65	589	174
23	70	60	67	58	70	55	24	24	37	63	559	177
24	70	67	89	58	76	72	24	24	34	63	519	181
25	70	74	103	72	63	84	24	24	33	64	486	181
26	70	89	81	70	56	72	24	25	33	62	441	180
27	70	103	70	63	56	65	24	24	34	64	396	180
28	70	84	87	65	63	65	24	24	* 49	65	355	180
29	70	72	106	74	-	65	24	24	68	64	323	191
30	70	72	67	76	-----	56	24	24	67	60	308	187
31	70	-----	51	79	-----	53	-----	24	-----	87	287	-----
Total	2,456	2,378	2,193	2,031	1,784	1,860	1,178	744	969	1,997	14,582	5,567
Mean	79.2	79.3	70.7	65.5	63.7	60.0	39.3	24.0	32.3	64.4	470	186
Ac-ft	4,870	4,720	4,350	4,030	3,540	3,690	2,340	1,480	1,920	3,960	28,920	11,040

Calendar year 1964: Max 436 Min 45 Mean 96.9 Ac-ft 70,330  
Water year 1964-65: Max 649 Min 23 Mean 103 Ac-ft 74,860

\* Discharge measurement made on this day.

## 9-535. Blue River above Green Mountain Reservoir, Colo.

Location.--Lat 39°49'55", long 106°13'20", in S½ sec.34, T.2 S., R.79 W., on left bank 300 ft north of old State Highway 9, just upstream from high-water line of Green Mountain Reservoir at elevation 7,950 ft, 1.3 miles downstream from Brush Creek, and 18 miles southeast of Kremmling.

Drainage area.--514 sq mi.

Records available.--October 1943 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 7,946.56 ft above mean sea level, unadjusted.

Extremes.--Maximum discharge during year, 1,060 cfs June 17 (gage height, 2.46 ft); maximum gage height recorded, 3.85 ft Dec. 13 (backwater from ice); minimum daily discharge, 66 cfs Mar. 6-9.

1943-65: Maximum discharge, 5,020 cfs June 11, 1952 (gage height, 4.93 ft); maximum gage height recorded, 6.93 ft Nov. 5, 1961 (backwater from ice); minimum daily discharge, 33 cfs Oct. 20, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Flow regulated by Dillon Reservoir since Sept. 3, 1963 (see elsewhere in this report). Natural flow of stream affected by transmountain and transbasin diversions and many small diversions for irrigation of about 4,000 acres of hay meadows above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.7	52	1.8	515
1.0	120	2.4	1,000
1.3	225		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	388	115	112	90	120	88	86	342	308	650	770	426
2	144	120	123	98	117	86	98	372	*270	754	837	414
3	141	123	144	102	*103	72	121	360	314	770	580	402
4	135	115	141	102	92	70	127	*348	330	730	698	390
5	132	115	115	100	94	67	112	319	308	738	*778	378
6	129	112	115	105	102	66	110	265	275	730	846	378
7	117	115	112	108	102	66	109	235	324	698	855	360
8	109	123	112	106	101	*66	108	225	372	730	846	348
9	101	*120	112	97	100	66	110	205	414	690	819	336
10	98	123	*100	92	98	67	112	197	463	658	810	*324
11	98	126	100	96	97	70	112	197	548	666	770	314
12	96	138	132	102	95	74	100	213	508	786	746	319
13	*106	141	128	104	85	75	*71	255	548	722	706	297
14	112	144	120	105	80	77	69	255	*608	629	714	255
15	112	144	118	102	84	80	73	217	629	580	682	235
16	112	157	116	96	86	78	82	205	778	548	643	209
17	109	138	106	88	85	75	91	235	920	*548	636	197
18	101	129	106	83	84	75	91	*280	864	629	682	213
19	98	126	107	87	83	71	101	270	855	666	802	235
20	98	126	110	88	82	74	141	308	837	574	910	265
21	98	115	114	88	81	74	168	324	828	560	846	286
22	98	115	122	89	81	74	193	360	794	541	786	286
23	98	132	128	89	83	88	221	408	770	567	746	292
24	98	135	134	90	87	112	230	348	754	730	706	286
25	96	135	140	92	90	132	213	292	738	754	658	292
26	98	126	138	108	82	140	205	260	650	650	615	292
27	98	144	122	106	74	124	178	245	580	580	567	286
28	104	157	114	100	83	113	178	213	615	548	560	286
29	109	115	124	102	-	110	209	209	*690	548	554	319
30	115	115	137	105	-----	101	260	235	714	489	482	319
31	115	-----	96	116	-----	87	-----	297	-----	615	463	-----
Total	3,663	3,839	3,698	3,036	2,551	2,618	4,079	8,494	17,606	20,078	22,113	9,239
Mean	118	128	119	97.9	91.1	84.5	136	274	587	648	713	308
Ac-ft	7,270	7,610	7,330	6,020	5,060	5,190	8,090	16,850	34,920	39,820	43,860	18,330

Calendar year 1964: Max 554 Min 64 Mean 190 Ac-ft 137,700  
 Water year 1964-65: Max 920 Min 66 Mean 277 Ac-ft 200,400

\* Discharge measurement made on this day.

Note.--No gage-height record Dec. 8-10, Dec. 31 to Jan. 13, Feb. 2 to Apr. 13 (stage-discharge relation affected by ice during most of periods). Stage-discharge relation affected by ice Dec. 7, 11-30, Jan. 14 to Feb. 1.

9-570. Green Mountain Reservoir near Kremmling, Colo.

Location.--Lat 39°52'45", long 106°19'45", in NE¼ sec.15, T.2 S., R.80 W., in hoist house at right end of Green Mountain Dam on Blue River, 0.6 mile upstream from Elliott Creek and 13 miles southeast of Kremmling.

Drainage area.--599 sq mi (includes 15.4 sq mi of Elliott Creek above diversion for Elliott Creek feeder canal).

Records available.--November 1942 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 7,800 ft above mean sea level (Bureau of Reclamation bench mark). Gage heights have been reduced to elevations above mean sea level. Prior to Sept. 25, 1951, mercury gage in powerhouse at same datum. Sept. 25, 1951, to Oct. 1, 1953, electric-tape gage at present site and datum.

Extremes.--Maximum contents observed during year, 146,300 acre-ft July 19 (elevation, 7,949.71 ft); minimum, 42,730 acre-ft Apr. 19 (elevation, 7,880.03 ft).

1942-65: Maximum contents observed, 148,900 acre-ft July 10, 1947 (elevation, 7,950.95 ft); minimum since appreciable storage was attained, 388 acre-ft Jan. 12, 1963 (elevation, 7,801.70 ft).

Remarks.--Reservoir is formed by an earth- and rock-fill dam. Dam completed and storage began in November 1942. Capacity of reservoir, 146,900 acre-ft between elevations 7,800 (sill of outlet gate) and 7,950 ft (top of radial spillway gates). Dead storage, 7,760 acre-ft. Reservoir is used for power development and storage for replacement of water diverted to South Platte River basin during late irrigation season. Figures given herein represent usable contents.

Cooperation.--Records furnished by Bureau of Reclamation.

Month-end elevation and contents, water year October 1964 to September 1965

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	7,934.30	115,800	-
Oct. 31.....	7,922.27	95,180	-20,620
Nov. 30.....	7,919.62	91,020	-4,160
Dec. 31.....	7,914.88	83,920	-7,100
Calendar year 1964.....	-	-	+21,260
Jan. 31.....	7,909.69	76,570	-7,350
Feb. 28.....	7,904.63	69,830	-6,740
Mar. 31.....	7,897.55	61,080	-8,750
Apr. 30.....	7,884.25	46,750	-14,330
May 31.....	7,903.10	67,880	+21,130
June 30.....	7,937.86	122,500	+54,620
July 31.....	7,947.02	140,600	+18,100
Aug. 31.....	7,948.42	143,600	+3,000
Sept. 30.....	7,947.14	140,900	-2,700
Water year 1964-65.....	-	-	+25,100

† Elevation at 2400.

## 9-575. Blue River below Green Mountain Reservoir, Colo.

Location.--Lat 39°52'50", long 106°20'00", in NE¼ sec.15, T.2 S., R.80 W., on left bank 0.3 mile upstream from Elliott Creek, 0.3 mile downstream from Green Mountain Dam, and 13 miles southeast of Kremmling.

Drainage area.--599 sq mi (includes 15.4 sq mi of Elliott Creek above diversion for Elliott Creek feeder canal).

Records available.--October 1937 to September 1965. Published as Blue River below Green Mountain Reservoir, near Kremmling, 1938-43.

Gage.--Water-stage recorder (digital). Datum of gage is 7,682.66 ft above mean sea level (Bureau of Reclamation bench mark). Prior to Oct. 1, 1951, at site 3.7 miles downstream at different datum.

Extremes.--Maximum discharge during year, 1,640 cfs July 20 (gage height, 7.07 ft); minimum daily, 61 cfs Apr. 27, Apr. 29 to May 1. 1937-65: Maximum discharge, 4,000 cfs June 4, 1938 (gage height, 5.93 ft, site and datum then in use), from rating curve extended above 3,000 cfs; minimum daily (prior to construction of Green Mountain Reservoir), 80 cfs Feb. 18-24, 1938, Feb. 18, 19 1940; no flow at times in 1943.

Remarks.--Records good. Flow regulated by Green Mountain Reservoir (see preceding page). Diversions for irrigation of about 5,000 acres above station. Transmountain diversions above station (see elsewhere in this report).

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	584	210	216	253	239	233	416	61	77	68	1,380	576
2	584	212	220	253	239	234	413	63	*77	69	1,390	485
3	668	214	216	251	*236	233	412	63	74	69	1,390	488
4	685	212	216	253	237	230	413	*65	72	70	1,300	493
5	675	210	216	253	238	227	412	67	72	69	*901	484
6	671	210	216	253	236	228	412	68	72	70	878	489
7	678	210	208	253	236	229	505	67	72	69	748	492
8	678	208	296	253	238	*228	547	67	71	69	753	490
9	633	210	299	253	234	230	548	66	72	70	743	490
10	636	*212	296	253	234	231	549	65	72	222	663	*441
11	643	212	*274	253	235	229	550	64	77	300	632	372
12	633	212	255	253	235	233	984	62	74	446	616	373
13	*643	210	249	*257	235	235	*919	66	74	1,020	616	370
14	643	210	251	249	236	233	959	69	76	1,290	614	371
15	496	210	253	251	235	232	986	83	72	891	613	372
16	493	210	253	249	235	235	1,000	81	73	646	612	372
17	490	246	253	246	234	236	463	80	*72	891	612	373
18	490	218	251	244	236	233	192	80	72	996	714	373
19	496	218	251	244	238	239	335	79	73	1,110	1,070	373
20	317	222	253	244	232	236	206	*79	74	1,180	1,410	374
21	317	218	251	242	232	237	207	80	71	993	1,090	373
22	319	220	253	242	233	236	112	79	72	995	1,040	377
23	308	218	253	242	233	238	63	80	71	996	1,190	370
24	308	216	253	239	235	236	63	80	71	993	987	370
25	236	222	255	237	234	237	62	79	71	1,300	893	372
26	220	218	253	239	232	237	63	80	72	1,400	899	371
27	212	218	251	240	232	236	61	79	71	1,370	898	371
28	210	220	253	241	232	236	62	77	71	1,370	579	371
29	210	220	251	239	-----	284	61	77	*68	1,340	573	362
30	208	220	253	240	-----	383	61	77	68	1,380	570	371
31	208	-----	253	238	-----	417	-----	77	-----	1,390	580	-----
TOTAL	14,592	6,466	7,721	7,657	6,581	7,621	12,036	2,260	2,174	23,142	26,954	12,359
MEAN	471	216	249	247	235	246	401	72.9	72.5	747	869	412
AC-FT	28,940	12,830	15,310	15,190	13,050	15,120	23,870	4,480	4,310	45,900	53,460	24,510
CALENDAR YEAR 1964	MAX	685	MIN	76	MEAN	223	AC-FT	161,600				
WATER YEAR 1964-65	MAX	1,410	MIN	61	MEAN	355	AC-FT	257,000				

\* Discharge measurement made on this day.



9-580. Colorado River near Kremmling, Colo.

Location.--Lat 40°02'12", long 106°26'22", in NE¼SW¼ sec.23, T.1 N., R.81 W., on right bank at upstream end of Gore Canyon, 3 miles southwest of Kremmling and 3.8 miles downstream from Blue River.

Drainage area.--2,360 sq mi, approximately.

Records available.--July 1904 to September 1918 (published as Grand River near Kremmling), October 1961 to September 1965.

Gage.--Water-stage recorder (digital). Altitude of gage is 7,320 ft (from topographic map). Prior to July 28, 1910, wire-weight, chain, and staff gages and July 28, 1910, to Sept. 30, 1918, water-stage recorder supplemented in winter by staff gage, all within a few hundred feet, at datum of 7,301.32 ft above mean sea level (Denver Northwestern and Pacific Railway bench mark) except prior to Oct. 18, 1906, at datum 0.80 ft lower.

Extremes.--Maximum discharge during year, 3,100 cfs May 24 (gage height, 9.03 ft); minimum daily, 311 cfs Dec. 7.

1904-18, 1961-65: Maximum discharge observed, 21,500 cfs June 7, 1912 (gage height, 21.8 ft, datum then in use), from rating curve extended above 14,000 cfs; minimum observed, 166 cfs Dec. 19, 1907.

Remarks.--Records good except those for periods of ice effect, which are fair. Natural flow of stream affected by transmountain diversions, storage reservoirs, diversions for irrigation of about 40,000 acres above station, and return flow from irrigated areas.

Revisions.--Revised figures of discharge, in cubic feet per second, for water year 1964, superseding those previously published, are given herewith:

1964	1964-Con.	1964-Con.	1964-Con.
Sept. 1..... 709	Sept. 9..... 696	Sept. 17..... 880	Sept. 24..... 811
2..... 686	10..... 702	18..... 876	25..... 811
3..... 729	11..... 699	19..... 994	26..... 807
4..... 835	12..... 869	20..... 922	27..... 804
5..... 824	13..... 876	21..... 910	28..... 807
6..... 821	14..... 872	22..... 679	29..... 845
7..... 821	15..... 876	23..... 835	30..... 858
8..... 790	16..... 890		

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
September 1964.....	24,534	994	679	818	48,660
Water year 1963-64.....	-	1,580	250	568	412,120

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	845	398	403	425	390	376	617	1,210	1,630	811	2,700	946
2	845	393	403	426	390	395	643	1,530	*1,690	835	2,420	848
3	906	393	350	390	400	364	689	1,720	1,660	824	2,290	820
4	845	393	352	430	400	366	712	1,690	1,660	790	2,290	852
5	859	383	341	430	395	370	699	*1,780	1,740	763	*1,830	862
6	797	383	323	430	400	370	683	1,730	1,650	739	1,730	887
7	835	380	311	439	393	370	767	1,440	1,560	716	1,560	869
8	831	385	400	437	393	370	910	1,310	1,730	773	1,500	852
9	841	393	450	448	390	370	1,030	1,240	1,750	845	1,400	*835
10	777	*395	480	439	380	370	1,090	1,180	1,960	910	1,450	780
11	801	400	*470	426	380	370	1,010	1,100	2,190	1,010	1,200	703
12	801	393	420	426	370	376	1,140	1,020	2,390	1,060	1,110	699
13	*811	413	378	410	370	376	1,290	1,170	2,440	*1,620	1,140	693
14	814	423	430	*413	360	373	*1,280	1,290	2,640	1,960	1,090	666
15	663	418	450	418	390	371	1,330	1,320	2,430	1,750	1,070	653
16	743	398	430	413	380	371	1,450	1,200	2,340	1,310	1,060	666
17	683	429	418	400	390	376	1,260	1,310	*2,540	1,350	1,050	660
18	640	462	410	410	400	376	866	1,510	2,610	1,610	1,240	696
19	646	410	405	415	400	383	743	1,650	2,490	1,770	1,530	719
20	575	398	390	431	400	380	873	1,790	2,200	2,020	2,030	753
21	438	383	405	426	400	376	1,120	*1,990	1,970	1,770	1,880	794
22	468	366	423	420	400	373	1,210	2,160	1,790	1,780	1,430	773
23	465	371	464	410	395	380	1,140	2,510	1,540	1,640	1,640	756
24	468	373	467	400	410	380	1,200	2,280	1,390	2,080	1,570	746
25	450	406	453	400	393	383	1,070	2,840	1,400	2,550	1,280	739
26	405	413	429	396	360	376	974	2,430	1,760	2,700	1,300	760
27	386	385	439	398	360	380	801	1,970	1,650	2,490	1,260	743
28	360	408	431	395	376	393	696	1,650	1,450	2,430	1,080	736
29	385	408	413	410	-----	403	777	1,430	*1,070	2,320	946	767
30	388	408	403	385	-----	509	946	1,370	848	2,320	962	807
31	395	-----	410	385	-----	596	-----	1,460	-----	2,550	970	-----
TOTAL	20,290	11,963	12,751	12,892	10,925	12,024	29,016	51,050	56,208	48,296	46,024	23,088
MEAN	655	399	411	416	390	386	967	1,647	1,876	1,558	1,435	770
AC-FT	40,240	23,730	25,290	25,570	21,670	23,850	57,550	101,300	111,600	95,790	91,290	45,790

CALENDAR YEAR 1964 MAX 1,580 MIN 260 MEAN 577 AC-FT 89,260  
 WATER YEAR 1964-65 MAX 2,980 MIN 311 MEAN 917 AC-FT 663,700

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 8-12, 14-16, 20, Jan. 4-6, 23, 24, Feb. 2, 3, 10-22, 26, 27, Mar. 5-11.

## PINEY RIVER BASIN

9-585. Piney River below Piney Lake, near Minturn, Colo.

Location.--Lat 39°42'25", long 106°25'40", in sec.14, T.4 S., R.81 W., on left bank 1½ miles upstream from Dickson Creek, 2 miles downstream from Piney Lake, and 8½ miles north of Minturn.

Drainage area.--13.0 sq mi.

Records available.--October 1947 to September 1954, October 1963 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 9,145.25 ft above mean sea level (levels by Bureau of Reclamation). Prior to October 1963, water-stage recorder at site 15 ft upstream at same datum.

Average discharge.--9 years, 25.3 cfs (18,320 acre-ft per year).

Extremes.--Maximum discharge during year, 305 cfs June 17 (gage height, 5.30 ft); minimum not determined.  
1947-54, 1963-65: Maximum discharge, 396 cfs June 11, 1952 (gage height, 5.47 ft); minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

3.1	1.0	3.6	22
3.2	2.5	4.0	60
3.3	5.5	4.7	167
3.5	15	5.2	280

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 4.6	2.0					2.0	37	77	134	113	12
2	4.0	2.0					2.2	54	69	136	73	* 12
3	3.1	2.0					2.2	59	76	167	73	12
4	2.8	2.0					2.2	64	80	142	* 72	12
5	2.8	1.8					2.2	61	66	152	57	12
6	2.5	1.6					2.0	49	60	162	49	14
7	2.4	1.4					2.0	44	80	155	43	13
8	2.4	1.4					2.2	37	100	164	40	11
9	2.4	1.4					2.4	31	129	137	35	10
10	2.4	* 1.4					2.2	27	158	145	34	9.6
11	2.4	1.6				1.2	2.2	29	181	142	32	9.1
12	2.2	1.6					2.0	34	153	164	29	10
13	2.2	1.8					2.0	38	147	133	29	10
14	2.0	1.6					2.0	35	162	139	30	8.6
15	2.0	1.4					2.4	30	178	121	28	8.2
16	2.0	1.6					4.0	30	205	110	24	7.3
17	2.0	1.8					4.2	45	258	104	24	7.3
18	2.2	1.6					4.4	56	* 255	116	36	8.2
19	1.9	1.4					4.8	61	230	129	65	10
20	1.9	1.2					6	84	212	102	76	12
21	1.9	1.2					9	100	205	* 104	52	12
22	1.9	1.2					12	128	181	100	38	10
23	1.9	1.4					14	128	160	100	32	10
24	1.9	1.6					15	108	153	150	28	12
25	2.0	1.8					13	69	155	153	24	16
26	2.0	1.6				2.0	14	53	142	113	21	20
27	2.0	1.4					13	44	116	88	18	22
28	1.9	1.4					* 15	* 38	132	88	16	22
29	1.9	1.6					19	40	169	79	15	27
30	2.2	1.8					22	51	165	69	14	24
31	2.2	---					---	68	---	99	14	---
Total	72.0	47.6	49.6	43.4	39.2	46.0	201.6	1,732	4,454	3,947	1,234	3,833
Mean	2.32	1.59	1.6	1.4	1.4	1.5	6.72	55.9	148	127	39.8	12.8
Ac-ft	143	94	98	86	78	91	400	3,440	8,830	7,830	2,450	760

Calendar year 1964: Max 153 Min - Mean 19.5 Ac-ft 14,190  
Water year 1964-65: Max 258 Min - Mean 33.6 Ac-ft 24,300

Peak discharge (base, 150 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-11	0600	4.90	205	7-13	0400	5.00	235
6-17	0600	5.30	305	7-24	0630	4.73	178
6-30	0430	4.89	203	7-31	2330	4.65	165

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4 to Dec. 5. No gage-height record Dec. 6 to Apr. 28 (stage-discharge relation affected by ice during most of period).

9-586. Dickson Creek near Minturn, Colo.

Location.--Lat 39°42'15", long 106°27'20", on right bank 0.5 mile upstream from Freeman Creek, 1.0 mile upstream from mouth, and 8 miles north of Minturn, Eagle County.

Drainage area.--3.41 sq mi.

Records available.--October 1964 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 9,250 ft (from topographic map).

Extremes.--Maximum discharge during year, 41 cfs June 13 (gage height, 3.13 ft); minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No regulation or diversion above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.2	0.5	2.7	15
2.3	1.6	2.9	26
2.4	3.5	3.1	39
2.5	6.7		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.2	1.3						6.1	16	13	4.5	2.4
2	1.0	1.2						6.7	18	12	3.5	2.4
3	1.2	1.2						7.1	20	11	4.1	2.7
4	1.2	1.2						7.5	21	11	3.8	2.7
5	1.2	* 1.1						6.1	19	10	* 4.1	2.9
6	1.2	1.0						4.8	20	9.8	3.5	2.6
7	1.2	1.0						5.1	24	10	3.1	* 2.4
8	* 1.2	1.0					1.4	4.8	26	11	2.9	2.2
9	1.3	1.2						3.3	29	9.8	2.9	1.6
10	1.3	1.2						2.9	32	8.6	2.7	1.6
11	1.3	1.0				0.6		3.3	33	8.6	2.7	2.0
12	1.4	1.0						4.8	34	9.4	2.9	2.2
13	1.3	1.2						5.1	37	8.3	2.9	1.8
14	1.3	1.4						3.5	36	7.1	2.9	1.8
15	1.4	1.4						2.9	36	6.4	2.9	2.0
16	1.4	1.4	0.8	0.6	0.6			3.5	36	6.4	2.7	2.2
17	1.4	1.2						7.1	36	6.1	2.9	2.2
18	1.4	1.0						8.6	* 34	6.4	5.1	2.9
19	1.4	.9						11	31	6.1	4.8	3.1
20	1.4	.8						14	28	5.7	4.5	3.1
21	1.4	.8						18	26	5.4	3.3	2.9
22	1.4	.8						21	* 24	* 5.1	2.9	2.9
23	1.4	.9					2.0	22	22	5.1	3.1	3.3
24	1.4	1.0						19	22	5.1	2.9	3.1
25	1.4	1.2						16	21	5.7	2.6	2.7
26	b 1.2	1.2						13	19	4.5	2.4	2.7
27	b 1.1	1.0						11	17	4.1	2.2	2.6
28	b 1.1	.9						* 10	16	3.5	2.4	2.7
29	1.2	1.0						9.8	15	3.3	2.6	3.5
30	1.0	.9						12	14	3.8	2.6	2.7
31	1.2							15		6.4	2.4	
Total	39.5	32.4	24.8	18.6	16.8	23.0	53.1	285.0	762	228.7	98.8	75.9
Mean	1.27	1.08	0.8	0.6	0.6	0.7	1.77	9.19	25.4	7.38	3.19	2.53
Ac-ft	78	64	49	37	33	46	105	565	1,510	454	196	151

Calendar year 1964: Max - Min - Mean - Ac-ft -  
 Water year 1964-65: Max 37 Min - Mean 4.54 Ac-ft 3,290

Peak discharge (base, 25 cfs).--May 22 (1800) 27 cfs (2.91 ft); June 13 (0230) 41 cfs (3.13 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 5 to Apr. 29 (stage-discharge relation affected by ice during part of period).

## PINEY RIVER BASIN

9-587. Freeman Creek near Minturn, Colo.

Location.--Lat 39°41'50", long 106°26'40", on right bank 0.9 mile upstream from mouth and 7½ miles north of Minturn, Eagle County.

Drainage area.--2.94 sq mi.

Records available.--October 1964 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 9,360 ft (from topographic map).

Extremes.--Maximum discharge during year, 29 cfs June 13 (gage height, 2.56 ft); no flow for many days.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No regulation or diversion above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

1.2	0	2.0	6.8
1.3	.1	2.1	8.2
1.4	.5	2.3	14
1.6	2.0	2.5	24
1.8	4.2		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	0.1					0.1	2.0	16	3.5	1.8	0.3
2	.1	.1					.1	2.6	15	3.0	1.4	.3
3	.1	.1					.1	3.6	15	2.7	1.8	.5
4	.1	.1					.1	4.4	14	2.3	* 1.6	.5
5	.1	* .1					.1	4.6	13	2.0	1.8	.7
6	.1	.1					.1	4.4	14	1.9	1.8	.8
7	.1	.1					.2	4.6	16	2.0	1.2	* .5
8	* .1	.1					.2	4.8	17	3.4	1.1	.4
9	.1	.1					.2	5.0	18	2.6	1.0	.3
10	.1	0					.2	4.6	19	1.9	.9	.3
11	.1	0					.2	5.4	19	1.8	.9	.4
12	.1	0					.2	6.9	20	2.6	.9	.5
13	.1	0					.2	6.9	22	2.1	.9	.3
14	.1	0					.2	6.3	18	1.5	.8	.3
15	.1	0					.3	5.4	18	1.4	.8	.3
16	.1	0					.3	5.8	17	1.3	.7	.3
17	.1	0					.3	10	16	1.3	.6	.5
18	.1	0					.3	12	* 14	1.4	1.4	.8
19	.1	0					.4	13	13	1.4	1.8	1.0
20	.1	0					.6	14	11	1.3	2.0	1.0
21	.1	0					1.0	16	9.3	1.2	1.1	.8
22	.1	0					1.2	21	* 7.9	* 1.2	.8	.8
23	.1	0					1.4	22	7.4	2.6	.7	1.0
24	.1	0					1.4	19	6.9	2.8	.6	1.0
25	.1	0					1.0	13	6.8	2.3	.5	.7
26	.1	0					.8	9.9	6.0	1.7	.4	.5
27	.1	0					.6	7.9	5.1	1.4	.4	.5
28	.1	0					* .4	* 7.9	4.5	1.3	.3	.6
29	.1	0					.6	9.6	3.8	1.0	.4	1.1
30	.1	0					1.0	14	3.6	1.1	.5	.9
31	.1	-----					-----	16	-----	3.1	.4	-----
Total	3.1	0.9	0	0	0	3.1	13.8	282.6	386.3	61.1	31.3	17.9
Mean	0.10	0.03	0	0	0	0.1	0.46	9.12	12.9	1.97	1.01	0.60
Ac-ft	6.1	1.8	0	0	0	6.1	27	561	766	121	62	36

Calendar year 1964: Max - Min - Mean - Ac-ft -  
 Water year 1964-65: Max 22 Min 0 Mean 2.19 Ac-ft 1,590

Peak discharge (base, 25 cfs).--May 23 (1400) 28 cfs (2.53 ft); June 13 (0200) 29 cfs (2.56 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-7, Nov. 17 to Apr. 28, Sept. 14-30. Stage-discharge relation affected by ice Nov. 12 to May 8, May 20.

9-588. East Meadow Creek near Minturn, Colo.

Location.--Lat 39°43'50", long 106°25'40", on left bank 1½ miles upstream from mouth and 10 miles north of Minturn, Eagle County.Drainage area.--3.61 sq mi.Records available.--October 1964 to September 1965.Gage.--Water-stage recorder. Altitude of gage is 9,420 ft (from topographic map).Extremes.--Maximum discharge during year, 58 cfs June 17 or 18 (gage height, 1.85 ft, from recorded range in stage); minimum not determined.Remarks.--Records good except those for period of no gage-height record, which are poor. No regulation or diversion above station.Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

0.8	0.8
.9	1.4
1.0	2.6
1.1	4.7
1.2	8.0
1.3	13
1.6	35

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 1.1									29	1.2	2.8
2	1.1									29	8.5	* 3.0
3	1.0									30	9.0	3.4
4	1.0									29	* 8.5	3.6
5	1.0									29	7.7	3.9
6	1.0							9	17	27	7.0	3.6
7	1.0									27	6.0	2.8
8	.9									28	5.7	2.6
9	1.0									25	5.4	2.5
10	1.0	(*)								23	4.7	2.4
11	.9						0.5			21	4.5	2.4
12	1.0									24	4.5	2.6
13	1.0									21	4.7	2.4
14	1.0									18	4.7	2.1
15	1.0									16	4.3	2.0
16	1.0	0.6	0.5	0.5	0.4	0.4		8	40	16	3.9	2.0
17	1.0									14	5.4	1.9
18	.9									12	10	2.4
19	1.2									12	10	2.8
20	1.1									12	9.5	2.8
21	1.1									*10	6.4	2.4
22	1.1									9.0	5.0	2.4
23	.8									12	5.0	2.5
24	.7									17	4.5	3.2
25	.7									15	4.1	3.4
26	.7						2.5			12	3.9	3.6
27	.7							15		10	3.7	3.0
28	.8							(*)		8.5	3.4	3.0
29	.9									7.3	3.2	2.8
30	.8									32	3.2	3.0
31	.7									14	3.0	
Total	29.2	18.0	15.5	15.5	11.2	12.4	35.0	335	872	564.5	181.4	83.3
Mean	0.94	0.6	0.5	0.5	0.4	0.4	1.2	11	29.1	18.2	5.85	2.78
Ac-ft	58	36	31	31	22	25	69	664	1,730	1,120	360	165

Calendar year 1964: Max - Min - Mean - Ac-ft -  
 Water year 1964-65: Max - Min - Mean 5.95 Ac-ft 4,310

Peak discharge (base, 40 cfs).--June 17 or 18 (time unknown) 58 cfs (1.85 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 24 to June 29 (stage-discharge relation affected by ice during part of period).

## PINEY RIVER BASIN

9-595. Piney River near State Bridge, Colo.

Location.--Lat 39°48', long 106°35', in sec.16, T.3 S., R.82 W., on left bank at downstream side of private bridge at Perry Olsen Ranch just downstream from Rock Creek, 6 miles southeast of State Bridge.

Drainage area.--82.6 sq mi.

Records available.--May 1944 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 7,272.35 ft above mean sea level, unadjusted. Prior to July 29, 1944, staff gage and July 29, 1944, to Oct. 24, 1947, water-stage recorder, at datum 2.38 ft higher.

Average discharge.--21 years, 74.1 cfs (53,650 acre-ft per year).

Extremes.--Maximum discharge during year, 826 cfs June 17 (gage height, 5.14 ft); minimum daily, 7.0 cfs Oct. 22, 25, 28, 29, Nov. 4, 1944-65: Maximum discharge, 1,110 cfs June 8, 1952 (gage height, 5.61 ft); minimum daily, 1.9 cfs Sept. 1, 18, 19, 1954.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for irrigation of about 400 acres of hay meadows above and below station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1 to Nov. 8)

2.2	5.5	3.3	89
2.3	8.0	3.6	150
2.5	16	4.0	260
2.7	26	4.6	510
3.0	48	5.1	790

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	7.2	(*)				16	177	392	323	174	32
2	12	7.2					18	222	370	320	122	33
3	12	7.5			(*)		18	231	398	346	124	34
4	11	7.0				(*)	17	234	406	306	122	36
5	11	b 10		(*)			16	222	370	306	105	38
6	11	b 11					16	194	378	306	* 94	42
7	* 10	b 12					16	172	* 485	298	82	36
8	8.0	b 13					16	172	550	312	74	34
9	8.0	* 13					18	139	595	274	66	31
10	8.0	13					17	124	670	267	61	* 30
11	8.0	13				12	16	122	670	257	58	29
12	7.8	13					15	148	700	284	56	33
13	7.8	13					15	177	760	* 302	57	30
14	7.8	13					15	177	748	238	61	27
15	7.5	13					17	148	730	208	54	26
16	7.5	13	14	13	13		20	148	730	195	49	25
17	7.8	14					22	* 200	754	184	48	24
18	7.8	13					22	250	706	184	77	30
19	7.2	12					24	274	664	203	120	37
20	7.5	12					36	362	610	172	135	42
21	7.2	12					51	420	585	167	94	39
22	7.0	11					62	525	525	162	69	38
23	7.5	12					77	560	465	157	59	40
24	7.8	13					77	455	455	214	54	43
25	7.0	15					62	346	* 450	225	49	49
26	7.2	14				16	69	278	398	179	45	50
27	7.5	13					64	238	346	146	41	49
28	7.0	13					62	220	346	141	39	51
29	7.0	14					86	234	366	126	39	68
30	7.5	15					124	278	366	118	38	62
31	8.0	-----				(*)	-----	342	-----	157	36	-----
Total	262.4	361.9	434	403	364	416	1,104	7,779	15,978	7,077	2,302	1,138
Mean	8.46	12.1	14	13	13	13	36.8	251	533	228	74.3	37.9
Ac-ft	520	718	861	799	722	825	2,190	15,430	31,690	14,040	4,570	2,260

Calendar year 1964: Max 490 Min 6.8 Mean 54.2 Ac-ft 39,360  
Water year 1964-65: Max 760 Min 7.0 Mean 103 Ac-ft 74,620

Peak discharge (base, 520 cfs).--May 22 (2400) 610 cfs (4.82 ft); June 17 (0445) 826 cfs (5.14 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 9 to Mar. 31 (stage-discharge relation affected by ice during most of period).

9-605. Rock Creek near Toponas, Colo.

Location.--Lat 40°02'28", long 106°39'19", in NW¼ sec.24, T.1 N., R.83 W., on right bank 0.1 mile upstream from Horse Creek, three-quarters of a mile downstream from Shoe and Stocking Creek, and 8 miles east of Toponas.

Drainage area.--48 sq mi, approximately.

Records available.--October 1952 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 8,544 ft (from topographic map).

Average discharge.--13 years, 31.9 cfs (23,090 acre-ft per year).

Extremes.--Maximum discharge during year, 419 cfs June 13 (gage height, 4.45 ft), from rating curve extended above 196 cfs; minimum not determined.

1952-65: Maximum discharge, 482 cfs May 12, 1962 (gage height, 4.80 ft); maximum gage height, 5.49 ft Apr. 18, 1962 (backwater from ice); minimum daily discharge, 2.2 cfs Aug. 30, 31, Sept. 2, 1954.

Remarks.--Records good except those for period of ice effect, which are poor. No regulation or diversion above station.

Rating tables, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 4

May 5 to Sept. 30

1.9	5.5	1.9	7.0	2.6	72
2.0	9.0	2.0	11	3.0	130
		2.1	17	4.0	324
		2.3	36		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.6	8.0					9.5	110	195	47	34	9.8
2	6.2	8.3					10	160	192	45	* 24	9.8
3	6.2	* 8.3					10	170	197	39	27	9.8
4	6.2	6.2					9.5	170	199	36	27	11
5	6.2	6.9					9.5	160	194	33	23	13
6	6.6	7.2					9.5	127	195	30	16	21
7	* 6.6	7.6					9	106	218	29	14	12
8	6.6	8.3					9	95	* 224	31	13	11
9	6.6	6.9					10	82	226	33	12	11
10	6.6	6.9					11	81	272	33	12	9.8
11	7.2	7.2				6.5	10	85	256	26	12	9.0
12	6.9	7					9	100	256	* 32	16	9.4
13	6.9	7					8.5	122	324	38	16	9.0
14	6.9	7					9	114	246	24	13	8.6
15	6.9	7					9.5	102	216	21	12	8.6
16	6.6	7	7.5	7	7		11	117	201	20	12	9.0
17	6.9	7					12	156	184	19	12	9.8
18	6.6	7.5					13	169	169	24	18	13
19	5.8	7					14	178	151	42	29	24
20	6.6	6.5					16	* 195	135	28	30	26
21	6.9	6.5					20	226	122	27	15	19
22	7.2	6.5					26	264	* 110	22	14	20
23	7.6	6					* 36	276	98	23	12	24
24	8.3	6.5					50	246	91	25	13	32
25	8.0	7					46	209	86	35	11	35
26	7.2	7.5				9	42	205	78	23	9.8	26
27	7.2	7.5					42	169	69	19	9.0	18
28	7.2	7.5					44	138	63	16	8.6	16
29	7.2	7.5					60	135	55	15	9.8	25
30	7.6	7.5					80	154	51	17	* 15	22
31	9.0							178		57	12	
Total	215.1	214.8	232.5	217	196	229.0	655.0	4,799	5,073	909	501.2	481.6
Mean	6.94	7.16	7.5	7	7	7.4	21.8	155	169	29.3	16.2	16.1
Ac-ft	427	426	461	430	389	454	1,300	9,520	10,060	1,800	994	955

Calendar year 1964: Max 193 Min - Mean 23.9 Ac-ft 17,360

Water year 1964-65: Max 324 Min - Mean 37.6 Ac-ft 27,220

Peak discharge (base, 200 cfs).--May 22 (2400) 316 cfs (3.96 ft); June 13 (0900) 419 cfs (4.45 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 12 to May 5 (no gage-height record Nov. 13 to Apr. 22).

## BIG ALKALI CREEK BASIN

9-608. Big Alkali Creek near Burns, Colo.

Location.--Lat 39°51', long 106°48', in NE¼ sec.28, T.2 S., R.84 W., on right bank half a mile upstream from Catamount Creek and 5 miles southeast of Burns.

Drainage area.--16 sq mi, approximately.

Records available.--October 1958 to September 1965 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 7,200 ft (from topographic map).

Average discharge.--7 years, 0.85 cfs (615 acre-ft per year).

Extremes.--Maximum discharge during year, 132 cfs Aug. 3 (gage height, 3.72 ft), from rating curve extended above 1 cfs as explained below; no flow for many days.

1958-65: Maximum discharge, 715 cfs Aug. 2, 1959 (gage height, 7.00 ft, from floodmarks), from rating curve extended above 3 cfs on basis of slope-area measurement of peak flow; no flow for many days in most years.

Remarks.--Records fair, except those for periods of ice effect or no gage-height record, which are poor. Water is stored in Hurt Reservoir (capacity, about 100 acre-ft) for use in Catamount Creek drainage. One small diversion above station for irrigation.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	0.1	(*)		(*)	* 0.1	b 2.5	2.3	4.6	1.5	0.3	0.2
2	.1	*.1				.1	2.3	2.5	4.6	1.4	*.3	.3
3	.1	.1				.1	1.7	2.2	4.9	1.4	1.0	.3
4	.1	.1		(*)		.1	.9	2.2	5.1	1.4	.4	.2
5	0	.1				.1	.5	1.6	5.2	1.3	.4	2.0
6	* 0	.1				.1	.7	* 1.4	5.5	1.2	.3	.4
7	0	.1				.1	.7	1.4	* 5.6	1.2	.3	.3
8	0	.1				.1	.7	1.5	5.6	1.3	.3	.3
9	.1	.1				.1	.7	1.4	5.5	1.0	.3	.3
10	.1	.1				.1	.5	1.4	4.5	.9	.3	.3
11	.1	.1				.1	.4	1.3	4.0	.8	.3	.3
12	.1	.1				.1	.4	1.5	4.5	*.9	.3	.3
13	.1	.1				.1	.4	1.8	4.5	1.0	.2	.2
14	.1	.1				.1	.4	2.1	4.2	1.0	3.5	.2
15	.1	.1				.2	.6	1.9	3.9	1.0	.4	.2
16	.1	.1	0.1	0.1	0.1	.3	.6	1.9	3.6	.9	.3	.2
17	.1	.1				.3	.5	2.1	3.4	.9	.4	.2
18	.1	.1				.4	1.0	2.2	3.3	1.7	.3	.9
19	.1	.1				.4	* 1.6	2.3	3.2	1.2	.3	1.2
20	.1	b .1				.5	1.8	* 3.1	2.9	1.0	.3	.6
21	.1	.1				1.0	1.8	3.3	2.8	.9	.3	.9
22	.1	.1				2.0	1.8	3.4	* 2.5	1.7	.3	1.0
23	.1	.1				2.4	1.8	3.9	2.2	3.1	.3	.8
24	.1	.1				2.4	1.8	3.4	2.1	1.7	.3	.7
25	.1	.1				2.0	1.6	3.6	2.0	1.6	.2	.6
26	.1	.1				2.2	1.6	3.6	2.1	1.0	.2	.6
27	.1	.1				2.0	1.4	4.0	2.0	.7	.2	.5
28	.1	.1				1.6	1.2	3.7	1.9	.5	.2	*.5
29	.1	.1				* 1.4	1.8	3.2	1.5	.4	.2	.5
30	.1	.1				b 2.0	2.1	3.2	1.5	.3	*.2	.5
31	.1					b 3.0		4.8		.3	.2	
Total	2.7	3.0	3.1	3.1	2.8	25.5	35.8	78.2	109.2	35.2	21.8	15.5
Mean	0.09	0.10	0.1	0.1	0.1	0.82	1.19	2.52	3.64	1.14	0.70	0.52
Ac-ft	5.4	6.0	6.1	6.1	5.6	51	71	155	217	70	43	31

Calendar year 1964: Max 4.7 Min 0 Mean 0.54 Ac-ft 393  
 Water year 1964-65: Max 10 Min 0 Mean 0.92 Ac-ft 667

Peak discharge (base, 30 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
7-22	2100	2.55	40	8-3	1545	3.72	132
7-23	0145	2.56	40	8-14	1730	2.78	52

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 1-6, Nov. 21 to Mar. 29 (stage-discharge relation affected by ice during most of period), Apr. 6-29, July 10-12, July 26 to Aug. 2, Aug. 15-30, Sept. 24-30.



## 9-630. Eagle River at Red Cliff, Colo.

Location.--Lat 39°30'35", long 106°22'00", in SE¼ sec.19, T.6 S., R.80 W., on left bank at Red Cliff, 0.3 mile upstream from Turkey Creek.

Drainage area.--72.2 sq mi.

Records available.--October 1910 to September 1925, May 1944 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 8,648.48 ft above mean sea level, datum of 1929. Jan. 8, 1911, to Sept. 30, 1925, chain gage at bridge a quarter of a mile downstream at different datum. May 25, 1944, to Oct. 12, 1952, water-stage recorder at site 200 ft upstream at datum 3.54 ft higher.

Average discharge.--36 years, 53.2 cfs (38,520 acre-ft per year).

Extremes.--Maximum discharge during year, 350 cfs June 16 (gage height, 3.97 ft); minimum daily, 7 cfs Nov. 4.

1910-25, 1944-65: Maximum discharge observed, 1,010 cfs June 5, 1912 (gage height, 4.0 ft, site and datum then in use), from rating curve extended above 500 cfs; minimum daily, 1 cfs Oct. 15, 1917.

Remarks.--Records good except those for periods of ice effect, indefinite stage-discharge relation, or no gage-height record, which are poor. Transmountain diversions above station by Columbine, Ewing, and Wurtz ditches (see elsewhere in this report). Trans-basin diversion above station from Robinson Reservoir (capacity, 2,520 acre-ft) to Tenmile Creek for mining development. Small diversions for irrigation of about 400 acres above station.

Rating table, except periods of ice effect or indefinite stage-discharge relation  
(gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 31 to Apr. 26, May 4-17, May 22 to June 28, Aug. 20 to Sept. 30)

2.5	9.0	3.3	102
2.7	21	3.7	195
3.0	53	4.1	330

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	9.5	* 9.5	9	9	8	13	e 80	150	148	91	27
2	15	10	9	8.5	* 8	8	14	e 100	152	143	* 67	27
3	16	10	9	8	9	* 8	14	e 110	160	127	63	32
4	15	* b 7	9.5	9	9.5	8.5	13	116	170	122	52	36
5	14	b 8	9	* 9.5	9.5	9	13	* 100	160	122	45	32
6	* 10	b 8.5	8	9.5	9	9	13	89	162	122	42	33
7	11	b 8.5	7.5	9	9	9	13	84	175	110	39	49
8	11	b 8.5	7.5	9	9	9	13	76	192	86	37	45
9	11	b 8.5	8	8.5	9	9	14	63	222	84	34	37
10	12	b 9	9	8.5	8.5	9.5	14	60	* 246	84	33	* 33
11	12	b 8	8.5	8.5	8	9.5	14	59	234	81	32	28
12	12	b 7.5	8	8.5	8	9.5	b 14	67	243	88	30	26
13	11	b 7.5	7.5	8.5	8	9.5	14	84	234	88	33	24
14	11	8	7.5	8.5	8	9.5	b 13	84	231	* 81	36	24
15	10	8.5	8	8.5	8	10	13	67	243	70	34	23
16	10	8	8.5	8.5	8.5	9.5	15	69	283	63	30	24
17	10	7.5	8	8	8.5	9	15	97	272	63	30	23
18	11	7.5	7.5	8	9	9	16	* 129	302	92	45	27
19	10	7.5	7.5	9	9	8.5	18	138	302	97	54	32
20	10	8	7.5	9	9	9	* 25	158	283	79	66	37
21	10	8	8	9	9	10	38	190	266	72	48	36
22	9.5	7.5	8	9	9	10	48	e 220	249	70	41	33
23	10	8.5	8.5	8.5	9	10	52	e 210	* 249	70	34	37
24	10	9	9	9	8.5	10	52	e 200	237	67	31	39
25	10	9.5	8.5	9	8.5	9.5	46	195	222	54	30	33
26	10	9	8.5	8.5	9.5	10	42	170	210	48	27	30
27	11	8.5	8.5	8	9	11	36	165	190	51	26	27
28	10	9	8.5	8.5	8.5	12	34	158	180	51	25	29
29	10	9.5	8	8.5	8.5	13	48	148	168	45	26	38
30	10	10	7.5	9	-----	* 13	67	150	158	47	28	38
31	10	-----	8.5	9.5	-----	12	-----	155	-----	91	30	-----
Total	347.5	254.0	256.0	270.0	244.5	300.5	754	3,791	6,545	2,606	1,239	959
Mean	11.2	8.47	8.26	8.71	8.73	9.69	25.1	122	218	84.1	40.0	32.0
Ac-ft	689	504	508	536	485	596	1,500	7,520	12,980	5,170	2,460	1,900

Calendar year 1964: Max 266 Min - Mean 30.7 Ac-ft 22,310  
Water year 1964-65: Max 302 Min 7 Mean 48.1 Ac-ft 34,850

Peak discharge (base, 280 cfs).--June 16 (1900) 350 cfs (3.97 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

e Stage-discharge relation indefinite.

Note.--No gage-height record Nov. 14 to Mar. 30 (stage-discharge relation affected by ice during most of period).

9-632. Wearyman Creek near Red Cliff, Colo.

Location.--Lat 39°31'15", long 106°19'05", in SE¼ sec.15, T.6 S., R.80 W., on left bank 10 ft upstream from bridge, half a mile upstream from mouth, and 3 miles east of Red Cliff.

Drainage area.--8.78 sq mi.

Records available.--October 1964 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 9,250 ft (from topographic map).

Extremes.--Maximum discharge during year, about 140 cfs June 18 (gage height, 3.23 ft); minimum not determined.

Remarks.--Records fair except those for periods of ice effect, no gage-height record, or indefinite stage-discharge relation, which are poor. No regulation or diversions above station.

Rating table, except periods of ice effect or indefinite stage-discharge relation  
(gage height, in feet, and discharge, in cubic feet per second)

1.9	1.1	2.4	23
2.0	2.0	2.6	43
2.1	4.2	3.0	100
2.2	8.0		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.9	b 1.9	(*)				* 1.1	5	20	50	16	5.7
2	2.7	1.9					1.0	7	21	44	* 17	6.1
3	2.7	1.9					1.0	8.5	21	47	17	6.1
4	2.7	b 1.8					1.2	8	21	44	17	6.5
5	2.4			(*)			1.2	* 7	21	41	16	6.1
6	2.4						1.0	6.9	21	38	16	6.1
7	2.4						1.0	6.5	21	36	16	5.7
8	2.4						1.2	6.1	25	34	16	5.7
9	2.4						1.3	5.3	* 31	33	15	* 6.5
10	2.7						1.4	5.0	40	e 32	14	6.1
11	2.7						1.2	5.0	48	e 30	14	6.1
12	2.4						* 1.2	5.3	48	31	14	5.7
13	2.4						1.2	6.1	47	31	14	5.7
14	2.4						1.2	6.1	46	* 28	13	5.3
15	2.4						1.4	6.1	e 60	27	12	5.3
16	2.4		1.4	1.2	0.8	0.8	1.6	6.9	e 80	23	12	5.0
17	2.4	1.6					1.6	7.2	e 90	21	11	5.0
18	2.2						1.4	* 9.4	e 100	20	12	5.3
19	b 2.2						1.6	12	e 90	18	12	5.7
20	b 2.0						1.9	17	e 80	17	11	5.7
21	b 2.0						2.2	19	e 90	17	9.4	5.3
22	b 2.0						2.4	20	e 90	17	9.4	5.3
23	2.2						2.7	21	e 90	17	8.7	5.3
24	2.2						2.4	21	*e 85	16	7.6	5.3
25	b 2.0						2.7	21	e 80	16	7.2	5.0
26	b 2.0						2.4	19	e 80	15	6.9	5.0
27	1.3						2.0	17	e 70	14	6.5	4.6
28	1.3						2.0	15	e 60	14	6.5	4.6
29	1.5						2.4	15	e 50	14	6.9	5.0
30	2.0						3.0	15	50	14	6.5	4.6
31	2.0							17		17	6.1	
Total	63.7	49.1	43.4	37.2	22.4	24.8	49.9	346.4	1676	816	366.7	165.4
Mean	2.25	1.64	1.4	1.2	0.8	0.8	1.66	11.2	55.9	26.3	11.8	5.51
Ac-ft	138	97	86	74	44	49	99	687	3,320	1,620	727	328

Calendar year 1964: Max - Min - Mean - Ac-ft -  
Water year 1964-65: Max 100 Min - Mean 10.0 Ac-ft 7,270

Peak discharge (base, 70 cfs).--June 18 (1800) about 140 cfs (3.23 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

e Stage-discharge relation indefinite.

Note.--No gage-height record Nov. 5 to Apr. 12 (stage-discharge relation affected by ice during most of period), Apr. 27 to May 5.

9-634. Turkey Creek near Red Cliff, Colo.

Location.--Lat 39°31'20", long 106°20'15", in NW¼SW¼ sec.16, T.6 S., R.80 W., on right bank 400 ft downstream from Lime Creek, 1.9 miles northeast of Red Cliff, and 2.0 miles upstream from mouth.

Drainage area.--23.9 sq mi.

Records available.--October 1963 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 8,885 ft (from topographic map).

Extremes.--Maximum discharge during year, 515 cfs June 17 (gage height, 3.03 ft), from rating curve extended above 230 cfs; minimum not determined.

1963-65: Maximum discharge, that of June 17, 1965; minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 17-20)

Oct. 1 to June 16				June 17 to Sept. 30			
1.2	2.0	2.2	77	1.2	7	1.9	93
1.3	3.5	2.4	127	1.3	10	2.2	188
1.5	10	2.6	210	1.4	17	2.7	425
1.7	21	2.8	345	1.7	56		
2.0	47	2.9	435				

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.0	4.4	(*)				*2.6	18	51	192	34	10
2	4.7	4.1			(*)		2.4	25	57	201	*33	11
3	4.7	4.1				(*)	2.6	29	63	209	30	11
4	4.7	*b 3.0					2.8	32	68	205	27	11
5	4.7	b 3.2		(*)			2.8	* 33	63	177	24	11
6	* 5.0	b 3.4					2.6	28	62	149	22	11
7	5.0	b 3.6					2.6	25	68	130	20	11
8	4.7	b 3.8					2.8	23	88	130	18	11
9	5.0	b 4.0					3.0	20	*104	126	18	* 11
10	5.3	b 4.0					3.0	18	124	112	18	11
11	5.3	b 4.0					2.8	17	150	101	18	11
12	5.0	b 3.8					2.6	19	150	91	18	11
13	5.0	b 3.6					* 2.6	21	165	82	18	11
14	5.0	b 3.8					2.8	23	178	* 76	16	11
15	5.0	b 4.0					3.0	22	228	69	16	11
16	5.0	4.2	3.2	2.8	2.6	2.4	3.4	21	381	66	16	11
17	5.0	4.2					3.8	24	415	61	16	11
18	4.7	4.0					3.4	* 31	350	58	17	12
19	4.4	3.8					4.1	35	345	53	17	12
20	4.7	3.8					6.2	40	340	47	16	13
21	4.7	3.8					8.2	48	266	44	15	12
22	4.7	3.8					9.6	65	262	42	15	11
23	4.7	4.0					12	77	222	43	14	11
24	4.7	4.0					12	72	* 209	42	14	11
25	4.1	4.0					9.3	60	196	39	13	11
26	4.7	3.8					8.2	51	174	35	12	10
27	4.7	3.6					7.2	44	149	33	11	9.7
28	4.4	3.6					7.2	39	149	31	11	9.4
29	4.4	3.6					8.6	36	159	29	11	10
30	4.4	3.6					12	38	181	30	11	9.4
31	4.4	-----					-----	44	-----	36	10	-----
Total	147.8	114.6	99.2	86.8	72.8	74.4	156.2	1,078	5,417	2,739	549	327.5
Mean	4.77	3.82	3.2	2.8	2.6	2.4	5.21	34.8	181	88.4	17.7	10.9
Ac-ft	293	227	197	172	144	148	310	2,140	10,740	5,430	1,090	650

Calendar year 1964: Max 112 Min - Mean 14.9 Ac-ft 10,820

Water year 1964-65: Max 415 Min - Mean 29.8 Ac-ft 21,540

Peak discharge (base, 160 cfs).--June 17 (1965) 515 cfs (3.03 ft); July 3 (1930) 217 cfs (2.28 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 16 to Apr. 13 (stage-discharge relation affected by ice during part of period).

9-645. Homestake Creek near Red Cliff, Colo.

Location.--Lat 39°28'25", long 106°22'00", in sec.6, T.7 S., R.80 W., on right bank at downstream side of Forest Service Highway bridge, 3 miles upstream from mouth, and 3 miles south of Red Cliff.

Drainage area.--58.9 sq mi.

Records available.--October 1910 to September 1918, May 1944 to September 1965. Published as "at Redcliff" October 1910 to September 1916.

Gage.--Water-stage recorder. Datum of gage is 8,783 ft above mean sea level (river-profile survey). Jan. 8, 1911, to Sept. 30, 1918, staff gage at three sites 2½ to 2.8 miles downstream at different datums. May 25, 1944, to May 8, 1961, water-stage recorder at site 15 ft downstream at same datum.

Average discharge.--29 years, 87.9 cfs (63,640 acre-ft per year),

Extremes.--Maximum discharge during year, 908 cfs June 18 (gage height, 3.94 ft); minimum not determined.

1910-18, 1944-65: Maximum discharge observed, 1,300 cfs June 24, 1918 (gage height, 6.2 ft, site and datum then in use); minimum observed, 0.6 cfs Jan. 25, 1915 (discharge measurement).

Remarks.--Records good except those for period of ice effect, which are poor. No diversion above station.

Rating tables, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to June 14				June 15 to Sept. 30			
1.2	5.0	2.0	64	2.1	20	2.7	185
1.3	7.5	2.2	106	2.2	35	3.0	330
1.5	15	2.5	190	2.3	55	3.5	605
1.6	20	3.0	390	2.5	110	4.0	950
1.8	36	3.2	490				

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13		(*)				9	163	376	468	360	49
2	13				(*)		9	205	327	545	315	49
3	12					(*)	9.5	217	372	527	260	60
4	10	(*)					9.5	214	395	509	226	68
5	9.6			(*)			9.5	* 193	280	509	* 181	60
6	* 9.6						9	160	256	497	145	68
7	10						10	152	350	463	128	55
8	8.9						11	146	405	497	110	53
9	8.2						13	119	460	452	95	49
10	8.2						13	109	* 450	430	89	* 43
11	9.2					6	12	111	450	425	86	41
12	9.6						11	143	376	509	90	41
13	9.2						* 12	181	415	420	80	37
14	8.9						11	190	465	* 370	83	34
15	8.6						13	149	521	335	80	30
16	8.2	8	8	8	7		16	146	670	305	75	29
17	7.8						18	196	754	305	86	28
18	8.2						19	* 260	796	345	142	34
19	6.5						21	288	733	315	185	41
20	6.5						* 40	340	698	285	165	51
21	6.8						97	390	664	280	114	51
22	6.5						122	475	612	330	98	49
23	7.0						127	515	* 599	485	83	53
24	7.8						122	420	587	340	72	60
25	6.5						101	292	545	280	65	70
26	6.5					8	92	240	480	230	58	65
27	7						77	205	425	194	51	68
28	7						77	181	468	185	45	65
29	7.5						92	193	521	169	58	70
30	8					(*)	124	236	485	169	72	70
31	8							314		370	60	
Total	263.8	240	248	248	196	208	1,306.5	7,143	14,935	11,543	3,747	1,541
Mean	8.51	8	8	8	7	6.7	43.6	230	498	372	121	51.4
Ac-ft	523	476	492	492	389	413	2,590	14,170	29,620	22,900	7,430	3,060

Calendar year 1964: Max 592 Min - Mean 66.5 Ac-ft 48,270  
 Water year 1964-65: Max 796 Min - Mean 114 Ac-ft 82,560

Peak discharge (base, 710 cfs).--June 18 (0200) 908 cfs (3.94 ft); July 22 (2330) 712 cfs (3.66 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 25 to Apr. 16 (no gage-height record Nov. 4 to Apr. 16).

9-655. Gore Creek at upper station, near Minturn, Colo.

Location.--Lat 39°37'40", long 106°16'30", on left bank 140 ft downstream from bridge on U. S. Highway 6, half a mile upstream from Black Gore Creek, and 8.8 miles northeast of Minturn, Eagle County.

Drainage area.--14.4 sq mi.

Records available.--October 1947 to September 1956, October 1963 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 8,620 ft (from topographic map). Prior to Aug. 26, 1952, at site 40 ft upstream at same datum; Aug. 27, 1952, to Sept. 30, 1956, at site 20 ft upstream at same datum.

Average discharge.--11 years, 28.4 cfs (20,560 acre-ft per year).

Extremes.--Maximum discharge during year, 384 cfs June 16 (gage height, 3.40 ft), from rating curve extended above 190 cfs; minimum daily, 2.0 cfs Mar. 3-11, 20-23.

1947-56, 1963-65: Maximum discharge, 588 cfs June 10, 1952, from rating curve extended above 260 cfs; maximum gage height, 6.65 ft June 18, 1951, site then in use; minimum daily discharge, 1.5 cfs Feb. 28 to Mar. 9, 1964.

Remarks.--Records good except those for periods of ice effect, which are poor. No diversion above station.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 14-29)

Oct. 1 to Sept. 8				Sept. 8-30	
1.3	1.6	2.1	21	2.0	8
1.5	3.0	2.3	40	2.2	15
1.6	4.2	2.6	80	2.3	18
1.8	8.2	2.9	145		
1.9	11	3.1	220		
2.0	15	3.3	300		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.9	2.7	2.9	3.0	b 2.8	2.1	* 2.9	37	80	148	93	16
2	4.2	2.9	* 3.5	2.8	b 2.6	2.1	2.8	46	82	184	78	16
3	4.2	* 3.2	b 3.2	2.7	* 3.0	* 2.0	2.9	49	98	170	* 74	16
4	4.0	b 3.0	b 3.0	2.6	2.5	2.0	3.0	48	93	159	66	16
5	3.8	b 2.8	b 2.8	2.5	2.4	2.0	3.0	43	77	159	62	17
6	4.0	b 2.6	b 2.6	* 2.4	2.3	2.0	2.8	* 32	71	162	57	16
7	3.8	b 2.4	2.8	2.4	2.3	2.0	2.9	27	96	140	50	15
8	3.8	b 2.4	2.8	2.4	2.3	2.0	3.0	26	* 122	128	47	* 15
9	3.7	b 2.4	2.8	2.4	2.2	2.0	3.6	22	152	111	42	* 12
10	3.7	2.4	2.7	2.4	2.2	2.0	3.6	20	166	111	42	11
11	3.7	b 2.4	2.7	2.4	2.1	2.0	3.4	22	220	109	42	11
12	3.6	b 2.6	2.8	2.4	2.1	2.1	3.2	32	138	109	39	12
13	3.6	b 2.6	2.8	2.4	2.2	2.1	3.5	40	152	96	38	11
14	3.5	b 2.8	2.8	2.4	2.2	2.1	3.2	38	184	84	36	10
15	3.4	b 3.0	2.7	2.4	2.1	2.1	3.6	30	236	* 120	34	9.2
16	3.2	3.0	2.6	2.4	2.1	2.1	4.6	27	256	120	32	8.6
17	3.2	2.8	2.6	2.3	2.1	2.1	5.5	37	292	122	33	8.6
18	3.1	2.8	2.6	2.3	2.1	2.1	4.9	47	272	140	38	11
19	2.8	b 2.8	2.5	2.3	2.1	2.1	6.2	* 52	256	140	44	12
20	2.9	b 2.6	2.5	2.2	2.1	2.0	11	71	264	125	49	13
21	2.9	b 2.6	2.5	2.2	2.1	2.0	* 16	87	280	107	49	12
22	2.8	b 2.6	2.5	2.2	2.1	2.0	19	109	244	105	33	12
23	3.1	2.6	2.6	2.2	2.1	2.0	21	113	* 228	109	30	13
24	3.4	2.6	2.6	2.2	2.1	2.1	21	91	220	135	28	14
25	2.9	2.6	b 2.8	2.3	2.1	2.1	17	66	204	130	26	16
26	3.1	2.6	b 3.0	2.3	2.1	2.1	14	55	166	102	23	16
27	3.2	b 2.6	b 3.2	2.3	2.1	2.1	11	47	159	93	21	15
28	3.1	b 2.8	b 3.2	2.4	2.1	2.1	11	41	176	89	20	16
29	3.1	3.0	b 3.0	b 2.4	-	2.1	14	44	192	77	19	17
30	3.2	3.0	b 2.6	b 2.6	-----	2.1	23	58	159	71	19	17
31	3.2	-----	3.1	b 2.8	-----	2.6	-----	76	-----	102	18	-----
Total	107.1	81.2	86.8	75.0	62.6	64.3	246.6	1,533	5,335	3,757	1,282	404.4
Mean	3.45	2.71	2.80	2.42	2.24	2.07	8.22	49.5	178	121	41.4	13.5
Ac-ft	212	161	172	149	124	128	489	3,040	10,580	7,450	2,540	802

Calendar year 1964: Max 145 Min 1.5 Mean 21.0 Ac-ft 15,220

Water year 1964-65: Max 292 Min 2.0 Mean 35.7 Ac-ft 25,850

Peak discharge (base, 200 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-11	0100	3.12	256	7- 5	1900	3.12	244
6-16	2300	3.40	384	7-23	2200	3.10	200

\* Discharge measurement made on this day.  
b Stage-discharge relation affected by ice.

9-660. Black Gore Creek near Minturn, Colo.

Location.--Lat 39°35'50", long 106°15'55", on right bank 300 ft from U. S. Highway 6, 0.3 mile upstream from Timber Creek, 2½ miles upstream from mouth, and 9 miles east of Minturn, Eagle County.

Drainage area.--11.8 sq mi.

Records available.--October 1947 to September 1956, October 1963 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 9,180 ft (from topographic map). Prior to October 1963 water-stage recorder at site 15 ft upstream at same datum.

Average discharge.--11 years, 16.8 cfs (12,160 acre-ft per year).

Extremes.--Maximum discharge during year, 340 cfs June 16 (gage height, 4.90 ft), from rating curve extended above 140 cfs; minimum not determined.

1947-56, 1963-65: Maximum discharge, 365 cfs June 7, 1952 (gage height, 5.42 ft); maximum gage height, 5.70 ft Mar. 31, 1956 (ice jam); minimum discharge, 0.9 cfs Jan. 11, 1950 (gage height, 2.79 ft).

Remarks.--Records good except those for periods of ice effect, which are poor. No diversion above station. Natural regulation by two small recreation lakes above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 15-25)

2.8	2.5	3.7	51
3.1	8.0	4.0	95
3.2	11	4.5	200
3.4	21	5.0	340

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.0	2.4					* 2.2	20	84	78	23	* 7.0
2	2.8	2.4					2.2	26	87	72	20	7.2
3	2.8	* 2.6	(*)		(*)	(*)	2.2	29	104	70	* 17	7.6
4	2.8	2.4					2.4	30	97	67	16	7.6
5	2.6	2.4					2.4	26	78	63	15	7.2
6	2.6	2.2		(*)			2.2	* 21	76	58	13	6.8
7	2.5	2.0					2.2	20	95	54	13	6.6
8	* 2.6	2.0					2.4	21	* 115	55	12	6.4
9	2.8	2.0					2.6	17	135	51	11	6.2
10	3.0	2.0					2.6	16	162	52	11	6.0
11	3.0	2.0					2.4	18	168	44	11	6.0
12	2.8	2.0					2.2	23	160	40	11	5.8
13	2.8	2.2					* 2.4	29	168	37	11	5.6
14	2.6	2.4					2.6	29	182	* 34	11	5.4
15	2.6	2.4					3.0	23	212	32	10	5.2
16	2.6	2.4	2	1.8	2	2	3.8	23	238	29	10	5.0
17	2.6	2.2					4.0	33	253	27	11	5.0
18	2.4	2.2					3.6	43	218	26	11	5.4
19	2.2	2.2					3.8	* 54	185	25	12	5.8
20	2.4	2.2					4.6	67	178	23	12	6.2
21	2.4	2.0					6	84	164	22	10	6.0
22	2.4	2.0					8	104	149	21	9.5	6.0
23	2.5	2.0					10	115	* 133	21	9.2	6.4
24	2.8	2.2					12	97	129	23	8.6	6.6
25	2.6	2.2					10	76	123	20	8.0	6.4
26	2.6	2.2					8.9	60	102	19	7.8	5.8
27	2.6	2.0					8.0	50	92	18	7.6	5.6
28	2.4	2.0					8.3	45	90	16	7.4	5.6
29	2.4	2.2					9.5	49	87	15	7.6	6.0
30	2.6	2.2					13	60	82	15	7.4	5.8
31	2.8							74		26	7.2	
Total	81.6	65.6	62	55.8	56	62	149.5	1,382	4,146	1,153	351.3	184.2
Mean	2.63	2.19	2	1.8	2	2	4.98	44.6	138	37.2	11.3	6.14
Ac-ft	162	130	123	111	111	123	297	2,740	8,220	2,290	697	365

Calendar year 1964: Max 121 Min - Mean 12.5 Ac-ft 9,100

Water year 1964-65: Max 253 Min - Mean 21.2 Ac-ft 15,370

Peak discharge (base, 150 cfs).--June 16 (1845) 340 cfs (4.90 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 18-22, 25-29, Nov. 1 to Apr. 22 (no gage-height record Dec. 2 to Apr. 13).

9-661. Bighorn Creek near Minturn, Colo.

Location.--Lat 39°38'20", long 106°17'35", on left bank 0.3 miles upstream from U. S. Highway 6, 0.4 mile upstream from mouth, and 8.2 miles northeast of Minturn, Eagle County.

Drainage area.--4.37 sq mi.

Records available.--October 1963 to September 1965.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 8,600 ft (from topographic map).

Extremes.--Maximum discharge during year, 71 cfs June 16 (gage height, 3.36 ft); minimum not determined.

1963-65: Maximum discharge, 71 cfs June 16, 1965; maximum gage height, 3.43 ft June 7, 1964; minimum discharge not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No regulation or diversion above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 11 to July 28)

2.3	0.8	2.7	6.5
2.4	1.5	2.9	14
2.5	2.5	3.2	33
2.6	4.0	3.6	75

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.8	1.1					* 0.8	12	27	55	26	6.0
2	1.8	1.1	(*)				.8	15	25	59	24	5.5
3	1.7	* 1.2			(*)	(*)	.8	15	29	55	* 24	5.2
4	1.7	1.0					.8	14	28	53	22	5.2
5	1.6	1.1					.8	12	24	53	21	5.5
6	1.6	1.0		(*)			.9	* 9.3	24	54	20	5.5
7	1.6	1.0					.8	7.6	30	49	19	5.2
8	* 1.6	.9					.9	7.6	* 33	47	17	* 5.8
9	1.5	.9					.9	6.0	38	44	15	6.0
10	1.5	.9					.9	5.0	44	43	16	5.5
11	1.5	.9					.9	5.2	46	42	16	5.5
12	1.4	.9					1.0	7.6	44	42	16	5.2
13	1.4	b .9					1.0	9.6	46	39	14	4.8
14	1.4	b .9					1.0	9.6	51	37	14	4.2
15	1.3	b .9					1.2	7.6	55	* 34	14	3.8
16	1.3	b .9	0.8	0.8	1.0	0.8	1.4	7.2	62	32	13	3.4
17	1.3	1.0					1.4	10	67	32	12	3.0
18	1.2	1.1					1.5	15	65	33	14	3.4
19	1.2	1.1					1.9	* 17	65	34	17	3.4
20	1.2	1.0					3.0	22	68	32	18	3.4
21	1.2	.9					* 5.0	25	65	29	15	3.0
22	1.2	.8					7.9	27	64	28	14	2.8
23	1.2	.8					8.6	27	* 64	29	14	3.0
24	1.2	.9					8.6	24	65	32	12	3.4
25	1.1	1.0					5.8	21	63	30	11	4.2
26	1.2	1.1					4.0	16	58	27	10	4.8
27	1.2	1.0					3.4	13	55	24	9.0	5.0
28	1.2	.9					3.2	12	56	24	8.2	5.2
29	1.2	1.0					4.5	14	59	23	7.9	5.5
30	1.2	.9					8.2	19	59	22	6.8	5.0
31	1.2							25		26	6.5	
Total	42.7	29.1	24.8	24.8	28.0	24.8	81.9	437.3	1,479	1,163	466.4	137.4
Mean	1.38	0.97	0.8	0.8	1.0	0.8	2.73	14.1	49.3	37.5	15.0	4.58
Ac-ft	85	58	49	49	56	49	162	867	2,930	2,310	925	273

Calendar year 1964: Max 44 Min - Mean 6.66 Ac-ft 4,830  
Water year 1964-65: Max 68 Min - Mean 10.8 Ac-ft 7,810

Peak discharge (base, 50 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-10	2245	3.30	51	7- 2	1900	3.26	64
6-16	2330	3.36	71				

\* Discharge measurement made on this day.  
b Stage-discharge relation affected by ice.  
Note.--No gage-height record Nov. 17 to Apr. 1 (stage-discharge relation affected by ice during most of period).

9-662. Booth Creek near Minturn, Colo.

Location.--Lat 39°39'05", long 106°19'15", on left bank 0.2 mile upstream from U. S. Highway 6, 0.4 mile upstream from mouth, and 7 miles northeast of Minturn, Eagle County.

Drainage area.--6.03 sq mi.

Records available.--October 1964 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 8,450 ft (from topographic map).

Extremes.--Maximum discharge during year, about 150 cfs June 16 (gage height not determined); maximum gage height, 3.83 ft June 17; minimum daily discharge, 0.4 cfs Oct. 25.

Remarks.--Records fair except those for periods of ice effect, no gage-height record or indefinite stage-discharge relation, which are poor. No diversion or regulation above station.

Rating table, except periods of ice effect or indefinite stage-discharge relation  
(gage height, in feet, and discharge, in cubic feet per second)

2.0	0.4	2.8	12
2.1	.7	3.0	20
2.3	2.4	3.2	36
2.4	3.5	3.4	63
2.6	7.0	3.6	103

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.0	0.5	0.7	0.9	b 0.9	0.6	0.9	e 14	37	e 60	e 22	* 4.8
2	* 1.5	.6	* .7	.9	b 1.0	.6	* .9	e 20	35	e 60	e 22	4.7
3	1.4	.6	.9	.9	.8	.6	1.0	e 22	41	e 60	e 18	4.8
4	1.2	* .7	.8	.9	.8	* .6	1.2	e 22	36	e 55	e 16	4.8
5	1.2	.8	.8	.9	* .7	.6	1.1	e 20	e 34	e 50	e 14	5.4
6	1.2	.9	.8	.8	.7	.6	1.0	* e 18	e 34	e 55	14	5.6
7	1.2	.8	.8	.8	.7	.6	.9	16	e 40	e 55	12	5.0
8	1.2	.7	.8	.8	.7	.6	1.0	15	* e 50	e 50	11	4.8
9	1.2	.7	.8	.8	.7	.6	1.2	12	e 60	e 50	10	4.4
10	1.1	.7	.8	.8	.7	.6	1.2	11	e 70	e 50	11	4.0
11	1.1	.7	.8	.7	.7	.6	1.1	10	e 70	e 50	10	4.0
12	1.0	.6	.8	.7	b .6	.6	1.0	12	e 75	e 55	9.2	4.2
13	1.0	.7	.8	.7	b .6	.6	1.0	15	e 85	e 50	9.8	3.5
14	.9	b .7	.8	.7	b .6	.6	1.0	15	e 100	47	12	3.2
15	.9	b .8	.8	.7	.7	.6	1.1	14	e 110	* 48	11	3.1
16	.8	b .8	.8	.7	.6	.6	1.3	14	e 120	42	11	2.7
17	.8	b .7	.8	.7	.6	.6	1.6	16	e 130	37	* 9.5	2.5
18	.7	b .6	.8	.7	.6	.6	1.5	20	e 130	e 36	12	3.2
19	.6	.6	.8	.7	.6	b .6	1.6	* 22	e 120	e 34	15	3.4
20	.6	.6	.8	.7	.6	b .5	2.4	30	e 120	e 30	16	3.8
21	.6	.6	.8	.7	.6	b .6	* 5.6	33	e 110	e 30	12	3.5
22	.6	.6	.8	.7	.6	.6	7.2	46	e 110	e 32	11	3.5
23	.6	.6	.8	.7	.6	.6	7.5	43	e 100	e 34	9.8	3.6
24	.8	.6	.8	.7	.6	.6	6.6	35	* 97	e 38	9.0	4.7
25	.4	.6	.7	.7	.6	.6	4.9	37	82	e 36	8.5	6.2
26	.6	.6	b .7	.7	.6	.6	4.0	27	72	e 30	7.5	6.6
27	.6	.6	b .7	.7	.6	.6	3.3	21	62	e 26	6.8	6.6
28	.6	.6	.8	.7	.6	.6	3.2	19	63	e 24	6.4	6.4
29	.6	.6	.9	.7	-	.6	4.1	19	e 65	e 22	6.0	7.2
30	.6	.6	.9	.7	-----	.6	7.0	25	e 60	e 20	5.6	6.8
31	.6	-----	.9	b .9	-----	.7	-----	34	-----	e 24	4.8	-----
Total	28.2	19.8	24.7	23.4	18.7	18.6	77.4	677	2,318	1,290	352.9	137.0
Mean	0.91	0.66	0.80	0.75	0.67	0.60	2.58	21.8	77.3	41.6	11.4	4.57
Ac-ft	56	39	49	46	37	37	154	1,340	4,600	2,560	700	272

Calendar year 1964: Max - Min - Mean - Ac-ft -  
Water year 1964-65: Max 130 Min 0.4 Mean 13.7 Ac-ft 9,890

Peak discharge (base, 80 cfs).--June 16 (time unknown) about 150 cfs (gage height unknown); July 24 (2300) about 85 cfs (3.55 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

e Stage-discharge relation indefinite.

Note.--No gage-height record Oct. 1 to Nov. 4, Dec. 22-24, Jan. 7-12, Feb. 3-5.



9-663. Middle Creek near Minturn, Colo.

Location.--Lat 39°38'50", long 106°22'50", on right bank a quarter of a mile upstream from U. S. Highway 6, 0.4 mile upstream from mouth, and 5 miles northeast of Minturn, Eagle County.

Drainage area.--5.97 sq mi.

Records available.--October 1964 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 8,300 ft (from topographic map).

Extremes.--Maximum discharge during year, 105 cfs June 19 (gage height, 2.60 ft), from rating curve extended above 56 cfs; no flow for many days.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion or regulation above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 19-27)

0.7	0.3	1.3	9.0
.8	.8	1.5	17
.9	1.7	2.0	52
1.0	3.0	2.5	96
1.1	4.6		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.6	0.1					0	4.6	18	39	13	* 3.2
2	*.6	.1	(*)		(*)		* 0	5.7	18	40	13	2.9
3	.6	.1					0	6.3	20	39	13	3.0
4	.5	*.1				(*)	0	* 6.8	20	36	11	3.2
5	.5	.1					0	6.8	18	32	* 11	3.5
6	.4	.1		(*)			0	6.1	19	30	10	3.3
7	.4	.1					0	5.9	22	30	9.0	2.9
8	.4	.1					0	5.7	* 26	30	8.5	2.9
9	.4	.1					0	5.2	31	28	7.8	2.7
10	.4	0					0	4.6	35	26	7.8	2.6
11	.4	0					.1	4.3	38	26	7.5	2.6
12	.4	0					.1	4.4	39	28	6.8	2.6
13	.4	0					.1	5.0	44	26	6.8	2.5
14	.4	0					*.1	4.8	53	26	6.3	2.5
15	.4	0					.1	4.4	65	* 23	5.7	2.5
16	.4	0					.1	4.1	75	21	5.4	2.4
17	.4	0					.1	5.0	82	19	5.2	2.4
18	.4	0					.2	5.9	83	18	5.7	2.5
19	.3	0					.4	* 6.3	82	17	6.5	2.5
20	.3	0					.6	9.0	82	16	6.8	2.6
21	.3	0					1.2	15	67	15	5.6	2.5
22	.3	0					1.7	21	63	14	5.2	2.5
23	.3	0					2.4	24	60	14	5.0	2.5
24	.3	0					2.5	22	* 58	15	4.4	2.7
25	.3	0					2.0	20	58	15	4.3	2.7
26	.2	0					1.7	17	50	13	4.0	2.7
27	.2	0					1.4	13	40	13	3.8	2.6
28	.2	0					1.4	11	39	12	3.8	2.6
29	.2	0					2.0	11	41	11	3.8	2.7
30	.2	0					3.0	12	40	11	3.8	2.7
31	.2	-----			-----		-----	15	-----	15	3.5	-----
Total	11.3	0.9	0	0	0	0	21.2	291.9	1386	698	214.0	81.5
Mean	0.36	0.03	0	0	0	0	0.71	9.42	46.2	22.5	6.90	2.72
Ac-ft	22	1.8	0	0	0	0	42	579	2,750	1,380	424	162

Calendar year 1964: Max - Min - Mean - Ac-ft -  
Water year 1964-65: Max 83 Min 0 Mean 7.41 Ac-ft 5,360

Peak discharge (base, 60 cfs).--June 19 (2300) 105 cfs (2.60 ft).

\* Discharge measurement or observation of no flow made on this day.

Note.--Stage-discharge relation affected by ice Oct. 19 to Nov. 3, Apr. 15-20. No gage-height record Nov. 4 to Apr. 14 (stage-discharge relation affected by ice part of period), Apr. 29, 30.

9-664. Red Sandstone Creek near Minturn, Colo.

Location.--Lat 39°40'55", long 106°24'05", in sec.25, T.4 S., R.81 W. (projected), on left bank 150 ft upstream from road culvert, 1,200 ft upstream from Indian Creek, and 6.8 miles north of Minturn.

Drainage area.--7.27 sq mi.

Records available.--October 1963 to September 1965.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 9,150 ft (from topographic map).

Extremes.--Maximum discharge during year, 139 cfs June 17 (gage height, 4.22 ft), from rating curve extended above 80 cfs; minimum not determined.

1963-65: Maximum discharge, 139 cfs June 17, 1965 (gage height, 4.22 ft), from rating curve extended above 80 cfs; minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No regulation or diversion above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.4	0.7	3.2	20
2.5	1.5	3.4	31
2.6	2.9	3.8	69
2.7	4.7	4.0	94
3.0	13	4.2	132

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.9	b 1.0					0.8	12	44	40	15	4.7
2	1.8	b 1.2					.8	15	44	40	14	4.7
3	1.6	b 1.2					.9	16	50	38	14	4.7
4	1.6	b 1.0					1.0	* 16	48	34	13	4.7
5	1.5	* 1.2					1.0	14	44	36	* 13	4.9
6	1.5	1.2					.9	12	50	35	12	5.2
7	1.5	1.2					.8	12	66	33	10	* 4.2
8	* 1.5	1.2					1.0	12	77	34	9.7	4.3
9	1.5	1.4					1.2	9.7	* 84	29	8.8	4.0
10	1.5	1.4					1.2	8.8	90	26	8.5	3.6
11	1.4	1.2					1.2	9.4	87	24	8.2	3.4
12	1.4	1.4					1.0	12	87	29	7.9	4.0
13	1.4	1.6					1.2	13	103	26	8.2	3.3
14	1.4	1.6					* 1.0	12	101	20	7.9	2.9
15	1.4	1.6					1.0	11	99	18	7.0	2.9
16	1.3	1.6	1.0	0.8	0.7	0.6	1.2	12	103	17	6.5	2.8
17	1.5	1.6					1.3	15	114	16	6.5	2.8
18	1.3	1.4					1.3	* 19	110	16	12	3.4
19	1.1	1.4					1.3	22	103	16	12	4.3
20	1.3	1.2					2.3	30	94	14	12	4.3
21	1.3	1.0					4.5	41	87	14	9.7	3.8
22	1.3	1.0					5.6	50	* 77	* 13	8.5	3.8
23	1.3	1.2					6.8	55	69	16	8.2	4.0
24	1.4	1.4					7.6	50	66	17	7.6	5.2
25	1.1	1.4					6.3	37	64	15	7.0	5.4
26	1.3	1.4					5.2	29	54	13	6.3	5.4
27	1.3	1.2					4.3	24	47	14	6.1	4.7
28	1.3	1.2					4.3	22	46	13	5.6	4.7
29	1.3	1.4					6.1	24	46	11	5.8	5.6
30	1.3	1.2					9.1	29	44	12	5.6	4.9
31	1.3							39		19	5.2	
Total	43.6	39.0	31.0	24.8	19.6	18.6	82.2	682.9	2,198	698	281.8	126.6
Mean	1.41	1.30	1.0	0.8	0.7	0.6	2.74	22.0	73.3	22.5	9.09	4.22
Ac-ft	86	77	61	49	39	37	163	1,350	4,360	1,380	559	251

Calendar year 1964: Max 64 Min - Mean 6.29 Ac-ft 4,570

Water year 1964-65: Max 114 Min - Mean 11.6 Ac-ft 8,410

Peak discharge (base, 70 cfs).--June 17 (1900) 139 cfs (4.22 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 5 to Apr. 14 (stage-discharge relation affected by ice during most of period).

9-673. Alkali Creek near Wolcott, Colo.

Location.--Lat 39°45', long 106°40', in SE¼ sec.27, T.3 S., R.83 W., on right bank 100 ft below unnamed tributary, 100 ft above ford and headgate, and 3½ miles north of Wolcott.

Drainage area.--27.3 sq mi.

Records available.--October 1958 to September 1965 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is about 7,300 ft (estimated from nearby level line).

Average discharge.--7 years, 2.13 cfs (1,540 acre-ft per year).

Extremes.--Maximum discharge during year, 985 cfs July 18 (gage height, 7.41 ft, from floodmark), from rating curve extended above 41 cfs as explained below; no flow for many days.

1958-65: Maximum discharge, that of July 18, 1965, from rating curve extended above 41 cfs on basis of slope-area measurements at gage heights 5.56 and 7.41 ft; no flow at times most years.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. No diversion above station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0.2	(*)				3.6	14	8	3.5	1.0	0.8
2	0	.2					3.4	18	8.5	3.6	.4	.9
3	.1	.2			(*)		3.3	* 20	8.5	3.4	1.1	* 1.2
4	0	.1				(*)	3.0	17	8.5	3.4	2.4	.8
5	0	.1		(*)			2.8	16	8.5	3.2	2.0	2.5
6	.1	.1					3.2	15	8.5	3.0	* 1.9	1.1
7	* .1	.1					3.4	15	* 8	3.0	1.8	1.1
8	.1	.1					3.6	13	6.5	3.2	1.6	1.1
9	.2	* .1					3.6	11	6.1	3.0	1.6	1.0
10	.2	0					3.2	10	6.6	2.8	1.7	1.0
11	.2	.1					3.0	9	6.6	2.6	1.7	1.0
12	.2	0					3.2	10	7.4	2.4	1.7	1.1
13	.2	0				0.2	3.6	13	8.6	3.0	1.6	1.0
14	.2	.1					* 4.1	11	7.4	2.8	1.7	* .9
15	.2	.1			0.2		4.2	10	7.4	2.6	1.6	.8
16	.2	.1					4.9	15	6.8	2.4	1.4	.8
17	.2	.1					5.0	20	6.6	2.2	1.4	2.0
18	.2	.1					4.7	16	6.3	* 3.0	1.6	2.5
19	.2	0					5.9	18	5.9	8	1.6	2.4
20	.2	0					6.6	* 19	5.7	* 2.2	1.3	2.0
21	.2	0					6.6	16	5.6	2.1	1.3	2.2
22	.2	0					* 7.0	14	5.5	2.1	1.3	2.2
23	.2	0					8.0	13	5	2.0	1.3	2.0
24	.2	0					7.8	11	* 4.6	2.0	1.1	1.8
25	.2	0					7.8	10	4.2	6.7	1.1	1.6
26	.2	0					7.6	10	4.1	1.4	1.1	1.6
27	.2	0					7.2	10	3.8	.8	1.0	1.5
28	.2	0				3	8.2	9	3.6	.5	1.0	1.4
29	.2	0					9.5	8	3.5	.4	1.0	1.4
30	.2	0				(*)	11	7	3.5	.5	1.0	1.4
31	.2	---					---	8	---	2.5	.9	---
Total	5.0	1.8	0	0	5.6	23.0	159.0	406	189.8	111.3	43.2	43.1
Mean	0.16	0.06	0	0	0.2	0.7	5.30	13.1	6.33	3.59	1.39	1.44
Ac-ft	9.9	3.6	0	0	11	46	315	805	376	221	86	85

Calendar year 1964: Max 10 Min 0 Mean 0.96 Ac-ft 698  
 Water year 1964-65: Max 30 Min 0 Mean 2.71 Ac-ft 1,960

Peak discharge (base, 15 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5- 3	1815	2.56	23	7-25	1700	4.19	88
5-17	2000	2.53	25	8- 4	1300	3.36	28
7-18	2130	7.41	985				

\* Discharge measurement or observation of no flow made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4 to Apr. 2 (no gage-height record Nov. 16 to Mar. 30), Apr. 4, 5, 7, 10-12. No gage-height record Oct. 5-7, May 6-20, 28-31, June 1-7, 22, 23, July 3-20, Aug. 5, 6, Sept. 14-30.

## EAGLE RIVER BASIN

9-680. Brush Creek near Eagle, Colo.

Location.--Lat 39°33'40", long 106°46'20", in SE¼ sec.1, T.6 S., R.84 W., on left bank 150 ft downstream from Beecher Creek, 1½ miles downstream from confluence of East and West Brush Creeks, and 7½ miles southeast of Eagle.

Drainage area.--71 sq mi, approximately.

Records available.--October 1950 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,450 ft (estimated from nearby level line).

Average discharge.--15 years, 43.7 cfs (31,640 acre-ft per year).

Extremes.--Maximum discharge during year, 397 cfs June 17 (gage height, 4.05 ft); minimum daily, 14 cfs Apr. 5, 11-13.  
1950-65: Maximum discharge, 775 cfs June 7, 1952 (gage height, 5.10 ft), from rating curve extended above 400 cfs; minimum daily, 11 cfs Feb. 28, Mar. 14, 1962.

Remarks.--Records good except those for periods of ice effect or indefinite stage-discharge relation, which are poor. Small diversions for irrigation of hay meadows above and below station. One small diversion to Gypsum Creek above station. Slight regulation by Zurcher's Lake (capacity, 450 acre-ft) on West Brush Creek for irrigation of hay meadows above station.

Rating table, except periods of ice effect or indefinite stage-discharge relation  
(gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used July 14 to Aug. 5)

2.4	13	3.0	66
2.6	24	3.5	180
2.8	41	4.0	365

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	22	20	b 18	16	16	19	48	73	138	142	39
2	24	22	20	b 18	b 16	b 17	* 19	60	68	142	108	39
3	23	22	* 20	b 16	16	b 18	16	* 66	76	160	92	44
4	23	20	19	21	* 17	* b 20	16	71	81	158	92	44
5	23	20	18	* 20	17	b 16	14	66	78	145	80	45
6	23	20	b 18	20	17	b 15	15	55	73	152	71	49
7	* 23	20	b 16	20	17	b 15	15	53	98	183	62	45
8	23	20	b 16	20	16	b 15	16	51	* 130	170	58	44
9	22	20	20	19	16	16	16	45	162	158	56	43
10	23	20	19	19	16	16	15	41	192	145	52	39
11	24	* 21	19	19	16	16	14	39	234	138	52	37
12	23	20	19	19	b 16	16	14	42	214	160	* 53	40
13	23	21	b 18	19	b 15	16	14	49	214	145	55	38
14	23	22	b 18	19	b 16	16	15	51	231	128	58	36
15	23	22	19	19	17	16	16	48	e 290	120	55	33
16	23	22	19	19	b 16	16	18	45	e 250	118	50	32
17	23	22	18	18	16	16	19	56	285	115	46	32
18	23	22	b 18	b 18	16	b 15	19	68	289	115	56	37
19	22	20	19	18	16	b 15	20	66	281	125	98	43
20	23	18	18	b 17	16	b 15	* 24	* 71	253	* 108	68	49
21	23	18	18	18	16	15	29	90	234	101	53	45
22	23	18	18	17	16	15	34	125	210	101	51	44
23	23	19	19	b 16	16	16	38	135	204	122	48	45
24	23	19	b 20	17	b 16	16	36	108	* 204	101	45	49
25	22	21	20	17	b 16	16	31	83	204	96	44	52
26	22	21	20	b 17	17	16	30	69	186	83	43	51
27	22	21	20	b 17	16	16	25	56	165	73	40	53
28	22	20	20	17	16	16	24	48	178	74	39	55
29	22	20	20	17	-	16	29	45	180	63	40	62
30	22	20	b 18	17	-----	16	36	49	165	65	41	58
31	23	-----	b 16	18	-----	18	-----	60	-----	142	* 41	-----
Total	709	613	580	564	453	497	646	1,959	5,492	3,844	1,889	1,322
Mean	22.9	20.4	18.7	18.2	16.2	16.0	21.5	63.2	183	124	60.9	44.1
Ac-ft	1,410	1,220	1,150	1,120	899	986	1,280	3,890	10,890	7,620	3,750	2,620

Calendar year 1964: Max 162 Min 13 Mean 36.6 Ac-ft 26,610  
Water year 1964-65: Max 289 Min 14 Mean 50.9 Ac-ft 36,840

Peak discharge (base, 160 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-11	1900	3.76	273	7-7	0200	3.69	228
6-17	0245	4.05	397	7-31	1930	3.68	201

\* Discharge measurement made on this day.  
b Stage-discharge relation affected by ice.  
e Stage-discharge relation indefinite.

9-700. Eagle River below Gypsum, Colo.

Location.--Lat 39°39'00", long 106°57'10", in NW¼ sec.5, T.5 S., R.85 W., on right bank 30 ft downstream from bridge on U. S. Highways 6 and 24 at Gypsum and 150 ft downstream from Gypsum Creek.

Drainage area.--957 sq mi.

Records available.--October 1946 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 6,270 ft.

Average discharge.--19 years, 582 cfs (421,400 acre-ft per year).

Extremes.--Maximum discharge during year, 5,260 cfs June 18 (gage height, 8.22 ft); minimum daily, 114 cfs Mar. 3.

1946-65: Maximum discharge, 6,580 cfs June 11, 1952; maximum gage height, 9.17 ft June 29, 1957; minimum daily discharge, 110 cfs Feb. 21, 1955, Feb. 3, 1956, Dec. 26, 27, 1962.

Remarks.--Records good except those for periods of ice effect, which are fair. Transmountain diversions above station (see elsewhere in this report). Transbasin diversions above station from Robinson Reservoir (capacity, 2,520 acre-ft) to Tenmile Creek for mining development. Many small diversions for irrigation of hay meadows above station. Records of chemical analyses and water temperatures for the water year 1965 are published in Part 2 of this report as "at Gypsum."

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 12-19, July 24 to Sept. 16)

Oct. 1 to Apr. 19

Apr. 20 to Sept. 30

3.3	105	3.8	230	6.0	2,200
3.5	128	4.2	430	6.5	2,820
3.7	163	4.6	720	7.0	3,470
3.9	215	5.0	1,100	8.0	4,850
4.1	280				

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	170	176	194	176	167	143	183	774	1,650	2,480	2,090	437
2	163	176	197	165	147	*132	200	1,030	1,510	2,720	1,520	412
3	161	181	*188	142	167	114	194	1,160	1,680	2,820	1,380	465
4	161	181	185	*174	*167	134	183	1,210	1,840	2,650	1,310	493
5	153	172	176	185	161	140	178	*1,180	1,610	2,560	1,170	556
6	151	170	161	188	167	142	176	1,010	1,430	2,550	1,040	500
7	*151	170	b140	188	165	138	188	900	1,680	2,480	900	458
8	151	170	b130	181	161	140	191	900	2,080	2,400	828	444
9	151	172	170	170	159	140	206	783	2,430	2,360	756	430
10	151	172	194	170	153	145	203	680	*2,790	2,150	680	400
11	151	*174	183	170	147	142	194	648	2,990	2,100	656	382
12	151	172	176	172	132	143	188	712	2,850	2,390	*619	388
13	153	181	b140	170	125	140	200	855	2,760	*2,380	577	376
14	157	194	b140	170	155	138	200	940	3,170	2,020	664	350
15	159	197	172	170	163	140	209	828	3,600	1,800	556	335
16	170	200	183	167	145	140	233	712	4,180	1,680	521	335
17	170	209	172	155	157	138	259	846	4,700	1,530	500	315
18	170	206	143	147	155	130	266	1,170	4,810	1,740	605	350
19	167	197	172	161	151	125	270	1,230	4,650	1,960	1,010	376
20	167	185	181	157	153	122	*310	*1,460	4,390	1,650	1,030	444
21	165	183	178	157	153	137	400	1,670	4,250	1,580	801	430
22	165	183	178	163	151	137	521	2,020	3,930	1,530	704	406
23	165	200	197	143	147	137	591	2,380	3,570	1,940	640	394
24	165	191	212	163	137	138	633	2,220	*3,440	2,140	598	406
25	165	203	194	163	138	132	556	1,730	3,440	1,850	563	430
26	165	206	183	151	143	134	528	1,420	3,080	1,610	521	430
27	165	206	183	151	145	137	465	1,190	2,660	1,370	479	424
28	165	197	183	163	149	138	424	1,020	2,680	1,320	444	437
29	170	200	176	163	-	*138	465	980	2,820	1,190	444	528
30	174	197	b130	165	-----	153	570	1,090	2,880	1,120	493	500
31	174	-----	b130	200	-----	174	-----	1,310	-----	1,700	*486	-----
Total	5,016	5,621	5,341	5,160	4,260	4,281	9,384	36,058	89,550	61,760	24,585	12,631
Mean	162	187	172	166	152	138	313	1,163	2,985	1,992	793	421
Ac-ft	9,950	11,150	10,590	10,230	8,450	8,490	18,610	71,520	177,600	122,500	48,760	25,050

Calendar year 1964: Max 2,650 Min 130 Mean 429 Ac-ft 311,700  
Water year 1964-65: Max 4,810 Min 114 Mean 722 Ac-ft 522,900

Peak discharge (base, 3,500 cfs).--June 18 (0930) 5,260 cfs (8.22 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

## COLORADO RIVER MAIN STEM

9-705. Colorado River near Dotsero, Colo.

Location.--Lat 39°38'40", long 107°04'40", in sec.6, T.5 S., R.86 W., on left bank about 500 ft south of U. S. Highways 6 and 24, 1½ miles west of Dotsero, and 1½ miles downstream from Eagle River.

Drainage area.--4,390 sq mi, approximately.

Gage.--Water-stage recorder. Altitude of gage is 6,130 ft (from topographic map).

Records available.--October 1940 to September 1965.

Average discharge.--25 years, 2,130 cfs (1,542,000 acre-ft per year).

Extremes.--Maximum discharge during year, 11,600 cfs June 18 (gage height, 8.77 ft); minimum daily, 550 cfs Dec. 8.  
1940-65: Maximum discharge, 19,100 cfs June 8, 1952 (gage height, 11.56 ft); minimum daily, 350 cfs Jan. 5, 1944.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Natural flow of stream affected by transmountain diversions, storage reservoirs, power development, diversions for irrigation of 68,000 acres above station, and return flow from irrigated areas.

Cooperation.--Gage-height record collected in cooperation with The Public Service Co. of Colorado.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.7	660	5.0	4,250
1.9	760	6.0	5,800
2.0	820	7.0	7,550
2.5	1,200	8.0	9,650
3.0	1,660	9.0	12,100
4.0	2,870		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,210	784	869	660	700	735	1,220	2,730	4,560	4,490	5,400	1,660
2	1,160	784	876	740	660	* 710	1,220	3,560	4,780	4,600	4,670	1,610
3	1,170	784	834	700	720	675	1,250	4,120	4,800	4,680	4,250	1,560
4	1,230	790	802	660	780	685	1,220	* 4,280	5,000	4,440	4,150	1,600
5	1,180	778	750	740	* 700	725	1,190	4,250	4,840	4,260	3,860	1,730
6	* 1,160	766	710	780	778	715	1,140	4,040	4,670	4,180	3,270	1,850
7	1,140	760	b 600	860	784	705	1,140	3,620	4,880	4,050	3,030	1,690
8	1,150	760	b 550	920	755	705	1,230	3,300	5,500	3,900	2,780	1,640
9	1,180	772	b 650	820	735	705	1,430	3,030	6,090	3,960	* 2,660	1,590
10	1,160	766	b 800	800	740	735	1,550	2,730	* 6,810	3,730	2,520	1,480
11	1,140	* 784	b 900	800	740	745	1,530	2,610	7,530	3,730	2,380	1,410
12	1,150	778	b 800	800	695	745	1,430	2,570	7,810	4,000	2,220	1,370
13	1,150	796	b 700	800	b 560	745	1,770	2,840	8,250	* 4,380	2,050	1,340
14	1,180	827	b 600	780	b 620	755	1,780	3,160	9,280	4,420	2,100	1,280
15	1,180	862	700	780	b 720	755	* 1,740	3,140	9,520	4,300	2,070	1,240
16	1,030	855	800	740	784	755	1,870	2,880	9,630	3,790	1,970	1,200
17	1,080	855	780	700	802	772	2,050	3,010	10,400	3,410	1,920	1,180
18	1,030	883	720	660	802	720	1,670	3,760	10,900	3,720	2,030	1,270
19	976	876	700	660	778	680	1,340	4,110	10,500	4,260	2,700	1,450
20	976	778	780	660	766	705	1,430	* 4,680	9,820	4,120	3,190	1,560
21	904	790	880	700	725	740	1,890	5,400	8,970	4,100	3,370	1,660
22	827	802	900	740	750	766	2,400	6,170	7,950	3,830	2,860	1,610
23	827	808	940	660	745	772	2,600	6,990	7,280	4,190	2,620	1,560
24	834	796	1,000	720	705	766	2,620	7,140	* 6,780	4,480	2,700	1,580
25	834	841	1,000	800	735	745	2,560	6,700	6,560	4,720	2,440	1,610
26	814	911	900	780	730	745	2,330	6,000	6,330	4,940	2,210	1,610
27	778	900	900	700	725	760	2,090	5,160	5,950	4,520	2,120	1,620
28	750	820	900	680	745	796	1,750	4,210	5,560	4,260	2,040	1,580
29	750	840	820	680	-	* 820	1,720	3,800	5,500	4,080	1,740	1,720
30	760	* 860	700	720	-----	911	2,070	3,750	5,190	3,930	1,720	1,800
31	760	-----	600	800	-----	1,100	-----	4,080	-----	4,420	* 1,740	-----
Total	31,470	24,406	24,461	23,040	20,479	23,393	51,300	127,820	211,640	129,890	84,780	46,060
Mean	1,015	814	789	743	731	755	1,710	4,123	7,055	4,190	2,735	1,535
Ac-ft	62,420	48,410	48,520	45,700	40,620	46,400	101,800	253,500	419,800	257,600	168,200	91,360

Calendar year 1964: Max 6,040 Min 460 Mean 1,337 Ac-ft 970,800

Water year 1964-65: Max 10,900 Min 550 Mean 2,188 Ac-ft 1,584,000

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 27-30, Dec. 15 to Feb. 5 (stage-discharge relation affected by ice during part of period).

## 9-725. Colorado River at Glenwood Springs, Colo.

Location.--Lat 39°33'00", long 107°19'20", in sec.9, T.6 S., R.89 W., on right bank at powerplant at Glenwood Springs, 10 ft from U. S. Highways 6 and 24 and half a mile upstream from Roaring Fork River.

Drainage area.--4,560 sq mi, approximately.

Records available.--May 1899 to September 1965. Prior to October 1918, published as Grand River at Glenwood Springs.

Gage.--Water-stage recorder (digital). Datum of gage is 5,720.71 ft above mean sea level, adjustment of 1912. Prior to Jan. 1, 1900, wire-weight gage at railroad bridge 2,500 ft downstream at different datum. Jan. 1, 1900, to May 16, 1910, staff or float gage at present site and datum.

Average discharge.--66 years, 2,717 cfs (1,967,000 acre-ft per year).

Extremes.--Maximum discharge during year, 11,900 cfs June 18 (gage height, 8.83 ft); minimum daily, 519 cfs Dec. 8.

1899-1965: Maximum discharge, 30,100 cfs June 14, 1918 (gage height, 12.55 ft); minimum daily, 286 cfs Jan. 22, 1935.

Remarks.--Records good. Natural flow of stream affected by transmountain diversions, storage reservoirs, power development, diversions for irrigation of about 70,000 acres, and return flow from irrigated areas. Low flow regulated by Shoshone powerplant 6 miles above station. Records of chemical analyses and water temperatures for the water year 1965 are published in Part 2 of this report as "near Glenwood Springs."

Rating table (gage height, in feet, and discharge,  
in cubic feet per second)

2.7	490	5.0	2,910
3.0	650	6.0	4,800
3.5	1,020	7.0	7,160
4.0	1,520	9.0	12,600

## DISCHARGE, IN CURIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	1,250	794	919	758	* 919	* 865	1,290	2,620	5,060	4,720	5,620	1,710
2	1,220	* 796	914	804	702	727	1,260	3,500	5,140	4,760	4,910	1,670
3	1,220	853	873	717	819	671	1,330	4,140	5,280	4,900	4,400	1,610
4	1,190	793	851	* 758	884	687	1,330	* 4,350	5,550	4,720	4,310	1,650
5	1,280	779	774	868	782	711	1,270	4,320	5,360	4,490	4,090	1,730
6	1,240	785	726	871	873	728	1,250	4,070	5,210	4,380	3,370	1,960
7	* 1,120	783	599	977	843	773	1,190	3,650	5,480	4,260	3,120	1,810
8	1,220	793	519	1,010	868	737	1,210	3,300	6,260	4,140	2,820	1,730
9	1,230	781	605	890	802	802	1,470	3,020	6,810	4,230	* 2,690	1,680
10	1,220	790	893	882	819	822	1,580	2,720	7,350	4,010	2,520	1,610
11	1,180	797	933	876	789	719	1,590	2,550	* 8,120	3,980	2,400	1,540
12	1,150	810	929	887	621	839	1,500	2,520	8,390	4,230	2,220	1,490
13	1,200	801	649	881	614	783	1,760	2,780	8,860	* 4,640	2,110	1,440
14	1,160	846	565	884	706	822	1,720	3,120	9,920	4,680	2,110	1,400
15	1,220	879	693	896	875	861	1,800	3,160	10,100	4,620	2,160	1,350
16	1,180	902	848	862	768	859	1,890	2,920	10,200	4,110	2,040	1,340
17	1,000	898	866	829	729	749	2,070	3,060	10,800	3,640	1,990	1,230
18	1,090	877	678	790	809	698	1,800	3,860	11,200	3,850	2,090	1,280
19	1,060	931	706	758	720	767	* 1,520	* 4,300	10,800	4,460	2,720	1,410
20	970	760	858	729	797	689	1,460	4,870	10,100	4,350	3,190	1,600
21	1,030	801	977	824	793	749	1,850	5,680	9,480	4,330	3,440	1,700
22	901	816	923	824	831	787	2,360	6,490	* 8,500	4,010	2,990	1,680
23	841	798	988	729	774	856	2,600	7,580	7,660	4,330	2,550	1,620
24	901	804	1,110	790	823	776	2,660	7,880	7,130	4,680	2,670	1,630
25	851	839	1,110	908	721	777	2,590	7,240	6,910	4,930	2,470	1,640
26	849	914	934	785	798	820	2,330	6,320	6,530	5,200	2,200	1,680
27	829	944	946	708	727	826	2,100	5,440	6,150	4,760	2,130	1,670
28	792	855	978	848	834	906	1,800	4,510	5,720	4,460	2,050	1,650
29	766	875	906	786	-----	* 796	1,710	4,030	5,650	4,270	1,820	1,730
30	770	* 888	635	898	-----	949	2,020	4,000	5,360	4,100	1,760	1,840
31	788	-----	575	919	-----	1,140	-----	4,440	-----	4,540	* 1,770	-----
TOTAL	32,718	24,982	25,480	25,946	22,040	24,691	52,310	132,440	225,080	136,780	86,730	48,080
MEAN	1,055	833	822	837	787	796	1,744	4,272	7,503	4,412	2,798	1,603
AC-FT	64,900	49,550	50,540	51,460	43,720	48,970	103,800	262,700	446,400	271,300	172,000	95,370

CALENDAR YEAR	1964	MAX	6,610	MIN	432	MEAN	1,407	AC-FT	1,021M
WATER YEAR	1964-65	MAX	11,200	MIN	519	MEAN	2,294	AC-FT	1,661M

\* Discharge measurement made on this day.

## ROARING FORK RIVER BASIN

9-734. Roaring Fork River near Aspen, Colo.

Location.--Lat 39°10'48", long 106°48'04", on right bank 200 ft upstream from Salvation ditch headgate, 1 mile southeast of Aspen, and 2 miles upstream from Hunter Creek, Pitkin County.

Drainage area.--108 sq mi.

Records available.--October 1964 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 8,015.17 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 1,310 cfs July 1 (gage height, 5.20 ft), from rating curve extended above 770 cfs; minimum daily, 16 cfs Mar. 3, 4.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Transmountain diversion 14 miles upstream through Twin Lakes tunnel to Arkansas River basin since May 24, 1935 (see elsewhere in this report).

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Sept. 26-30)

1.4	17	3.0	205
1.6	24	3.5	335
2.0	57	4.0	520
2.5	116	4.9	1,070

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	36	27	26	26	* 21	* 20	26	152	* 265	881	157	54
2	32	27	26	24	21	18	24	185	242	848	126	51
3	28	28	25	22	22	16	22	195	270	818	* 150	64
4	26	22	24	22	22	16	22	193	281	610	134	70
5	26	25	22	24	22	19	22	166	232	638	120	68
6	28	25	21	* 24	22	20	22	* 148	219	692	115	76
7	26	24	19	23	22	20	22	119	258	722	104	65
8	26	24	20	23	21	20	22	111	302	800	98	61
9	28	* 23	22	22	22	20	22	98	338	830	92	60
10	28	22	25	23	22	22	22	95	356	812	87	56
11	30	22	26	22	20	20	21	85	386	812	86	57
12	28	20	25	22	22	20	21	96	374	1,020	79	57
13	26	22	22	22	20	20	22	124	353	965	77	55
14	26	22	23	23	21	20	23	138	386	* 770	91	54
15	28	24	25	23	21	20	24	112	442	620	80	52
16	28	24	26	22	20	20	25	106	525	595	75	50
17	30	24	25	20	21	20	29	140	* 590	585	75	49
18	28	22	23	22	20	20	32	189	836	644	98	66
19	26	22	26	22	20	18	36	* 213	951	644	103	78
20	24	20	24	22	20	17	53	293	993	365	84	78
21	24	24	24	23	20	19	75	317	951	191	75	70
22	25	24	24	22	20	20	* 90	347	909	176	79	68
23	* 27	22	25	23	20	22	103	332	888	166	72	70
24	26	24	26	23	20	20	103	275	824	162	69	81
25	24	24	25	23	18	20	87	223	806	164	60	87
26	28	24	24	22	18	18	79	191	510	170	59	85
27	31	22	24	22	20	18	74	161	380	150	55	89
28	28	24	24	22	20	18	71	141	406	141	52	* 95
29	29	26	24	22	-	* 18	89	148	* 485	128	57	99
30	29	* 25	22	22	-----	18	111	181	716	118	70	91
31	29	-----	23	24	-----	22	-----	230	-----	152	* 61	-----
Total	858	708	740	701	578	599	1,394	5,504	15,474	16,389	2,740	2,056
Mean	27.7	23.6	23.9	22.6	20.6	19.3	46.5	178	516	529	88.4	68.5
Ac-ft	1,700	1,400	1,470	1,390	1,150	1,190	2,760	10,920	30,690	32,510	5,430	4,080

Calendar year 1964: Max - Min - Mean - Ac-ft -  
 Water year 1964-65: Max 1,020 Min 16 Mean 131 Ac-ft 94,690

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-21, Mar. 2-29, stage-discharge relation affected by ice Nov. 10-28, Dec. 13, Jan. 3-5, 13, 17-20, Feb. 25, 26.



9-737. Hunter Creek above Midway Creek, near Aspen, Colo.

Location.--Lat 39°12'50", long 106°39'20", on right bank 2.8 miles upstream from Midway Creek and 9 miles east of Aspen, Pitkin County.Drainage area.--6.18 sq mi.Records available.--October 1964 to September 1965.Gage.--Water-stage recorder. Altitude of gage is 10,500 ft (from topographic map).Extremes.--Maximum discharge during year, 320 cfs sometime during period June 18-20 (gage height, 2.6 ft, from floodmarks), from rating curve extended above 70 cfs; maximum gage height recorded, 3.02 ft May 2 (backwater from ice); minimum discharge not determined.Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No regulation or diversion above station.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to July 15				July 16 to Sept. 30			
0.4	2.0	1.2	21	0.5	6.5	1.2	34
.6	4.1	1.4	37	.6	8.0	1.5	62
.8	7.0	1.6	61	.8	13	1.7	90
.9	8.8	1.8	94	1.0	21		
1.0	12	2.1	160				

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.8							6	25	120	40	9.2
2	5.0							10	20	130	30	8.8
3	5.1							11	34	130	25	13
4	5.3							10	34	140	22	12
5	5.3							9	16	130	20	14
6	5.4							7	14	120	19	15
7	5.6							6.2	22	110	18	12
8	5.6						3.5	5.7	41	110	17	12
9	5.6							5.6	67	100	16	10
10	5.3							4.8	80	100	15	9.0
11	4.9						2.6	4.6	62	110	14	8.8
12	4.4							6.2	33	120	13	9.2
13	4.6							7.9	36	100	12	8.6
14	4.8							8.1	67	85	14	7.7
15	5.0							6.5	104	70	13	7.4
16	5.2	3.0	2.8	2.6	2.6			5.7	120	62	12	7.0
17	5.4							7.9	130	60	* 13	7.1
18	5.2							12	* 150	65	25	9.0
19	5.0							14	160	60	20	9.4
20	4.8							25	140	55	15	9.4
21	4.4						5.0	30	130	55	14	9.2
22	* 4.1							39	130	55	13	8.4
23	2.6							34	130	* 82	12	8.6
24	3.0							20	140	80	11	11
25	3.4							11	130	70	10	11
26	3.4						3.0	8.3	120	60	* 9.5	11
27	3.4							7.2	110	50	9.2	12
28	3.4							5	* 8	120	35	* 12
29	3.6							4.8	* 8.8	* 135	30	15
30	2.8							4.5	17	120	40	15
31	3.2							25		50	11	12
Total	139.6	90.0	86.8	80.6	72.8	85.0	126.8	381.5	2,620	2,584	501.5	307.8
Mean	4.50	3.0	2.8	2.6	2.6	2.7	4.23	12.3	87.3	83.4	16.2	10.3
Ac-ft	277	179	172	160	144	169	252	757	5,200	5,130	995	611

Calendar year 1964: Max - Min - Mean - Ac-ft -  
 Water year 1964-65: Max 160 Min - Mean 19.4 Ac-ft 14,050

Peak discharge (base, 80 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-10	2200	1.90	114	6-29	2200	2.45	262
†	Unknown	2.6	320	7-23	2100	2.34	235

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 12-21, Oct. 24 to Apr. 29, May 1-6, 20. No gage-height record Nov. 11 to Apr. 27, May 28, June 16-28, June 30 to July 15, July 18-22, July 24 to Aug. 26, Sept. 28-30.

† Sometime during period June 18-20.

9-772. Fryingpan River near Ivanhoe Lake, Colo.

Location.--Lat 39°14'45", long 106°31'50", on left bank 200 ft downstream from Martin Creek, 2 miles southwest of Ivanhoe Lake, and 9 miles southeast of Norrie, Pitkin County.

Drainage area.--18.7 sq mi.

Records available.--October 1963 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 9,940 ft (from topographic map).

Extremes.--Maximum discharge during year, 391 cfs June 22 (gage height, 3.02 ft), from rating curve extended above 230 cfs; maximum gage height, 3.06 ft July 2 (backwater from log); minimum discharge not determined.  
1963-65: Maximum discharge, that of June 22, 1965; maximum gage height, that of July 2, 1965; minimum discharge not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used July 1, 2)

1.1	6.0	2.1	67
1.3	12	2.4	130
1.4	15	2.7	235
1.7	29	3.0	380
1.9	44		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 14	9	7.0					18	85	253	115	* 27
2	14	9	7.0					22	81	280	95	27
3	13	8	7.0					24	101	290	83	34
4	13	8	6.8					24	93	280	74	31
5	13	8	6.8					22	63	276	* 64	33
6	12	9						20	63	276	58	33
7	12	9						20	80	253	53	30
8	12	9					8	18	99	244	49	30
9	12	8.5						16	120	223	45	28
10	12	8						16	133	207	43	27
11	13	7						20	133	215	41	27
12	12	7						25	103	285	41	26
13	11	7						35	103	219	42	25
14	11	7						33	130	192	41	23
15	11	7						27	170	178	39	23
16	11	7.5		6	5	7		27	207	164	36	22
17	10	8						35	231	154	40	24
18	10	7.5	6.5					42	305	170	57	28
19	9.7	7.5						49	310	164	55	29
20	9.7	7.5						67	325	154	46	28
21	9.4	7.2						76	330	151	42	25
22	9.4	7.2						87	340	145	41	25
23	* 9.7	7.2					10	87	350	* 145	39	27
24	9.7	7.2						67	355	136	34	29
25	10	7.2						49	315	136	32	28
26	10	7.2						41	248	118	30	28
27	10	6.8					(*)	34	219	105	28	27
28	9.5	7.2						* 34	244	101	27	28
29	9.5	7.2						39	* 271	89	37	* 30
30	9.4	7.0						52	262	91	35	28
31	9.1							78		130	30	
Total	341.1	229.9	203.6	186	140	217	270	1,204	5,869	5,824	1,492	830
Mean	11.0	7.66	6.57	6	5	7	9	38.8	196	188	48.1	27.7
Ac-ft	677	456	404	369	278	430	536	2,390	11,640	11,550	2,960	1,650

Calendar year 1964: Max 168 Min - Mean 28.0 Ac-ft 20,320  
Water year 1964-65: Max 355 Min - Mean 46.0 Ac-ft 33,340

Peak discharge (base, 250 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-22	2030	3.02	391	7-12	0130	2.99	345
7-2	2100	3.06	360				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 25-29, Nov. 1-18, Apr. 28 to May 12. No gage-height record Dec. 6 to Apr. 27 (stage-discharge relation affected by ice during most of period).

9-774. Fryingspan River near Norrie, Colo.

Location.--Lat 39°17'45", long 106°36'10", in sec.1, T.9 S., R.83 W. (projected), on right bank just upstream from bridge at Horseshoe Bend Ranch, 0.1 mile upstream from Ivanhoe Creek, and 4 miles southeast of Norrie.

Drainage area.--32.2 sq mi.

Records available.--October 1963 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 8,760 ft (from topographic map).

Extremes.--Maximum discharge during year, 530 cfs June 19 (gage height, 3.82 ft); minimum not determined.  
1963-65: Maximum discharge, 530 cfs June 19, 1965 (gage height, 3.82 ft); minimum not determined.

Remarks.--Records good except those for periods of ice effect, which are poor. No regulation or diversion above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 25-28, June 26 to July 26)

0.7	10	2.5	187
.9	19	3.0	290
1.3	48	3.6	455
2.0	117		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	14	13				10	69	180	320	148	40
2	*18	14	13				11	87	166	350	133	*39
3	17	13	12				11	87	*203	345	129	50
4	16	13	11				11	79	198	332	103	51
5	16	13	10				10	*69	151	325	*92	50
6	16	14	9				10	60	141	318	86	53
7	16	14	8.5				10	60	172	295	81	44
8	16	14	9				10	59	201	295	75	43
9	16	13	10				11	50	239	270	70	41
10	16	12	12				11	43	251	257	67	38
11	17	12	11				10	47	292	261	63	38
12	16	13	10				9	66	233	312	62	38
13	16	13	9				9	87	215	*257	63	36
14	15	13	9				*9	86	241	225	63	33
15	15	14	11				9	66	288	213	62	31
16	14	14	12				10	69	350	200	56	31
17	14	14	12				11	102	*371	187	58	31
18	14	13	11				12	123	425	205	91	38
19	14	12	10				12	130	449	196	90	43
20	14	12	10				15	*160	446	175	73	43
21	14	13	12				20	178	431	168	63	40
22	14	13	13				40	201	419	161	64	38
23	14	12	13				40	215	416	167	58	42
24	14	12	13				40	175	425	162	52	46
25	14	13	13				38	131	389	156	49	46
26	16	13	12				32	107	335	144	46	43
27	15	12	11				27	92	300	133	42	42
28	16	12	10				*31	85	322	130	41	43
29	14	12	9.5				36	93	*342	117	52	48
30	14	13	9				53	119	328	118	56	46
31	14	---	10				---	162	---	160	45	---
Total	475	389	338.0	279	224	279	568	3,157	8,919	6,954	2,233	1,245
Mean	15.3	13.0	10.9	9	8	9	18.9	102	297	224	72.0	41.5
Ac-ft	942	772	670	553	444	553	1,130	6,260	17,690	13,790	4,430	2,470

Calendar year 1964: Max 285 Min - Mean 44.5 Ac-ft 32,300  
Water year 1964-65: Max 449 Min - Mean 68.7 Ac-ft 49,700

Peak discharge (base, 350 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-11	1900	3.25	360	7-2	2200	3.39	431
6-19	2200	3.82	530				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4 to Apr. 17 (no gage-height record Dec. 6 to Apr. 14), Apr. 20-24.

## ROARING FORK RIVER BASIN

9-776. Ivanhoe Creek near Norrie, Colo.

Location.--Lat 39°17'20", long 106°33'10", on right bank near Public Service powerline cabin, 1½ miles downstream from Lyle Creek, 3 miles upstream from mouth, and 6½ miles southeast of Norrie, Pitkin County.

Drainage area.--9.12 sq mi.

Records available.--October 1963 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 10,350 ft (from topographic map).

Extremes.--Maximum discharge during year, 180 cfs June 17 (gage height, 5.87 ft), from rating curve extended above 90 cfs; minimum not determined.

1963-65: Maximum discharge, that of June 17, 1965; maximum gage height, 6.50 ft May 17, 1964 (backwater from ice); minimum discharge not determined.

Revisions.--The maximum discharge for the water year 1964 has been revised to 152 cfs June 7, 1964 (gage height, 5.74 ft), superseding figure previously published.

Remarks.--Records good except those for periods of ice effect, which are poor. Transmountain diversions above station through Busk-Ivanhoe tunnel to Arkansas River basin (see elsewhere in this report).

Revisions.--Revised figures of discharge, in cubic feet per second, for the water year 1964, superseding those previously published, are given herewith:

1964	1964-Con.	1964-Con.
May 19..... 75	May 24..... 100	June 6..... 63
20..... 82	25..... 105	7..... 88
21..... 90	26..... 99	8..... 69
22..... 99	27..... 85	
23..... 95	28..... 72	

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
May 1964.....	1,146.3	105	1.6	37.0	2,270
June 1964.....	993	88	13	33.1	1,970
Water year 1963-64.....	—	105	—	7.24	5,250

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 1.5						1.2	8.5	51	28	35	* 2.5
2	1.3						1.6	14	40	32	25	2.5
3	1.2						1.6	17	56	35	26	3.3
4	1.2						1.4	16	58	54	22	4.2
5	1.2						1.0	15	34	46	* 17	4.1
6	1.1						1.0	14	30	44	14	4.2
7	1.1						1.0	14	52	35	11	3.1
8	1.0						1.0	13	* 69	72	9.2	3.1
9	1.0						1.4	12	87	93	8.0	2.8
10	1.2						1.4	12	92	77	6.1	2.6
11	1.5						1.2	13	84	80	3.1	2.6
12	1.5						1.0	17	60	88	2.3	2.8
13	1.3						.8	20	59	* 76	2.7	2.5
14	1.3						.8	18	79	61	3.5	2.2
15	1.2						1.0	15	102	53	3.1	2.1
16	1.2	1.0	0.8	0.8	0.6	0.6	2.0	13	118	51	2.6	2.0
17	1.2						3.0	19	116	48	2.9	2.0
18	1.3						4.0	26	* 124	53	6.5	2.8
19	1.0						6	32	116	47	7.0	3.6
20	1.0						8	44	100	40	5.1	3.8
21	* 1.0						10	50	94	34	3.8	3.3
22	.9						10	65	84	33	3.8	3.5
23	1.0						9	65	78	37	3.3	4.2
24	1.2						7	55	80	37	2.9	6.3
25	1.2						6.5	30	70	36	2.7	5.6
26	1.2						6	19	57	29	2.4	4.8
27	1.0						* 5.5	18	48	25	2.3	4.1
28	1.0						5.0	* 18	45	24	2.2	4.0
29	1.2						5.0	18	40	19	3.6	* 4.5
30	1.2						5.5	26	30	19	3.6	4.8
31	1.2							42		38	3.2	
Total	36.4	30.0	24.8	24.8	16.8	18.6	109.9	758.5	2,153	1,444	245.9	103.9
Mean	1.17	1.0	0.8	0.8	0.6	0.6	3.66	24.5	71.8	46.6	7.93	3.46
Ac-ft	72	60	49	49	33	37	218	1,500	4,270	2,860	488	206

Calendar year 1964: Max 105 Min - Mean 7.20 Ac-ft 5,220

Water year 1964-65: Max 124 Min - Mean 13.6 Ac-ft 9,840

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 23 to May 5 (no gage-height record Nov. 4 to Apr. 27), May 8, 9, 13-17, 21-27.

9-778. South Fork Fryingpan River at upper station, near Norrie, Colo.

Location.--Lat 39°14'30", long 106°35'35", on left bank 5 miles upstream from mouth and 7 miles southeast of Norrie, Pitkin County.Drainage area.--11.5 sq mi.Records available.--October 1963 to September 1965.Gage.--Water-stage recorder. Altitude of gage is 9,960 ft (from topographic map).Extremes.--Maximum discharge during year, 266 cfs June 19 (gage height, 3.25 ft), from rating curve extended above 150 cfs; minimum not determined.

1963-65: Maximum discharge, 266 cfs June 19, 1965 (gage height, 3.25 ft), from rating curve extended above 150 cfs; minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station.Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 17-24)

1.6	4.0	2.3	50
1.7	6.5	2.5	84
1.8	10	2.7	132
2.0	21	3.0	220

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 7.2							b 8	50	149	86	19
2	6.8							b 10	44	175	64	19
3	6.5							b 12	59	175	53	* 24
4	6.5	(*)						b 12	59	178	47	23
5	6.2							b 12	41	166	41	26
6	6.2							11	36	172	37	26
7	6.2							10	47	157	35	22
8	6.0							9.6	62	152	33	22
9	6.0							9.0	84	138	31	20
10	6.2							8.2	91	129	* 30	19
11	6.2							9.3	86	143	28	18
12	6.8							10	62	184	28	18
13	6.5							14	67	135	31	17
14	6.0							15	95	114	31	16
15	5.5							12	119	106	29	14
16	5.5	6	5	4.5	4	4	4	13	152	99	27	14
17	5.8							16	160	102	33	14
18	5.5							23	* 181	114	50	18
19	5.5							27	196	102	46	19
20	6							39	184	91	35	17
21	6.5							47	175	86	31	16
22	6.5							58	175	86	31	15
23	6.5							56	178	* 106	30	16
24	6.5							44	184	102	25	19
25	6.5							31	166	104	23	19
26	6							25	138	82	21	20
27	6							21	129	69	19	20
28	6.5							* 31	154	59	19	22
29	7							22	166	53	27	* 21
30	7							30	149	71	27	20
31	7							43		109	21	
Total	195.1	180	155	139.5	112	124	120	688.1	3,489	3,708	1,069	573
Mean	6.29	6	5	4.5	4	4	4	22.2	116	120	34.5	19.1
Ac-ft	387	357	307	277	222	246	238	1,360	6,920	7,350	2,120	1,140

Calendar year 1964: Max 116 Min - Mean 18.2 Ac-ft 13,260  
Water year 1964-65: Max 196 Min - Mean 28.9 Ac-ft 20,920

Peak discharge (base, 200 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-19	2000	3.25	266	7-12	2000	3.14	241
7-4	1930	3.14	241				

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 19 to Apr. 27 (stage-discharge relation affected by ice during most of period).

## ROARING FORK RIVER BASIN

9-779. South Fork Fryingpan River near Norrie, Colo.

Location.--Lat 39°18'05", long 106°37'05", in sec.1, T.9 S., R.83 W. (projected), on right bank 100 ft downstream from trail crossing, half a mile upstream from mouth, and 3 miles southeast of Norrie.

Drainage area.--17.3 sq mi.

Records available.--October 1963 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 8,650 ft (from topographic map).

Extremes.--Maximum discharge during year, 429 cfs June 19 (gage height, 3.51 ft), from rating curve extended above 170 cfs; minimum not determined.

1963-65: Maximum discharge, that of June 19, 1965; minimum not determined.

Revisions.--The maximum discharge for the water year 1964 has been revised to 294 cfs June 15, 1964 (gage height, 3.21 ft), superseding figure previously published.

Remarks.--Records good except those for periods of ice effect, which are poor. One small diversion above station to Nast Lake.

Revisions.--Revised figures of discharge, in cubic feet per second, for the water year 1964, superseding those previously published, are given herewith:

1964	1964-Con.	1964-Con.	1964-Con.
May 18..... 72	May 29..... 81	June 15..... 142	June 26..... 109
19..... 85	June 5..... 69	16..... 142	27..... 112
20..... 109	6..... 85	17..... 139	28..... 103
21..... 137	7..... 129	18..... 119	29..... 103
22..... 132	8..... 132	19..... 85	30..... 98
23..... 119	9..... 80	20..... 83	July 1..... 96
24..... 124	10..... 126	21..... 87	2..... 89
25..... 149	11..... 145	22..... 92	3..... 83
26..... 162	12..... 132	23..... 72	4..... 78
27..... 124	13..... 129	24..... 85	
28..... 101	14..... 124	25..... 107	

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
May 1964.....	1,698.5	162	5.9	54.8	3,370
June 1964.....	3,038	145	46	101	6,030
July 1964.....	1,589	96	28	51.3	3,150
Water year 1963-64.....	-	162	-	23.2	16,890

## 9-779. South Fork Fryingpan River near Norrie, Colo.--Continued

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 5

May 6 to Sept. 30

1.6	7.5	1.9	18	2.8	142
1.7	10	2.1	31	3.0	210
1.8	14	2.4	62	3.5	420
		2.6	94		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 12							18	87	200	89	23
2	11							22	78	242	66	* 22
3	11							26	* 98	238	58	27
4	11	(*)						28	101	226	* 52	29
5	10							26	70	203	48	27
6	10						5	25	63	200	43	30
7	10							25	81	172	40	26
8	10							24	107	168	36	27
9	10							20	145	149	36	25
10	10							19	155	139	34	23
11	11							19	168	152	32	22
12	10							23	129	210	31	22
13	10							31	124	* 162	33	22
14	9.8						(*)	34	168	124	34	20
15	9.5						7	28	206	114	34	20
16	9.5	8	6	6	5	4.5		29	262	107	30	19
17	9.5							37	274	109	31	19
18	9.5							48	290	119	49	23
19	8.5							56	330	109	49	25
20	8.5							76	322	96	39	25
21	8.5							96	306	94	35	22
22	8.5							116	294	90	36	21
23	9.2							114	294	105	33	22
24	9.2							97	298	107	30	25
25	8.5						10	61	258	105	28	27
26	8							49	203	89	25	26
27	8.5						(*)	41	189	72	23	26
28	9							37	214	65	22	28
29	8.5							40	* 226	57	27	28
30	9.0							51	210	69	33	26
31	9.0							70		109	26	
Total	296.7	240	186	186	140	139.5	220	1,376	5,750	4,201	1,182	727
Mean	9.57	8	6	6	5	4.5	7.3	44.4	192	136	38.1	24.2
Ac-ft	588	476	369	369	278	277	436	2,730	11,400	8,330	2,340	1,440

Calendar year 1964: Max 162 Min - Mean 23.8 Ac-ft 17,260  
 Water year 1964-65: Max 330 Min - Mean 40.1 Ac-ft 29,030

Peak discharge (base, 220 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-11	1830	3.02	222	7-12	0300	3.21	290
6-19	2200	3.51	429	7-23	2230	3.04	222
7-2	2100	3.30	334	7-31	1930	3.07	238

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 19-22, 25-29, Nov. 1 to May 5 (no gage-height record Nov. 4 to Apr. 28).

## ROARING FORK RIVER BASIN

9-780. Fryingspan River at Norrie, Colo.

Location.--Lat 39°19'50", long 106°39'30", in NE¼ sec.28, T.8 S., R.83 W., on right bank 300 ft south of State Highway 104 at Norrie, 1 mile upstream from North Fork, and 2 miles downstream from Chapman Gulch.

Drainage area.--89.5 sq mi.

Records available.--October 1910 to March 1917, October 1947 to September 1965. Prior to October 1962, published as Fryingspan Creek at Norrie.

Gage.--Water-stage recorder. Altitude of gage is 8,410 ft (from river-profile map). February 1911 to March 1917 staff gages at site 200 ft upstream at different datums.

Average discharge.--24 years (1910-16, 1947-65), 125 cfs (90,500 acre-ft per year).

Extremes.--Maximum discharge during year, 1,000 cfs June 18 (gage height, 4.48 ft); minimum daily, 13 cfs Mar. 26.

1910-17, 1947-65: Maximum discharge, 1,780 cfs June 30, 1957; maximum gage height, 5.55 ft June 28, 1957; minimum daily discharge, 8 cfs Dec. 26, 1962, but may have been less during periods of no gage-height record.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Transmountain diversions above station through Busk-Ivanhoe tunnel to Arkansas River basin since June 1925 (see elsewhere in this report).

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.7	18	2.5	108
1.9	25	3.0	270
2.1	40	3.5	485
2.3	66	4.5	1,010

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40	24	*22	24	18	20	22	190	444	670	390	85
2	36	24	24	26	*17	*17	24	235	404	725	318	*77
3	36	*27	22	26	18	14	24	246	*480	725	290	103
4	34	26	24	25	20	16	24	232	490	725	*263	113
5	32	24	22	*25	20	18	22	*204	395	710	235	101
6	32	26	20	24	20	20	20	172	368	690	214	124
7	32	28	19	24	20	22	20	165	449	665	196	96
8	31	26	18	24	20	22	20	162	508	665	179	94
9	31	24	24	24	19	22	22	132	600	645	162	*90
10	32	28	26	24	18	22	22	122	645	620	156	79
11	36	26	26	24	17	22	20	127	695	620	144	79
12	33	24	24	24	17	22	20	165	600	720	135	79
13	32	26	20	24	16	22	18	228	550	620	147	77
14	31	28	22	23	18	20	18	235	630	*550	156	68
15	30	30	24	23	20	20	18	176	710	508	150	66
16	29	30	24	23	19	20	22	179	805	494	130	63
17	30	30	22	23	18	20	24	252	830	480	141	62
18	30	28	22	22	19	19	26	298	896	498	235	81
19	24	28	24	23	20	17	28	318	902	490	238	96
20	24	30	26	23	22	16	50	*413	896	440	179	101
21	24	28	24	22	22	18	*80	472	872	431	147	85
22	26	26	24	22	20	20	120	535	848	413	150	81
23	28	26	26	18	18	19	120	560	836	431	132	85
24	29	28	30	20	17	17	127	472	848	440	119	103
25	24	30	26	22	19	14	96	359	810	408	108	106
26	24	28	24	20	22	13	83	298	725	377	99	99
27	26	26	22	19	22	14	*72	252	680	334	92	96
28	26	24	24	20	22	15	72	228	710	326	87	99
29	26	24	20	22	--	16	96	246	*720	290	116	116
30	26	22	18	22	-----	*17	135	302	695	302	132	106
31	26	-----	22	20	-----	18	-----	386	-----	408	101	-----
Total	920	799	715	705	538	572	1,465	8,361	20,041	16,420	5,341	2,710
Mean	29.7	26.6	23.1	22.7	19.2	18.5	48.8	270	668	530	172	903
Ac-Ft	1,820	1,580	1,420	1,400	1,070	1,130	2,910	16,580	39,750	32,570	10,590	5,380

Calendar year 1964: Max 695 Min 11 Mean 103 Ac-ft 74,740

Water year 1964-65: Max 902 Min 13 Mean 161 Ac-ft 116,200

Peak discharge (base, 760 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-11	1930	4.12	785	7-12	0500	4.08	805
6-18	2330	4.48	1,000				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 19-22, 25, 28-31, Nov. 1, 2, 25-30, Dec. 1-5, Jan. 23 to Apr. 23. No gage-height record Oct. 26, 27, Nov. 4-24, Dec. 6 to Jan. 2 (stage-discharge relation affected by ice most of periods).



9-781. North Fork Fryingpan River above Cunningham Creek, near Norrie, Colo.

Location.--Lat 39°21'25", long 106°34'30", on left bank 1.2 miles upstream from Cunningham Creek and 5½ miles east of Norrie, Pitkin County.Drainage area.--12.0 sq mi.Records available.--October 1963 to September 1965.Gage.--Water-stage recorder. Altitude of gage is 9,410 ft (from topographic map).Extremes.--Maximum discharge during year, 313 cfs June 17 (gage height, 4.07 ft), from rating curve extended above 200 cfs; maximum gage height recorded, 4.24 ft Apr. 22 (backwater from ice); minimum discharge not determined.

1963-65: Maximum discharge, that of June 17, 1965; maximum gage height recorded, 4.24 ft Apr. 22 (backwater from ice); minimum discharge not determined.

Remarks.--Records good except those for period of ice effect; which are poor. No diversion above station.Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

1.3	2.0	2.1	27
1.4	2.5	2.5	65
1.5	3.5	3.1	145
1.6	5.0	3.7	240
1.8	12		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.1						2.0	23	65	125	69	14
2	* 3.6						2.2	36	58	142	48	14
3	3.4						2.2	41	76	148	45	16
4	3.3						2.0	* 35	77	137	45	16
5	3.2	(*)					1.8	28	55	134	37	16
6	3.1						1.9	20	57	131	* 30	18
7	3.1						2.0	18	84	124	26	16
8	3.0						2.0	19	94	123	25	15
9	2.9						2.2	16	121	111	22	14
10	3.0						2.2	13	132	107	22	13
11	3.2						2.2	14	139	107	22	12
12	3.1						2.0	18	107	137	19	12
13	3.0						* 2.0	25	109	120	20	11
14	2.9						2.0	23	134	95	25	10
15	2.8						2.2	18	169	87	21	9.4
16	2.7	2.8	2.6	2.4	2.2	2	2.8	19	218	84	18	9.0
17	2.7						3.2	34	232	73	18	8.0
18	2.7						3.6	43	* 235	82	38	10
19	2.6						3.8	50	228	81	57	12
20	2.6						5.5	70	218	75	46	15
21	2.6						7	82	196	75	31	15
22	2.4						12	102	181	75	26	15
23	2.6						15	104	170	* 96	24	15
24	2.6						20	82	168	87	* 21	18
25	2.8						17	51	158	72	19	21
26	2.6						14	36	134	60	17	20
27	2.6						9.0	29	118	51	15	19
28	2.6						7.7	* 26	135	50	14	19
29	2.8						9.8	34	148	44	18	21
30	2.8						20	50	138	43	20	22
31	2.8							62		84	16	
Total	90.2	84.0	80.6	74.4	61.6	62	181.3	1,221	4,154	2,960	874	445.4
Mean	2.91	2.8	2.6	2.4	2.2	2	6.04	39.4	138	95.5	28.2	14.8
Ac-ft	179	167	160	148	122	123	360	2,420	8,240	5,870	1,730	883

Calendar year 1964: Max 137 Min - Mean 17.5 Ac-ft 12,700  
 Water year 1964-65: Max 235 Min - Mean 28.2 Ac-ft 20,400

Peak discharge (base, 150 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-10	2300	3.17	160	7-2	2230	3.35	182
6-17	2100	4.07	313	7-12	2400	3.16	152

\* Discharge measurement made on this day.  
Note.--Stage-discharge relation affected by ice Oct. 24 to Apr. 25 (no gage-height record Oct. 25 to Apr. 20).

## ROARING FORK RIVER BASIN

9-782. Cunningham Creek near Norrie, Colo.

Location.--Lat 39°20'05", long 106°34'30", on left bank half a mile upstream from unnamed tributary, 1½ miles upstream from mouth, and 4½ miles east of Norrie, Pitkin County.

Drainage area.--7.12 sq mi.

Records available.--October 1963 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 9,600 ft (from topographic map).

Extremes.--Maximum discharge during year, 218 cfs June 17 (gage height, 2.57 ft), from rating curve extended above 120 cfs; maximum gage height recorded, 3.45 ft Apr. 30 (backwater from ice); minimum discharge not determined.  
1963-65: Maximum discharge, 218 cfs June 17, 1965 (gage height, 2.57 ft), from rating curve extended above 120 cfs; maximum gage height, 3.45 ft Apr. 30, 1965 (backwater from ice); minimum discharge not determined.

Remarks.--Records good except those for periods of ice effect, which are poor. No diversion or regulation above station.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Aug. 19-24)

Oct. 1 to May 5

May 6 to Sept. 30

1.1	1.4	1.4	4.8	1.1	4.0	2.0	60
1.2	2.0	1.5	7.5	1.4	8.0	2.2	97
1.3	3.0	1.6	12	1.6	15	2.4	155
				1.7	23		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*1.8							20	45	71	22	5.4
2	1.7							22	42	76	14	5.2
3	1.7							24	52	76	13	5.8
4	1.6							18	52	76	11	6.8
5	1.6	(*)						14	43	70	*9.8	6.8
6	1.6							13	43	68	8.9	7.0
7	1.5							14	57	66	8.0	5.9
8	1.5							14	65	60	7.6	5.9
9	1.5							11	78	57	6.8	5.5
10	1.6						2.2	10	89	56	6.8	5.0
11	1.6							13	91	57	6.6	5.0
12	1.5							13	70	63	6.2	5.0
13	1.5							17	68	56	6.4	4.8
14	1.5							15	80	48	7.2	4.6
15	1.5							13	102	45	6.8	4.5
16	1.5	1.4	1.2	1.2	1	1.2		14	140	43	5.9	4.5
17	1.5							21	143	43	5.9	4.5
18	1.5							27	*155	43	10	5.2
19	1.5							31	127	37	13	5.9
20	1.5							43	121	35	10	6.2
21	1.4							51	110	30	7.6	5.9
22	1.3							57	97	30	7.0	5.8
23	1.3							62	95	*33	6.0	6.4
24	1.3							52	91	34	5.5	8.6
25	1.4							39	86	29	*5.4	8.9
26	1.3						15	29	76	22	5.3	8.9
27	1.2							21	68	19	4.9	8.6
28	1.3							*20	71	17	4.7	8.3
29	1.4							24	76	15	5.9	*8.9
30	1.4						(*)	35	68	15	6.6	8.3
31	1.4							43		30	6.0	
Total	45.9	42.0	37.2	37.2	28	37.2	194.0	800	2502	1420	250.8	188.1
Mean	1.48	1.4	1.2	1.2	1	1.2	6.5	25.8	83.4	45.8	8.09	6.27
Ac-ft	91	83	74	74	56	74	385	1,590	4,960	2,820	497	373

Calendar year 1964: Max 71 Min - Mean 9.04 Ac-ft 6,560  
Water year 1964-65: Max 155 Min - Mean 15.3 Ac-ft 11,080

Peak discharge (base, 100 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-10	2200	2.28	116	7-3	2100	2.22	102
6-17	2100	2.57	218				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 11-13,  
Oct. 20 to May 5 (no gage-height record Nov. 4 to May 3).

9-783. North Fork Fryingpan River below Cunningham Creek, near Norrie, Colo.

Location.--Lat 39°20'35", long 106°36'40", in sec.24, T.8 S., R.83 W., on right bank 200 ft upstream from campground, 1.2 miles downstream from Cunningham Creek, and 2½ miles east of Norrie.

Drainage area.--24.2 sq mi.

Records available.--October 1963 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 8,770 ft (from topographic map).

Extremes.--Maximum discharge during year, 561 cfs June 17 (gage height, 2.96 ft), from rating curve extended above 360 cfs; minimum not determined.

1963-65: Maximum discharge, that of June 17, 1965; minimum not determined.

Remarks.--Records good except those for periods of ice effect, which are poor. No diversion above station.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 3-14, July 17-20)

Oct. 1 to June 14, July 17 to Sept. 30

June 15 to July 16

0.8	4.0	1.2	38	1.5	135
.9	8.0	1.5	95	2.0	260
1.0	15	2.3	270	2.6	440

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.8						4.4	63	133	230	85	18
2	* 6.4						4.6	83	123	245	61	* 16
3	6.0	(*)					4.4	89	149	248	57	20
4	6.0						4.2	* 83	151	230	* 55	24
5	5.6						4.0	67	123	225	46	23
6	5.6						4.2	53	121	220	38	26
7	6.0						4.4	50	161	208	35	20
8	6.0						4.6	52	* 182	205	33	18
9	5.6						4.4	43	220	190	29	16
10	6.0						4.0	40	242	180	29	14
11	6.4						3.8	40	258	180	29	14
12	6.4						3.8	50	208	215	25	14
13	6.0						* 3.8	67	211	* 188	25	12
14	6.0						3.8	65	258	152	33	12
15	5.6						5	52	323	140	29	10
16	5.6	6	5.5	5.5	4.5	4	8	52	401	135	24	9.4
17	5.6						11	81	419	123	23	8.7
18	6.0						8.7	95	* 428	125	46	12
19	5.2						9.4	101	392	117	73	15
20	5.2						12	129	380	107	55	19
21	5.6						18	143	356	101	41	18
22	6.0						25	173	332	101	37	17
23	5.6						45	186	317	115	32	18
24	6.0						46	155	305	103	28	24
25	5.5						33	109	290	87	24	29
26	5.5						26	91	250	73	72	26
27	5.5						20	79	225	61	19	25
28	6						24	73	245	61	18	24
29	6.4						30	83	255	52	24	29
30	6.8						45	107	248	52	29	28
31	6.8							127		93	24	
Total	183.7	180	170.5	170.5	126.0	124	424.5	2681	7706	4562	1178	559.1
Mean	5.93	6	5.5	5.5	4.5	4	14.2	86.5	257	147	38.0	18.6
Ac-ft	364	357	338	338	250	246	842	5,320	15,280	9,050	2,340	1,110

Calendar year 1964: Max 225 Min - Mean 29.7 Ac-ft 21,590

Water year 1964-65: Max 428 Min - Mean 49.5 Ac-ft 35,840

Peak discharge (base, 250 cfs)--June 10 (2345) 285 cfs (2.25 ft); June 17 (2245) 561 cfs (2.96 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 25-28, Nov. 1 to Apr. 16 (no gage-height record Nov. 14 to Apr. 13), Apr. 20-22.

9-785. North Fork Fryingpan River near Norrie, Colo.

Location.--Lat 39°20'40", long 106°39'50", in N½ sec.21, T.8 S., R.83 W., on left bank 1,000 ft upstream from bridge on State Highway 104, a quarter of a mile upstream from mouth, half a mile downstream from Last Chance Creek, and 1 mile northwest of Norrie.

Drainage area.--41.2 sq mi.

Records available.--October 1910 to March 1917, October 1947 to September 1965. Prior to October 1962, published as North Fork Fryingpan Creek near Norrie.

Gage.--Water-stage recorder. Altitude of gage is 8,400 ft (from topographic map). Feb. 18, 1911, to Mar. 31, 1917, staff gage at site 10 ft downstream at different datum. Oct. 1, 1947, to Sept. 30, 1949, water-stage recorder at present site at datum 2.00 ft higher.

Average discharge.--24 years (1910-16, 1947-65), 52.9 cfs (38,300 acre-ft per year).

Extremes.--Maximum discharge during year, 783 cfs June 17 (gage height, 4.42 ft), from rating curve extended above 530 cfs; minimum daily determined, 4.5 cfs Oct. 19.

1910-17, 1947-65; Maximum discharge, 1,320 cfs June 6, 1958, from rating curve extended above 700 cfs; maximum gage height, 5.80 ft May 21, 1948 (present datum); minimum daily discharge, 0.5 cfs Nov. 1, 1950.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. One small diversion bypasses station for domestic use and irrigation of pasture.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.0	3.5	2.8	37	3.9	305
2.2	8.0	3.0	57	4.3	640
2.4	14	3.3	103		
2.6	24	3.6	170		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.5	6.2	(*)				7	106	167	324	133	* 26
2	8.3	6.8			(*)		7.5	145	156	344	94	24
3	7.5	* 6.8					7.5	156	191	338	86	27
4	7.2	6.2					7.5	145	205	318	* 83	30
5	7.0	b 6.5		(*)			7	* 124	156	305	69	29
6	6.8	b 6.5					7	98	153	300	57	32
7	7.0	b 6.5					7	91	214	283	49	27
8	5.8	b 6.5				5.5	7.5	91	* 241	278	44	25
9	5.1	b 7					7.5	73	283	256	41	23
10	5.3	b 7					7.5	62	305	232	39	22
11	6.8	6.5					7	67	394	228	39	21
12	6.8	6.5					7	88	294	300	35	21
13	6.2	6.5					7	108	283	* 250	40	19
14	6.0	7					7.5	105	305	198	46	18
15	5.3	7					8	80	418	174	40	16
16	4.9	6.5	6	6.5	5.5		9	84	540	164	33	15
17	4.9	6					10	124	* 550	150	32	14
18	5.1	6					11	138	513	162	66	18
19	4.5	6					12	153	477	159	108	24
20	4.7	6					20	* 205	468	138	84	28
21	4.7	6.5					* 30	241	495	133	60	25
22	4.7	7					40	261	468	142	50	25
23	4.9	7				6	53	261	434	180	42	28
24	5.5	7					56	223	442	170	36	34
25	5.3	7					42	150	402	140	33	40
26	6.0	6.5					38	127	338	117	30	36
27	6.0	6					28	110	305	101	27	34
28	6.0	6					29	105	331	98	26	34
29	6.8	6			-		43	115	344	84	33	40
30	6.8	6				(*)	72	140	331	78	36	39
31	7.0	-----			-----		-----	162	-----	145	31	-----
Total	188.4	195.0	186	201.5	154.0	178.5	602.5	4,138	10,203	6,289	1,622	794
Mean	6.08	6.50	6	6.5	5.5	5.8	20.1	133	340	203	52.3	26.5
Ac-ft	374	387	369	400	305	354	1,200	8,210	20,240	12,470	3,220	1,570

Calendar year 1964: Max 300 Min - Mean 38.6 Ac-ft 28,020

Water year 1964-65: Max 550 Min - Mean 67.8 Ac-ft 49,100

Peak discharge (base, 420 cfs).--June 11 (1830) 550 cfs (4.22 ft); June 17 (2300) 783 cfs (4.42 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 11 to Apr. 22 (stage-discharge relation affected by ice during most of period).

9-789. Lime Creek near Troutville, Colo.

Location.--Lat 39°26'00", long 106°35'45", in sec.19, T.7 S., R.82 W. (projected), on left bank 600 ft upstream from Eagle Lake and 2 miles northeast of Troutville.

Drainage area.--4.56 sq mi.

Records available.--October 1963 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 10,080 ft (from topographic map).

Extremes.--Maximum discharge during year, 128 cfs June 17 (gage height, 3.07 ft), from rating curve extended above 80 cfs; minimum not determined.

1963-65: Maximum discharge, 128 cfs June 17, 1965 (gage height, 3.07 ft), from rating curve extended above 80 cfs; minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station.

Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Aug. 19 to Sept. 24)

1.3	1.1	1.8	14
1.4	2.0	2.1	30
1.5	3.5	2.5	65
1.6	6.0	3.0	121

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.2	1.4						b 3.6	24	53	56	7.4
2	* 2.6	1.5						b 5.0	22	70	39	7.0
3	2.4	1.5						b 5.5	27	70	31	9.2
4	2.3	1.5						b 6	28	62	33	8.8
5	2.3	* 1.4						b 6	22	63	29	8.4
6	2.2	1.4						b 6	20	68	25	10
7	2.0	1.4						5.8	33	66	22	10
8	1.9	1.2					1.4	5.5	46	60	20	9.5
9	1.8	1.4						4.5	59	52	18	9.2
10	1.7	1.6						3.8	60	50	17	8.1
11	1.8	1.6						4.2	60	52	*17	7.0
12	1.8	1.4						5.5	37	71	15	6.7
13	1.8	1.6						5.8	36	65	16	6.0
14	1.7	1.6						5.5	52	55	24	5.0
15	1.6	1.6	1.4	1.2	1	1		5.0	70	52	18	* 4.5
16	1.6	1.6						5.0	89	47	15	3.8
17	1.6	1.6						8.8	96	42	15	3.2
18	1.6	1.4						14	* 89	51	32	4.0
19	1.6	1.2						18	87	56	68	5.8
20	1.6	1.0						25	85	43	43	6.7
21	1.6	1.2						36	80	42	29	7.0
22	1.5	1.2						45	68	48	24	6.4
23	1.5	1.0					2	42	60	* 61	21	6.4
24	1.5	1.2						29	67	61	18	8.4
25	1.5	1.4						20	64	50	16	10
26	1.5	1.4						14	51	43	14	11
27	1.5	1.2					(*)	10	48	35	12	11
28	1.4	1.2						* 8.8	63	33	10	12
29	1.4	1.4						10	73	30	10	14
30	1.4	1.2						18	66	31	11	12
31	1.4							23		65	9.2	
Total	55.3	41.3	43.4	37.2	28	31	41.0	404.3	1682	1647	727.2	238.5
Mean	1.78	1.38	1.4	1.2	1	1	1.4	13.0	56.1	53.1	23.5	7.95
Ac-ft	110	82	86	74	56	61	81	802	3,340	3,270	1,440	473

Calendar year 1964: Max 63 Min - Mean 9.66 Ac-ft 7,020  
Water year 1964-65: Max 96 Min - Mean 13.6 Ac-ft 9,880

Peak discharge (base, 80 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-17	2130	3.07	128	7-31	2030	2.75	90
6-29	2230	2.82	96	8-19	0030	2.73	100
7-13	0030	2.69	82				

\* Discharge measurement made on this day.  
b Stage-discharge relation affected by ice.  
Note.--No gage-height record Nov. 5 to Apr. 27 (stage-discharge relation affected by ice during most of period).

## ROARING FORK RIVER BASIN

9-804. Fryingpan River near Ruedi, Colo.

Location.--Lat 39°22'10", long 106°51'12", in SW¼ sec.11, T.8 S., R.85 W., on left bank 20 ft upstream from private bridge, 0.7 mile downstream from Snyder Gulch, and 3 miles west of Ruedi.

Drainage area.--238 sq mi.

Records available.--October 1964 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,300 ft (from topographic map).

Extremes.--Maximum discharge during year, 2,690 cfs June 18 (gage height, 5.16 ft); minimum daily, 30 cfs Mar. 19.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of several hundred acres and small transmountain diversions above station to Arkansas River basin.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Aug. 3-6, Sept. 10-30)

0.4	38	2.0	500
.7	70	2.5	810
1.0	120	3.0	1,160
1.3	203	4.0	1,850
1.6	320	5.0	2,560

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	80	51	* 54	50	34	34	52	450	* 950	1,360	740	170
2	73	44	56	45	34	* 32	51	562	859	1,420	540	153
3	69	* 47	54	40	* 36	32	55	610	1,020	1,460	* 480	167
4	66	51	55	45	38	34	54	550	1,100	1,420	436	203
5	64	42	50	45	38	36	50	* 550	915	1,390	396	177
6	62	42	45	* 40	38	36	51	475	831	1,340	360	222
7	62	52	40	40	38	36	53	450	1,010	1,290	328	180
8	61	49	40	38	38	36	55	450	1,190	1,240	304	167
9	56	49	55	38	38	38	56	378	1,390	1,210	276	159
10	56	57	60	38	36	38	55	340	1,520	1,120	256	140
11	62	54	60	40	34	36	52	340	1,710	1,100	240	131
12	61	49	55	40	32	36	52	392	1,570	1,300	233	131
13	64	55	50	38	32	36	54	500	1,410	1,180	229	129
14	64	60	40	40	36	36	54	540	1,560	* 992	268	116
15	60	57	50	40	38	34	57	450	1,780	894	264	109
16	56	57	55	38	36	34	64	432	2,140	866	233	107
17	56	57	55	36	36	34	72	574	2,210	803	225	101
18	56	55	50	36	38	32	76	720	* 2,370	852	336	112
19	54	54	55	38	38	30	80	* 761	2,280	859	495	135
20	51	60	55	40	38	32	118	929	2,190	768	396	167
21	53	56	55	40	38	36	* 177	1,120	2,120	733	320	156
22	51	48	50	38	38	38	260	1,290	1,960	698	296	138
23	54	54	55	38	36	38	288	1,370	1,910	789	260	138
24	55	54	60	40	32	36	312	1,220	1,860	810	229	162
25	56	61	55	40	34	36	248	901	1,820	733	200	183
26	49	55	50	38	36	36	225	733	1,590	664	186	164
27	47	54	45	38	36	42	240	610	1,420	556	170	159
28	54	55	50	40	36	42	180	520	1,440	550	159	159
29	56	56	45	45	—	42	233	535	1,500	475	170	193
30	56	53	40	45	—	* 44	320	628	* 1,480	465	252	186
31	55	-----	45	40	-----	47	-----	803	-----	684	* 196	-----
Total	1,819	1,588	1,584	1,247	1,012	1,129	3,698	20,183	47,105	30,021	9,473	4,614
Mean	58.7	52.9	51.1	40.2	36.1	36.4	123	651	1,570	968	306	154
Ac-ft	3,610	3,150	3,140	2,470	2,010	2,240	7,330	40,030	93,430	59,550	18,790	9,150

Calendar year 1964: Max - Min - Mean - Ac-ft -  
Water year 1964-65: Max 2,370 Min 30 Mean 338 Ac-ft 244,900

Peak discharge (base, 1,600 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-11	2230	4.06	1,890	6-30	0200	3.80	1,710
6-18	0230	5.16	2,690				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 5 to Mar. 21 (no gage-height record Dec. 13 to Jan. 6, Jan. 23 to Feb. 3), Mar. 24-26.

9-808. West Sopris Creek near Basalt, Colo.

Location.--Lat 39°20'10", long 107°05'40", in S½ sec.22, T.8 S., R.87 W., on right bank 30 ft downstream from private bridge, 2½ miles upstream from East Sopris Creek, and 4 miles southwest of Basalt.

Drainage area.--14.4 sq mi.

Records available.--October 1963 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,210 ft (from topographic map).

Extremes.--Maximum discharge during year, 52 cfs May 22 (gage height, 2.79 ft), from rating curve extended above 35 cfs; minimum not determined.

1963-65: Maximum discharge, that of May 22, 1965; minimum not determined.

Revisions.--The maximum discharge for the water year 1964 has been revised to 34 cfs May 17, 1964 (gage height, 2.59 ft), superseding figure previously published.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Small diversions above station for irrigation of hay meadows. Water exported from Dinkle Lake above station to Prince Creek drainage.

Revisions.--Revised figures of discharge, in cubic feet per second, for the water year 1964, superseding those previously published, are given herewith:

1964	1964 Con.
May 16..... 21	May 20..... 26
17..... 27	21..... 24
18..... 29	22..... 22
19..... 28	

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
May 1964.....	326.5	29	3.3	10.5	648
Water year 1963-64.....	-	29	-	3.28	2,380

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.7						* 1.2	15	15	18	4.9	4.0
2	2.7						1.2	17	13	16	* 4.6	3.9
3	2.7						1.2	18	14	18	4.6	4.0
4	2.7						1.2	18	14	15	5.0	4.0
5	2.7						1.2	17	12	15	4.4	4.0
6	2.7	(*)					1.2	* 16	11	12	4.2	3.7
7	* 2.6						1.2	13	* 12	12	4.0	3.9
8	2.6						1.3	14	14	13	4.0	3.7
9	2.6						1.4	12	14	13	4.0	3.5
10	2.5						1.3	11	14	13	4.0	3.3
11	2.5						1.2	9.7	18	12	4.0	3.3
12	2.5						1.2	9.4	22	* 13	4.0	3.3
13	2.5						1.3	11	21	13	4.9	3.2
14	2.4						1.4	14	22	12	4.3	3.3
15	2.4						1.9	12	24	11	4.2	3.4
16	2.4	1.5	1.4	1.4	1.2	1.2	3.2	11	26	11	4.7	3.3
17	2.2						3.2	16	* 28	11	4.3	3.2
18	2.2						3.3	* 20	31	11	4.4	3.2
19	2.2						7.6	20	33	11	4.4	4.0
20	2.1						* 17	24	35	9.7	4.3	3.4
21	2.0						13	42	31	9.2	4.0	3.2
22	2.0						12	48	28	8.9	4.2	3.2
23	2.0						11	40	28	7.2	4.0	3.4
24	2.0						11	28	28	6.5	4.2	4.0
25	2.0						9.7	22	29	6.5	4.2	3.4
26	1.8						9.2	19	26	5.9	4.0	3.2
27	1.8						8.9	* 17	21	5.4	4.2	* 3.2
28	1.8						* 7.8	14	20	4.9	4.6	3.2
29	1.8						8.9	13	* 20	4.2	4.7	3.3
30	1.8						11	13	19	4.6	4.7	3.1
31	1.8							14		5.7	* 4.3	
Total	70.7	45.0	43.4	43.4	33.6	37.2	156.2	568.1	643	328.7	134.3	104.8
Mean	2.28	1.5	1.4	1.4	1.2	1.2	5.21	18.3	21.4	10.6	4.33	3.49
Ac-ft	140	89	86	86	67	74	310	1,130	1,280	652	266	208

Calendar year 1964: Max 29 Min - Mean 3.42 Ac-ft 2,480  
 Water year 1964-65: Max 48 Min - Mean 6.05 Ac-ft 4,390

Peak discharge (base, 40 cfs)--May 22 (1930) 52 cfs (2.79 ft); June 20 (2330) 40 cfs (2.58 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 17 to Apr. 1 (stage-discharge relation affected by ice during most of period), Sept. 17-27.

## ROARING FORK RIVER BASIN

9-815.5 Crystal River at Placita, Colo.

Location.--Lat 39°08'30", long 107°15'20", in SE¼ sec.31, T.10 S., R.88 W., on right bank 0.1 mile downstream from highway bridge, 0.4 mile upstream from Bears Gulch, 0.7 mile north of Placita, and 3 miles upstream from Coal Creek.

Drainage area.--107 sq mi.

Records available.--October 1959 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 7,371.89 ft above mean sea level (levels by U. S. Bureau of Reclamation).

Average discharge.--6 years, 212 cfs (153,500 acre-ft per year).

Extremes.--Maximum discharge during year, 1,710 cfs June 20 (gage height, 5.65 ft); minimum daily, 12 cfs Mar. 3.  
1959-65: Maximum discharge, 1,710 cfs June 20, 1965 (gage height, 5.65 ft); minimum daily, 12 cfs Mar. 3, 1965.

Remarks.--Records good except those for periods of ice effect, which are poor. A few small diversions above station for irrigation of hay meadows.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used July 4-17)

2.1	21	4.0	420
2.3	36	4.5	680
2.6	68	5.0	1,060
3.0	128	5.6	1,610
3.5	250		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	67	45	39	38	40	34	45	320	530	1,260	500	157
2	66	47	* 39	34	40	28	48	400	* 530	1,390	444	150
3	63	46	37	32	* 40	* 12	42	412	614	1,480	* 416	170
4	62	43	35	36	44	20	40	428	662	1,430	396	200
5	61	43	32	38	44	22	38	394	578	1,430	362	262
6	* 60	42	26	38	42	24	37	* 320	632	1,390	338	366
7	58	42	22	* 38	40	24	37	280	792	1,410	307	307
8	57	42	26	36	32	24	36	277	852	1,360	310	289
9	55	42	32	36	26	24	39	241	996	1,270	286	265
10	55	* 42	36	36	28	24	39	241	924	1,280	277	229
11	54	43	38	38	28	25	36	241	964	1,380	265	209
12	52	41	36	38	30	25	34	283	964	* 1,530	253	190
13	50	44	30	40	32	25	36	345	884	1,300	289	178
14	49	44	32	40	34	25	34	334	1,030	1,220	304	159
15	49	45	36	40	36	24	36	295	1,210	1,160	262	150
16	49	45	38	38	34	24	43	310	1,340	1,110	232	141
17	51	44	34	36	34	24	49	388	1,380	1,140	232	139
18	52	43	32	32	36	25	52	525	* 1,400	1,130	271	155
19	49	42	36	36	38	24	62	656	1,480	1,120	262	175
20	48	40	38	38	42	22	* 95	836	1,510	996	232	168
21	48	38	38	38	42	22	133	* 940	1,550	1,040	212	150
22	48	36	38	36	42	24	168	1,000	1,510	876	206	144
23	49	36	40	34	38	25	200	924	1,510	799	206	144
24	50	38	44	40	34	22	206	722	1,470	757	190	150
25	49	38	40	40	36	18	190	602	1,370	708	178	155
26	49	38	38	38	38	16	185	535	1,180	650	166	148
27	49	39	36	38	40	19	161	470	1,080	626	155	153
28	48	40	34	40	40	22	159	408	1,200	566	144	161
29	47	41	30	42	-	24	192	384	1,320	530	190	180
30	47	39	30	44	-----	34	247	392	1,360	505	* 209	168
31	48	-----	36	44	-----	* 42	-----	444	-----	545	178	-----
Total	1,639	1,248	1,078	1,172	1,030	747	2,719	14,337	32,822	33,388	8,272	5,612
Mean	52.9	41.6	34.8	37.8	36.8	24.1	90.6	462	1,094	1,077	267	187
Ac-ft	3,250	2,480	2,140	2,320	2,040	1,480	5,390	28,440	65,100	66,220	16,410	11,130

Calendar year 1964: Max 1,180 Min 20 Mean 191 Ac-ft 138,300  
Water year 1964-65: Max 1,550 Min 12 Mean 285 Ac-ft 206,400

Peak discharge (base, 1,200 cfs).--June 20 (0200) 1,710 cfs (5.65 ft); July 12 (0430) 1,690 cfs (5.58 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 20-26, 28, Dec. 5 to Mar. 10 (no gage-height record Jan. 4-7), Mar. 20, 21, 25-28, 30.



9-816. Crystal River above Avalanche Creek, near Redstone, Colo.

Location.--Lat 39°13'55", long 107°13'35", in SW¼ sec.33, T.9 S., R.88 W., on right bank 1½ miles upstream from Avalanche Creek and 3½ miles north of Redstone.

Drainage area.--167 sq mi.

Records available.--October 1955 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 6,905 ft (from river-profile map).

Average discharge.--10 years, 294 cfs (212,800 acre-ft per year).

Extremes.--Maximum discharge during year, 2,780 cfs June 21 (gage height, 5.22 ft); minimum daily, 28 cfs Dec. 7.

1955-65: Maximum discharge, 3,980 cfs July 1, 1957 (gage height, 5.65 ft); minimum daily, 22 cfs Dec. 5, 1955, Feb. 15, 1964.

Remarks.--Records good except those for periods of no gage-height record, which are poor. A few small diversions for irrigation above station.

Rating table (gage height, in feet, and discharge,  
in cubic feet per second  
(Shifting-control method used July 12-21, Aug. 5 to Sept. 7)

1.4	23	2.5	275
1.6	48	3.0	495
1.8	78	4.0	1,190
2.0	120	5.1	2,550

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	73	58	52	52	45	43	88	658	859	1,670	622	190
2	73	58	* 54	42	44	42	95	761	* 817	1,940	544	171
3	72	55	52	40	* 45	* 30	95	775	901	2,100	* 506	195
4	68	54	48	52	45	40	80	789	936	1,950	485	231
5	67	54	39	52	49	42	75	712	859	1,920	435	289
6	* 67	54	31	54	52	43	75	* 568	936	1,840	395	415
7	68	54	28	* 52	52	44	75	470	1,120	1,850	368	342
8	68	54	33	48	43	44	75	440	1,190	1,720	364	330
9	67	52	42	47	48	45	80	386	1,320	1,530	334	* 306
10	70	* 51	48	45	47	45	80	372	1,210	1,540	318	268
11	68	55	51	47	45	45	75	377	1,250	1,720	310	247
12	65	51	47	45	34	45	70	460	1,270	* 1,950	300	220
13	65	55	35	44	33	45	70	562	1,210	1,500	322	200
14	64	55	33	49	42	44	70	550	1,400	1,370	346	180
15	62	58	49	45	44	44	72	480	1,660	1,270	289	160
16	61	58	48	44	39	45	78	512	1,840	1,210	268	150
17	61	56	45	40	42	47	96	726	1,860	1,230	261	160
18	62	58	39	38	43	43	109	880	* 1,970	1,300	326	180
19	59	54	49	45	44	42	147	1,020	2,210	1,310	300	190
20	59	51	48	42	48	38	* 240	1,250	2,380	1,140	268	180
21	59	51	49	45	52	51	306	1,370	2,400	1,180	234	170
22	58	45	47	45	54	45	364	1,530	2,400	1,020	231	160
23	58	51	52	36	49	45	430	1,370	2,420	936	231	150
24	61	47	62	48	35	44	390	1,080	2,370	901	213	170
25	59	56	55	47	40	33	359	880	2,190	852	201	170
26	58	55	52	45	43	43	342	712	1,720	796	189	160
27	59	54	54	42	47	43	296	598	1,490	761	177	170
28	59	51	45	48	51	51	289	522	1,690	698	171	180
29	59	56	35	49	--	52	377	522	1,920	646	207	190
30	59	52	31	51	-----	68	500	610	1,880	634	* 237	180
31	61	---	47	49	-----	* 80	---	747	---	684	195	---
Total	1,969	1,613	1,405	1,428	1,261	1,417	5,478	22,689	47,678	41,168	9,647	6,294
Mean	63.5	53.8	45.3	46.1	45.0	45.7	183	732	1,589	1,328	311	210
Ac-ft	3,910	3,200	2,790	2,830	2,500	2,810	10,870	45,000	94,570	81,660	19,130	12,480

Calendar year 1964: Max 1,800 Min 22 Mean 246 Ac-ft 178,900

Water year 1964-65: Max 2,420 Min 28 Mean 389 Ac-ft 281,800

Peak discharge (base, 2,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-21	0130	5.22	2,780	7-12	0430	5.06	2,340
7-3	0030	5.06	2,480				

\* Discharge measurement made on this day.

Note.--No gage-height record Apr. 2-14, Sept. 12-30.

## ROARING FORK RIVER BASIN

9-828. North Thompson Creek near Carbondale, Colo.

Location.--Lat 39°19'47", long 107°19'58", in sec.28, T.8 S., R.89 W., on right bank 0.4 mile downstream from Yank Creek and 8½ miles southwest of Carbondale.

Drainage area.--26.8 sq mi.

Records available.--October 1963 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 8,120 ft (from topographic map).

Extremes.--Maximum discharge during year, 312 cfs June 12 (gage height, 3.97 ft), from rating curve extended above 190 cfs; minimum not determined.

1963-65: Maximum discharge, 322 cfs May 17, 1964 (gage height, 4.05 ft), from rating curve extended above 190 cfs; minimum daily, 0.3 cfs Sept. 9, 1964.

Remarks.--Records good except those for periods of ice effect, indefinite stage-discharge relation, or no gage-height record, which are poor. Water exported above station to West Divide Creek by Thompson Creek feeder ditch. Figures of exports in acre-feet, furnished by State engineer of Colorado, are given below:

July.....	536
Water year 1964-65.....	536

Rating table, except periods of ice effect or indefinite stage-discharge relation  
(gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 6 to Nov. 5, Apr. 6-21, May 17-19)

1.8	0.1	2.6	39
1.9	1.0	2.8	66
2.0	4.0	3.0	100
2.1	8.0	3.5	195
2.4	24	4.0	305

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	e 1.5	1.6					10	63	107	42	12	0.8
2	e 1.2	1.9					11	90	105	41	* 1.0	1.8
3	e 1.1	1.9					10	93	109	38	1.1	1.3
4	e 1.0	1.8					9	88	109	35	8.5	1.3
5	e .9	1.8					* 8	88	109	34	7.2	2.2
6	* .9	* 1.8					5.5	64	120	31	6.8	7.2
7	1.0	1.8					8	52	* 130	29	5.6	3.1
8	1.0	1.8				0.8	5.5	50	140	30	5.2	5.2
9	1.0	1.8					4.0	41	180	29	4.4	6.8
10	1.0	1.8					5	37	160	26	4.0	3.4
11	1.3	1.8					4.0	36	200	29	4.4	3.4
12	1.0	1.6					3.7	40	250	50	3.7	6.8
13	1.0	1.6					3.4	60	200	44	3.7	5.6
14	1.0	1.6					4.0	71	180	32	3.1	2.5
15	1.0	1.6					5.2	56	170	* 23	5.2	2.2
16	1.0	1.6					6.0	74	180	22	3.7	1.9
17	1.3	1.6					8.0	131	* 170	20	3.7	2.2
18	1.0	1.6					10	* 167	155	20	1.0	8.0
19	1.0	1.6					15	169	146	20	11	14
20	1.0	1.6					23	183	132	18	6.8	11
21	1.0	1.4					28	219	127	17	4.8	9.0
22	1.3	1.4					30	231	120	14	3.7	1.0
23	1.6	1.4					37	205	113	13	3.4	14
24	1.6	1.4					42	149	113	12	2.8	16
25	1.3	1.4					42	116	109	16	2.2	13
26	1.3	1.4					38	* 104	92	12	1.6	1.2
27	1.6	1.4					31	86	74	11	1.0	* 1.1
28	1.3	1.4					30	78	64	12	1.0	1.1
29	1.6	1.4					* 35	83	53	10	1.9	14
30	1.6	1.4					50	92	43	10	4.0	11
31	1.6							102		12	* 1.6	
Total	37.0	48.2	43.4	31.0	22.4	44.0	521.3	3,118	3,960	752	158.0	210.7
Mean	1.19	1.61	1.4	1.0	0.8	1.4	17.4	101	132	24.3	5.10	7.02
Ac-ft	73	96	86	61	44	87	1,030	6,180	7,850	1,490	313	418

Calendar year 1964: Max 221 Min 0.3 Mean 15.9 Ac-ft 11,530

Water year 1964-65: Max 250 Min - Mean 24.5 Ac-ft 17,730

Peak discharge (base, 160 cfs).--May 21 (1830) 292 cfs (3.87 ft); June 12 (time unknown) 312 cfs (3.97 ft).

\* Discharge measurement made on this day.

e Stage-discharge relation indefinite.

Note.--Stage-discharge relation affected by ice Nov. 4 to Apr. 8 (no gage-height record Nov. 6 to Apr. 5), Apr. 10, 19. No gage-height record June 7-17.

9-830. Thompson Creek near Carbondale, Colo.

Location.--Lat 39°19'50", long 107°13'25", in sec.28, T.8 S., R.88 W., on right bank 800 ft upstream from Camp Foster Creek, 1 mile upstream from mouth, and 5 miles south of Carbondale.

Drainage area.--75.7 sq mi.

Records available.--October 1950 to September 1960, October 1964 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 6,450 ft (from topographic map).

Average discharge.--11 years, 38.6 cfs (27,950 acre-ft per year).

Extremes.--Maximum discharge during year, 630 cfs June 12, from rating curve extended above 360 cfs; maximum gage height, 3.97 ft May 18; minimum daily discharge, 1.6 cfs Apr. 13.

1950-60, 1964-65: Maximum discharge, about 800 cfs between June 4 and 8, 1957; maximum gage height, 4.4 ft Aug. 27, 1955, from floodmarks; minimum daily discharge, 1.5 cfs Aug. 30 to Sept. 1, 1954.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Small diversions for irrigation of hay meadows above station. Transbasin diversion above station through Thompson Creek feeder ditch to West Divide Creek.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 19)

Oct. 1 to May 18

May 19 to Sept. 30

2.3	2.0	3.0	52	1.2	8.0	2.5	100
2.5	10	3.2	92	1.4	15	3.0	205
2.7	23	3.4	150	1.6	24	3.5	390
2.9	40			1.8	35	3.7	500
				2.0	51		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.8	8.5					10	150	229	162	36	11
2	4.6	8.5	(*)				11	180	220	162	* 31	11
3	4.4	8					10	200	244	151	33	12
4	4.2	8					8.4	190	250	147	28	12
5	4.0	8					4.8	180	238	140	24	14
6	* 4.0	* 8					3.6	170	272	134	23	20
7	4.0	8					4.4	* 150	* 316	122	20	12
8	4.0	8					4.0	141	324	126	18	12
9	5.2	7.5				4	6.4	98	332	113	16	14
10	6.0	8					5.2	33	316	100	15	11
11	7.6	7.5					2.0	77	355	114	17	11
12	7.2	7.5					2.0	83	482	162	15	14
13	6.8	8					1.6	100	410	132	15	14
14	7.2	8.5					3.2	150	405	* 93	13	11
15	8.0	8.5					4.4	130	405	76	15	11
16	9.2	8.5	5	4.5	4		5.2	200	385	71	14	11
17	8.5	8.5					9	260	* 395	67	14	10
18	8	8.5					18	340	375	65	26	17
19	8	8					26	* 400	360	66	29	29
20	8	7.5					* 40	390	336	58	18	26
21	8	7					57	345	324	54	15	19
22	8	6.5					61	395	300	46	13	18
23	8.5	6.5				5	70	400	276	42	12	22
24	9	6.5					90	328	293	38	11	28
25	8.5	7					75	262	300	41	10	29
26	8	6					70	211	253	36	10	28
27	8	5.5					65	* 176	208	33	9	25
28	8	5.5					70	158	188	32	9	26
29	8.5	6					85	162	178	30	10	30
30	8.5	5.5					100	178	* 160	30	* 14	24
31	9					(*)		211		36	11	
Total	215.7	223.5	155	139.5	112	140	912.2	6,488	9,129	2,679	544	532
Mean	6.96	7.45	5	4.5	4	4.5	30.4	209	304	86.4	17.5	17.7
Ac-ft	428	443	307	277	222	278	1,810	12,870	18,110	5,310	1,080	1,060

Calendar year 1964: Max - Min - Mean - Ac-ft -  
Water year 1964-65: Max 482 Min 1.6 Mean 58.3 Ac-ft 42,200

Peak discharge (base, 200 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-3	Unknown	Unknown	†250	6-12	0430	3.87	630
5-18	1930	3.97	†550	7-12	1730	3.28	293

† About.

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-6, Oct. 17 to Nov. 2 (stage-discharge relation affected by ice during part of period), Apr. 17-20, Apr. 23 to May 7, May 13-18, Aug. 24-29. Stage-discharge relation affected by ice Nov. 3 to Apr. 3 (no gage-height record Nov. 7, 8, 25-28, Dec. 5 to Mar. 31).

## 9-837. Prince Creek near Carbondale, Colo.

Location.--Lat 39°19'25", long 107°08'20", in SW¼SW¼, sec.29, T.8 S., R.87 W., on right bank 100 ft from county road, a quarter of a mile downstream from unnamed tributary, and 7 miles southeast of Carbondale.

Drainage area.--3.04 sq mi.

Records available.--October 1963 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,880 ft (from topographic map).

Extremes.--Maximum discharge during year, 22 cfs July 17 (gage height, 2.35 ft); minimum daily, 0.2 cfs Nov. 24.  
1963-65: Maximum discharge, 22 cfs July 17, 1965 (gage height, 2.35 ft); no flow Oct. 13, 1963.

Remarks.--Records good except those for period of no gage-height record, which are poor. Water imported above station from Dinkle Lake in West Sopris Creek drainage.

Rating table (gage height, in feet, and discharge,  
in cubic feet per second)  
(Shifting-control method used May 23-30)

1.4	0	1.8	1.7
1.5	.1	1.9	3.8
1.6	.3	2.0	7.0
1.7	.8	2.3	19

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.2	3.2	2.5				* 2.8	13	9.4	15	11	7.8
2	3.4	3.2	2.8				3.2	14	9.4	15	* 10	7.4
3	3.4	3.2	3.2				3.2	13	9.4	15	10	7.8
4	3.4	3.2	2.5				2.8	11	9.4	15	10	7.4
5	3.4	3.2	2.3				2.5	9.8	9.4	15	10	7.8
6	3.6	* 3.2	2.3				2.8	* 9.0	9.4	15	10	7.8
7	* 3.4	3.2	2.3	(*)			2.5	7.8	* 10	15	9.4	7.4
8	3.2	3.0	2.3				2.8	7.8	11	15	9.8	7.4
9	3.4	3.0	2.2				2.8	7.0	11	15	11	7.4
10	3.2	3.0	2.2				2.8	6.0	11	15	11	7.4
11	3.2	3.2	2.2				2.3	6.0	12	15	11	7.4
12	3.2	3.0	2.2				2.5	6.0	12	* 15	11	7.4
13	3.2	3.2	2.2				2.5	6.7	11	15	11	7.4
14	3.2	3.2	2.2				2.3	6.7	12	15	11	7.4
15	3.2	3.2	2.2				2.3	6.4	13	15	10	7.4
16	3.2	3.2	2.2	2.4	2.2	2.4	2.8	6.4	12	15	9.8	7.0
17	3.2	3.2	2.2				2.8	8.2	* 12	15	9.8	7.4
18	3.2	3.2	2.2				2.8	* 9.4	12	16	11	8.6
19	3.2	2.8	2.4				4.1	9.8	12	15	11	8.6
20	3.2	2.8	2.4				* 7.0	9.8	12	14	11	8.6
21	3.2	2.8	2.6				7.8	8.6	12	15	11	7.0
22	3.2	2.8	2.6				8.6	8.6	12	13	10	5.7
23	3.4	1.2	2.6				7.8	9.8	12	13	9.8	5.4
24	3.4	2.2	2.4				7.4	11	12	11	9.4	5.1
25	3.4	1.1	2.4				7.0	11	13	12	9.0	5.1
26	3.4	2.5	2.4				* 6.4	11	13	11	8.6	4.8
27	3.4	2.8	2.4				5.4	* 10	14	11	8.6	* 4.8
28	3.4	2.8	2.4				6.4	9.4	15	11	8.2	5.1
29	3.4	2.8	2.4				9.0	9.0	* 15	11	8.2	5.4
30	3.2	2.5	2.2				11	9.8	15	11	8.6	4.8
31	3.2		2.2					9.8		11	* 8.6	
Total	102.2	93.9	73.6	74.4	61.6	74.4	136.4	281.8	352.4	430	308.8	206.0
Mean	3.30	2.80	2.37	2.4	2.2	2.4	4.55	9.09	11.7	13.9	9.96	6.87
Ac-ft	203	166	146	148	122	148	271	559	699	853	612	409

Calendar year 1964: Max 11 Min 0.2 Mean 4.33 Ac-ft 3,140  
Water year 1964-65: Max 15 Min 0.2 Mean 5.99 Ac-ft 4,340

\* Discharge measurement made on this day.

Note.--No gage-height record Dec. 9 to Apr. 1 (stage-discharge relation affected by ice during part of period).

9-840. Cattle Creek near Carbondale, Colo.

Location.--Lat 39°28'00", long 107°03'05", in NE¼NE¼ sec.12, T.7 S., R.87 W., on left bank at ford just downstream from Taylor Creek, half a mile upstream from diversion to Missouri Heights Reservoir and 10 miles northeast of Carbondale.

Drainage area.--31.1 sq mi.

Records available.--October 1950 to September 1955, October 1962 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,640 ft (from topographic map).

Average discharge.--8 years, 15.0 cfs (10,800 acre-ft per year).

Extremes.--Maximum discharge during year, 265 cfs May 22 (gage height, 3.80 ft); minimum not determined.

1950-55, 1962-65: Maximum discharge, 280 cfs about June 4, 1952 (gage height, 4.75 ft, from recorded range in stage); minimum daily determined, 1.7 cfs Oct. 3-5, 1963.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Small diversions for irrigation of hay meadows above station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.6	3.4	b 3.2	3.3			5	102	106	50	11	5.4
2	3.6	3.4	b 3.4	3.3			5.5	129	104	47	* 9.9	* 6.2
3	3.5	b 3.4	b 3.4	3.4			5	129	104	44	9.9	6.4
4	3.5	b 3.2	b 3.2	3.3			5	119	111	43	9.9	6.2
5	3.3	b 3.2	b 3.0	3.1			4.8	106	98	41	9.2	6.2
6	* 3.3	* b 3.2	b 2.8	3.1			* 4.8	83	90	40	8.8	6.5
7	3.3	b 3.2	b 2.6	3.0			b 5	* 62	104	39	8.3	6.2
8	3.3	b 3.2	b 2.6				b 5	57	113	39	8.1	6.0
9	3.4	b 3.2	b 3.0				b 5.5	47	125	37	7.5	6.0
10	3.4	3.4	b 3.4				b 5.5	42	119	33	7.3	6.0
11	3.5	3.4	b 3.4				b 5.5	38	123	31	7.1	6.2
12	3.4	3.4	3.5				b 5	40	111	* 31	7.1	6.4
13	3.3	b 3.4	3.5				b 5	39	102	28	7.3	6.0
14	3.3	b 3.2	3.6				b 5	51	98	24	7.3	5.9
15	3.3	b 3.2	3.6				b 5.5	47	113	22	6.9	5.8
16	3.3	3.4	3.6				b 9	48	125	19	6.7	5.6
17	3.3	3.4	3.5				b 12	68	* 117	17	6.5	6.0
18	3.3	b 3.2	3.6				15	* 90	107	19	7.3	7.7
19	3.2	b 3.0	3.5				18	106	106	19	6.9	7.9
20	3.3	b 3.0	3.4				26	135	102	15	6.7	7.7
21	3.3	b 3.0	3.2				37	162	94	14	6.0	7.3
22	3.3	b 3.0	3.0				44	208	85	12	6.0	6.9
23	3.4	b 3.2	3.1				53	220	76	11	5.6	6.9
24	3.5	b 3.2	b 3.0				53	160	74	11	5.4	6.9
25	3.4	3.4	3.2				49	113	77	11	5.2	6.7
26	3.3	3.4	3.2				47	86	70	11	5.0	6.7
27	3.3	b 3.2	3.1				42	* 65	62	9.9	4.8	6.4
28	3.4	3.4	b 3.0				43	56	57	9.6	4.8	6.2
29	3.4	3.4	b 2.8				56	55	57	9.2	5.0	7.3
30	3.4	b 3.2	b 2.8				76	68	* 53	9.6	5.0	* 7.1
31	3.4	---	3.4				---	94	---	12	* 4.8	---
Total	104.5	97.8	99.6	94.5	78.4	100.0	657.1	2,825	2,883	758.3	217.3	194.7
Mean	3.37	3.26	3.21	3.05	2.8	3.2	21.9	91.1	96.1	24.5	7.01	6.49
Ac-ft	207	194	198	187	156	198	1,300	5,600	5,720	1,500	431	386

Calendar year 1964: Max 139 Min - Mean 11.7 Ac-ft 8,520  
 Water year 1964-65: Max 220 Min - Mean 22.2 Ac-ft 16,080

Peak discharge (base, 100 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5- 2	1730	3.42	165	6-12	0130	3.57	121
5-22	2030	3.80	265	6-16	0130	3.62	129
6- 3	2300	3.24	115				

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Jan. 8 to Apr. 6 (stage-discharge relation affected by ice part of period).

## ROARING FORK RIVER BASIN

9-846. Fourmile Creek near Glenwood Springs, Colo.

Location.--Lat 39°24'00", long 107°19'25", in NW¼SW¼ sec.34, T.7 S., R.89 W., on left bank 100 ft downstream from National Forest boundary, 2.8 miles upstream from Freeman Creek, 6 miles west of Carbondale, 8 miles upstream from mouth, and 10 miles south of Court House in Glenwood Springs.

Drainage area.--16.7 sq mi.

Records available.--October 1957 to September 1965 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 7,780 ft (from topographic map).

Average discharge.--8 years, 8.29 cfs (6,000 acre-ft per year).

Extremes.--Maximum discharge during year, 234 cfs May 17; maximum gage height, 4.82 ft Apr. 22 (backwater from beaver dam); minimum daily discharge, 0.4 cfs on many days.

1957-65: Maximum discharge, 303 cfs May 11, 1962 (gage height, 5.21 ft), from rating curve extended above 100 cfs; minimum daily, 0.1 cfs Sept. 5, 7-11, 1959, Aug. 1-20, 1963.

Remarks.--Records fair except those for periods of ice effect, which are poor. No diversion above station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.5	0.6	0.5	b 0.6	0.5	0.4	* 1.5	117	54	9.8	3.0	0.8
2	.5	.7	.5	b .6	.5	.4	1.8	105	48	9.1	2.3	.6
3	.6	.7	.5	b .7	.5	*.5	2.0	109	44	7.7	2.2	.7
4	.6	.6	.5	.7	*.5	.6	2.0	105	* 43	7.0	2.0	.8
5	.6	.5	.5	.7	.5	.6	2.0	88	40	6.6	1.8	1.2
6	.5	.5	.5	* .6	.5	.5	2.0	66	42	6.1	1.6	2.1
7	* .5	.4	.5	.6	.5	.5	2.0	* 55	46	5.9	1.4	1.2
8	.5	.5	.5	.6	.5	.5	2.2	51	46	5.9	1.3	1.0
9	.5	.5	.5	.6	.5	.5	2.2	37	46	5.5	1.1	1.2
10	.6	* .5	.5	.6	.5	.5	2.3	32	42	5.0	1.0	.9
11	.7	.5	.5	.6	.5	.5	2.2	37	54	5.5	.9	.8
12	.6	.6	.5	.6	.5	.5	2.2	49	98	6.1	.9	1.4
13	.6	.6	.4	.6	.5	.5	2.3	74	78	6.1	.9	1.0
14	.6	b .6	.5	.5	.5	.5	2.2	75	68	4.6	.9	.6
15	.7	b .6	.5	.5	.4	.5	2.6	66	61	* 4.1	.9	.5
16	.7	b .6	.5	.5	.4	.6	3.0	88	55	3.7	1.0	.4
17	.8	b .6	.5	.5	.4	.7	3.5	145	49	3.4	1.1	.4
18	.8	.6	.5	.5	.4	.7	4.3	160	44	3.7	1.7	1.9
19	.7	.6	.5	.5	.4	.7	* 5.5	* 158	39	4.1	2.0	3.4
20	.7	.6	.5	.5	.4	.7	7.7	* 128	35	3.2	1.6	2.8
21	.7	.6	.5	.5	.4	.7	14	140	31	2.9	1.2	2.3
22	.7	.6	.5	.5	.4	.7	24	135	* 27	2.7	1.0	2.3
23	.8	.6	b .5	.5	.4	.7	28	110	23	2.8	1.1	3.2
24	.9	.6	b .5	.5	.4	.7	30	84	22	3.7	1.2	3.2
25	.7	.6	b .5	.5	.4	.7	30	66	20	6.1	.9	2.7
26	.7	.5	b .5	.5	.4	.7	35	58	18	3.9	.8	2.2
27	.7	.6	b .5	.5	.4	.7	28	48	15	2.8	* .7	1.6
28	.7	.6	b .5	.5	.4	.7	30	42	14	2.4	.7	1.6
29	.6	.6	b .5	.5	-	.9	53	46	12	* 2.0	.8	3.2
30	.7	* .5	b .5	.5	-----	1.0	103	50	10	1.8	1.0	* 2.6
31	.7	-----	b .6	.5	-----	1.3	-----	57	-----	3.2	1.0	-----
Total	20.2	17.2	15.5	17.1	12.6	19.7	430.5	2,581	1,224	147.4	40.0	48.6
Mean	0.65	0.57	0.50	0.55	0.45	0.64	14.4	83.3	40.8	4.75	1.29	1.62
Ac-ft	40	34	31	34	25	39	854	5,120	2,430	292	79	96

Calendar year 1964: Max 170 Min 0.2 Mean 7.37 Ac-ft 5,350  
 Water year 1964-65: Max 160 Min 0.4 Mean 12.5 Ac-ft 9,070

Peak discharge (base, 60 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-22	1700	4.82	68	5-17	2030	4.67	234
5-4	1800	4.49	160	6-12	0430	4.33	128

\* Discharge measurement made on this day.  
 b Stage-discharge relation affected by ice.

## 9-850. Roaring Fork River at Glenwood Springs, Colo.

(Formerly published as Roaring Fork at Glenwood Springs)

Location.--Lat 39°32'50", long 107°19'50", in sec.9, T.6 S., R.89 W., on left bank at Glenwood Springs, 1,500 ft upstream from mouth.Drainage area.--1,460 sq mi, approximately.Records available.--October 1905 to September 1909, September 1910 to September 1965. Monthly discharge only for some periods, published in WSP 1313. Prior to October 1964, published as Roaring Fork at Glenwood Springs.Gage.--Water-stage recorder. Datum of gage is 5,720.73 ft above mean sea level, adjustment of 1912. Prior to Nov. 20, 1915, chain gage on highway bridge 800 ft downstream at different datum. Nov. 20, 1915, to Oct. 26, 1917, staff gage at present site and datum.Average discharge.--59 years, 1,388 cfs (1,005,000 acre-ft per year).Extremes.--Maximum discharge during year, 9,450 cfs June 21 (gage height, 6.30 ft); minimum daily, 265 cfs Dec. 30.  
1905-9, 1910-65: Maximum discharge, 19,000 cfs July 1, 1957; maximum gage height, 8.7 ft June 14, 1921, from floodmarks; minimum discharge, 145 cfs Jan. 21, 1935 (gage height, 0.65 ft); minimum daily, 179 cfs Jan. 21, 1935.Remarks.--Records good. Diversions above station for irrigation of about 35,000 acres. Transmountain diversions to Arkansas River basin through Busk-Ivanhoe tunnel since 1925 and through Twin Lakes tunnel since 1935 (see elsewhere in this report). Records of chemical analyses, water temperatures, and suspended sediment loads for the water year 1965 are published in Part 2 of this report.Rating table (gage height, in feet, and discharge,  
in cubic feet per second)  
(Shifting-control method used Aug. 26 to Sept. 2) (Stage-discharge relation affected by ice Feb. 15)

0.8	200	3.0	2,280
1.2	400	4.0	4,030
1.6	680	5.0	6,200
2.0	1,050	6.0	8,770

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	448	495	474	454	352	325	509	2,210	3,100	6,090	3,080	1,060
2	436	502	488	370	300	290	544	2,700	2,920	6,450	2,560	1,020
3	424	502	454	330	340	270	516	2,870	* 3,260	6,920	2,480	1,080
4	406	495	454	448	358	310	502	2,870	3,650	6,680	2,320	1,280
5	* 418	481	400	436	358	310	474	2,680	3,170	6,750	2,170	1,260
6	430	481	352	388	370	325	454	2,210	3,030	6,420	2,010	1,650
7	424	474	330	394	358	320	467	1,870	3,570	6,400	1,830	1,490
8	424	467	310	382	352	325	448	1,820	4,050	6,180	1,710	1,470
9	424	474	442	346	330	325	495	1,550	4,650	5,880	1,600	1,390
10	430	488	467	352	335	340	474	1,410	4,790	5,880	1,480	1,250
11	430	495	430	352	330	325	436	1,280	5,060	5,950	1,410	1,200
12	430	488	436	352	280	330	418	1,390	5,570	7,130	1,340	1,180
13	418	502	335	335	300	330	442	1,730	4,940	6,350	1,320	1,130
14	424	523	305	358	320	330	448	1,960	5,410	5,570	1,430	1,070
15	418	530	454	352	320	320	448	1,660	6,150	* 5,060	1,420	1,020
16	418	523	481	330	300	330	502	1,570	7,030	4,870	1,300	990
17	418	530	448	325	335	335	551	* 2,030	7,420	4,790	1,280	950
18	430	516	358	325	330	320	565	2,670	8,020	5,060	1,480	1,080
19	454	509	454	352	335	300	* 600	2,990	8,430	5,170	1,790	1,270
20	442	460	400	346	330	285	851	* 3,690	8,510	4,650	1,560	1,290
21	436	460	394	358	335	358	1,140	4,210	8,590	4,390	1,420	1,260
22	436	442	388	370	340	346	1,450	4,730	* 8,250	4,070	1,370	1,220
23	448	474	418	310	325	352	1,590	4,770	8,120	3,850	1,300	1,190
24	467	460	523	388	285	364	1,730	4,090	8,020	3,770	1,250	1,220
25	467	495	448	376	* 295	305	1,490	3,240	7,990	3,590	1,160	1,280
26	467	488	406	346	325	325	1,450	2,730	6,600	3,370	1,150	1,270
27	474	509	388	340	335	330	1,260	2,350	5,550	3,080	* 1,070	* 1,240
28	481	454	394	* 376	340	364	1,160	2,030	5,690	2,920	1,020	1,260
29	* 481	488	* 352	382	-	* 370	* 1,370	1,990	6,150	* 2,710	1,020	1,450
30	495	* 460	265	376	-----	394	1,700	2,140	6,500	2,480	1,290	1,370
31	495	-----	305	364	-----	467	-----	2,560	-----	2,780	1,180	-----
Total	13,693	14,665	12,553	11,313	9,213	10,320	24,484	78,000	174,190	155,250	48,800	36,890
Mean	442	489	405	365	329	333	816	2,516	5,806	5,008	1,574	1,230
Ac-ft	27,160	29,090	24,900	22,440	18,270	20,470	48,560	154,700	345,500	307,900	96,790	73,170

Calendar year 1964: Max 5,350 Min 228 Mean 993 Ac-ft 720,700

Water year 1964-65: Max 8,590 Min 265 Mean 1,615 Ac-ft 1,169,000

Peak discharge (base, 6,300 cfs)

\* Discharge measurement made on this day.

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-21	0745	6.30	9,450	7-12	1100	5.59	7,680
7-3	0700	5.60	7,680				

## DIVIDE CREEK BASIN

9-890. West Divide Creek below Willow Creek, near Raven, Colo.

Location.--Lat 39°16'32", long 107°31'10", in sec.14, T.9 S., R.91 W., on right bank at upstream side of bridge, 0.4 mile downstream from Willow Creek, 13 miles south of Raven, and 20 miles south of Silt.

Drainage area.--34.9 sq mi.

Records available.--October 1938 to September 1947, October 1963 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,820 ft (from topographic map). October 1938 to September 1947 at site 0.25 mile upstream at different datum.

Average discharge.--11 years, 28.0 cfs (20,270 acre-ft per year).

Extremes.--Maximum discharge during year, 438 cfs May 22 (gage height, 4.48 ft); minimum daily, 0.2 cfs Dec. 13.

1938-47, 1963-65: Maximum discharge, 876 cfs May 13, 1941 (gage height, 3.27 ft, site and datum then in use), from rating curve extended above 320 cfs; no flow at times in 1939, 1940.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Water imported above station from North Thompson Creek (Roaring Fork River basin) and Clear Fork (Gunnison River basin). Figures of imports in acre-feet, furnished by State engineer of Colorado, are given below:

Month	Clear Fork ditch	Thompson Creek feeder ditch
June.....	120	0
July.....	1,120	536
August.....	96	0
Water year 1964-65....	1,340	536

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used May 23 to June 19)

1.6	0	1.9	1.5	2.4	20	3.3	165
1.7	.3	2.0	3.5	2.7	52	4.1	365
1.8	.7	2.2	9.0	3.0	96		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.3	0.5	0.4	0.4	0.6	1.0	6	152	182	95	20	1.5
2	.3	.7	.4	.3	.3	.8	13	190	188	90	15	1.4
3	.3	.7	.4	.3	.6	.6	13	188	200	95	14	1.9
4	.4	.6	.4	.4	.8	.9	11	185	190	80	15	1.9
5	*.4	.5	.4	.5	.9	1.0	10	* 168	188	80	11	1.9
6	.3	*.4	.3	.5	1.0	1.2	9.5	129	210	75	8	4.0
7	.3	.3	.3	.4	1.0	1.2	9	111	205	75	6	2.3
8	.3	.4	.3	.5	1.0	1.0	9.5	111	200	75	5	2.5
9	.4	.3	.3	.5	1.0	1.0	10	87	180	70	4.6	2.5
10	.3	.4	.4	.6	.8	1.2	10	77	165	70	4.4	1.5
11	.5	.4	.3	.6	.7	1.1	9.5	72	188	80	4.4	1.3
12	.4	.5	.3	.6	.8	1.0	8.5	83	210	* 85	4.4	2.5
13	.4	.5	.2	.6	.9	1.0	8	133	190	78	* 4.6	2.5
14	.4	.6	.3	.5	1.0	1.0	9	140	178	75	6.0	1.3
15	.5	.6	.4	.4	1.0	1.1	12	118	* 180	70	6.6	1.1
16	.4	.5	.4	.4	.9	* 1.2	11	152	165	60	4.8	1.0
17	.5	.4	.3	.4	.8	1.0	13	225	152	55	5.2	1.0
18	.5	.4	.3	.4	.8	.9	15	255	150	55	13	3.3
19	.4	.4	.3	.5	.9	.9	18	252	140	60	13	7.8
20	.4	.4	.4	.5	1.0	1.0	32	288	127	60	8.1	7.5
21	.4	.5	.4	.5	1.0	1.2	54	* 325	* 111	40	6.0	6.0
22	.5	.5	.3	.5	1.0	1.4	63	352	100	42	5.2	5.8
23	.6	.5	.3	.5	.9	1.7	65	272	95	40	4.5	6.9
24	.6	.5	.4	.5	.7	2.0	64	210	95	36	3.5	8.7
25	.5	.5	.5	.5	.8	2.2	59	180	100	40	3.3	8.1
26	.5	.4	.4	.5	.8	2.0	59	168	90	34	2.7	7.8
27	.6	.5	.3	.3	.9	2.0	47	145	80	26	2.1	7.2
28	.6	.5	.3	.3	1.0	2.0	51	142	80	20	1.5	6.6
29	.6	.5	.3	.4	-	2.4	74	158	90	18	2.1	8.4
30	.6	.4	.3	.5	-----	2.6	109	170	100	16	* 3.8	7.2
31	.6	-----	.4	.6	-----	3.2	-----	182	-----	20	2.3	-----
Total	13.8	14.3	10.7	14.4	23.9	42.8	892.0	5,420	4,529	1,805	210.1	123.4
Mean	0.45	0.48	0.35	0.46	0.85	1.38	29.4	175	151	58.2	6.78	4.11
Ac-ft	27	28	21	29	47	85	1,750	10,750	8,980	3,580	417	245

Calendar year 1964: Max 295 Min - Mean 21.9 Ac-ft 15,910  
Water year 1964-65: Max 352 Min 0.2 Mean 35.9 Ac-ft 25,960

Peak discharge (base, 150 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-12	2030	3.63	235	7-12	1500	3.39	175
5-22	1800	4.48	438	8-18	1715	3.66	268
6-11	2300	3.79	252				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 5 to Apr. 17. No gage-height record Feb. 8-18, June 22 to July 12, July 14 to Aug. 13.



9-895. West Divide Creek near Raven, Colo.

Location.--Lat 39°19'52", long 107°34'46", in W½ sec.29, T.8 S., R.91 W., on left bank 10 ft downstream from private road bridge, 0.8 mile upstream from Brook Creek, 8 miles south of Raven, and 16 miles south of Silt.

Drainage area.--65.8 sq mi.

Records available.--October 1955 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,050 ft (from topographic map).

Average discharge.--10 years, 28.5 cfs (20,630 acre-ft per year).

Extremes.--Maximum discharge during year, 495 cfs May 21 (gage height, 5.00 ft); minimum not determined.

1955-65: Maximum discharge, 790 cfs May 12, 1962 (gage height, 5.41 ft), from rating curve extended above 350 cfs; no flow at times in most years.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Water imported above station from North Thompson Creek (Roaring Fork River basin), Clear Fork (Gunnison River basin), and Owens Creek (Plateau Creek basin). See preceding page for figures of imports from North Thompson Creek and Clear Fork. Figures of imports in acre-ft, furnished by State engineer of Colorado, for water imported from Owens Creek, are given below:

Month	Owens Creek ditch
June.....	40
July.....	382
Water year 1964-65.....	422

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used June 2-17)

1.6	0.2	2.2	2.2	2.8	19	4.0	176
1.8	.5	2.4	4.8	3.0	32	4.5	318
2.0	.9	2.6	10	3.5	80	5.0	503

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.1	1.2					13	210	233	93	20	3.4
2	1.1	1.3					20	220	194	96	14	3.4
3	1.1	1.2					20	220	189	92	15	3.7
4	1.1	1.0					19	210	171	85	9.7	3.8
5	* 1.0	1.0					17	* 200	148	81	7.9	4.0
6	1.0	* 1.0					13	186	162	79	6.8	5.5
7	1.0	1.0					12	157	205	76	6.1	4.3
8	1.0	1.0				2.5	12	159	216	78	6.1	4.0
9	1.1	1.0					13	126	210	72	5.7	4.6
10	1.1	1.0					13	112	194	68	5.7	3.7
11	1.1	1.1					13	102	* 192	74	5.7	3.5
12	1.1	1.2					11	116	224	100	5.9	4.0
13	1.1	1.2					11	171	186	86	* 5.5	4.6
14	1.1	1.2					13	186	174	71	6.3	3.5
15	1.1	1.2					15	145	166	64	9.4	3.0
16	1.1	1.0	1.0	1.2	1.6	(*)	14	176	162	* 58	6.6	2.9
17	1.1	1.0					15	247	152	54	6.1	2.8
18	1.0	.9					17	309	148	54	10	4.6
19	1.0	.9					20	325	141	63	21	10
20	1.0	1.0					30	346	134	56	8.5	10
21	1.0	1.2					55	* 412	* 126	41	6.3	8.8
22	1.0	1.2					70	381	114	44	5.2	7.9
23	1.1	1.2				3.5	70	367	102	39	4.5	8.5
24	1.2	1.2					65	303	96	34	4.8	10
25	1.2	1.2					60	261	102	42	4.6	9.4
26	1.2	1.0					55	238	98	33	4.5	8.8
27	1.2	1.0					55	210	85	25	4.0	7.9
28	1.2	1.2					60	194	81	20	3.7	7.3
29	1.3	1.2					100	222	86	17	3.5	10
30	1.2	1.0					150	230	102	16	* 5.2	9.1
31	1.2							227		21	4.2	
Total	34.1	32.8	31.0	37.2	44.8	93.5	1,051	6,968	4,593	1,832	232.5	177.0
Mean	1.10	1.09	1.0	1.2	1.6	3.0	35.0	225	153	59.1	7.50	5.90
Ac-ft	68	65	61	74	89	185	2,080	13,820	9,110	3,630	461	351

Calendar year 1964: Max 356 Min 0.2 Mean 27.5 Ac-ft 19,990  
Water year 1964-65: Max 412 Min - Mean 41.4 Ac-ft 29,990

Peak discharge (base, 160 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-2	0230	Unknown	†390	6-12	0600	4.49	255
5-21	2045	5.00	495	7-12	1630	4.13	192

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3-26. No gage-height record Nov. 27 to May 5 (stage-discharge relation affected by ice during most of period).

† About.

## DIVIDE CREEK BASIN

9-907. East Divide Creek near Silt, Colo.

Location.--Lat 39°26'10", long 107°34'10", in NE¼ sec. 20, T. 7 S., R. 91 W., on right bank 0.2 mile upstream from Tar Gulch, 0.7 mile upstream from June Creek, and 9 miles southeast of Silt.

Drainage area.--40.8 sq mi.

Records available.--October 1959 to September 1965 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 6,650 ft (from topographic map).

Average discharge.--6 years, 10.6 cfs (7,670 acre-ft per year).

Extremes.--Maximum discharge during year, 295 cfs June 12 (gage height, 4.75 ft); minimum daily, 0.1 cfs Nov. 7.  
1959-65: Maximum discharge, about 350 cfs May 12, 1962 (gage height not determined); maximum gage height, 5.06 ft Mar. 16, 1961 (backwater from ice); no flow for many days in most years.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. One small diversion above station for irrigation of hay meadows.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 7-13, Aug. 3-14)

2.8	0.2	3.8	20
2.9	.5	3.9	26
3.1	1.5	4.0	36
3.2	2.3	4.2	67
3.3	3.7	4.4	116
3.4	5.7	4.6	180
3.6	12		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	0.6	0.5		(*)	(*)	2.6	64	94	21	2.9	1.7
2	.3	.4	.5				2.6	87	85	20	2.6	1.6
3	.2	.3	.5				2.6	92	87	17	2.3	1.8
4	.3	.3	.5				2.4	92	89	16	2.1	1.9
5	*.3	.2	.5				2.2	*92	87	14	2.0	2.9
6	.3	*.2	.4				2.2	67	94	14	1.7	5.5
7	.3	.1	.4				2.4	58	111	13	1.7	3.0
8	.3	.2	.4				2.6	60	113	13	1.7	2.8
9	.4	.2	.4				2.6	46	111	14	1.7	3.2
10	.3	.2	.4				2.4	42	97	12	1.7	3.0
11	.4	.3	.4			1.2	2.2	39	* 111	13	1.8	2.8
12	.5	.4	.4				2.0	46	156	20	1.9	3.7
13	.4	.6	.3				2.0	67	128	16	* 2.0	2.7
14	.5	.7	.4				2.2	71	116	12	1.9	2.1
15	.5	.7	.5				2.8	58	108	10	2.1	1.6
16	.4	.6	.5	0.8	0.9		4.0	69	89	* 9.4	2.0	1.0
17	.5	.5	.5				4.8	113	74	8.7	2.0	.8
18	.5	.4	.5				6.3	125	74	9.4	2.7	3.0
19	.5	.4	.6				* 8.1	133	71	9.0	3.0	5.3
20	.5	.5	.6				13	156	64	13	3.1	4.7
21	.5	.6	.6			1.2	17	* 176	* 60	7.5	2.4	4.1
22	.5	.6	.6			1.2	20	113	52	5.7	2.2	3.6
23	.5	.6	.7			* 1.2	23	97	44	4.9	2.2	3.3
24	.7	.6	.7			1.3	30	89	42	6.6	2.1	3.0
25	.8	.6	.8			1.8	29	78	40	6.3	2.0	2.6
26	.7	.5	.8			1.4	25	71	34	5.7	1.7	2.3
27	.8	.6	.7			1.3	21	62	30	4.9	1.6	2.2
28	.7	.6	.7			1.3	19	60	26	4.1	1.5	2.1
29	.7	.6	*.8			1.6	26	65	24	3.4	1.7	1.9
30	.7	.5	.9			2.0	43	74	21	3.0	* 2.2	1.8
31	.7	---	.9			2.4	---	87	---	2.9	2.0	---
Total	15.1	13.6	17.4	24.8	25.2	40.7	325.0	2549	2332	329.5	64.5	82.0
Mean	0.49	0.45	0.56	0.8	0.9	1.31	10.8	82.2	77.7	10.6	2.08	2.73
Ac-ft	30	27	35	49	50	81	645	5,060	4,630	654	128	163

Calendar year 1964: Max 162 Min 0 Mean 10.8 Ac-ft 7,850  
Water year 1964-65: Max 176 Min 0.1 Mean 15.9 Ac-ft 11,550

Peak discharge (base, 80 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-2	2245	4.43	116	6-12	0515	4.75	295
5-21	2100	4.86	275				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 1 to Dec. 9, Dec. 24-28, Mar. 28 to Apr. 17. No gage-height record Dec. 10-23, Dec. 29 to Mar. 23 (stage-discharge relation affected by ice during most of periods), Sept. 7-11, 15-18.

9-925. Beaver Creek near Rifle, Colo.

Location.--Lat 39°28'20", long 107°49'55", in NE¼ sec.1, T.7 S., R.94 W., on left bank 150 ft upstream from unnamed tributary, 200 ft upstream from road bridge, 4 miles upstream from mouth, and 4.8 miles southwest of Rifle.

Drainage area.--7.90 sq mi.

Records available.--October 1952 to September 1965.

Gage.--Water-stage recorder and plank control. Altitude of gage is 6,685 ft (from topographic map).

Average discharge.--13 years, 4.25 cfs (3,080 acre-ft per year).

Extremes.--Maximum discharge during year, 55 cfs June 7 (gage height, 3.73 ft); minimum daily, 0.5 cfs Nov. 4, Feb. 25, 27, 1952-65; Maximum discharge, 85 cfs May 24, 1964 (gage height, 4.00 ft), from rating curve extended above 37 cfs; minimum daily, 0.3 cfs Jan. 4-6, 1959.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions above station for irrigation of about 170 acres below station and about 380 acres in Mamm Creek basin.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

2.8	0.4	3.2	11
2.9	1.8	3.4	24
3.0	4.0	3.7	55
3.1	7.0		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.1	1.0	1.0	1.0	* 1.0	* 0.8	1.4	5.2	28	19	4.9	1.8
2	1.0	1.2	1.0	1.0	.8	.8	1.4	5.2	25	19	* 5.5	1.8
3	1.1	* 1.1	1.0	1.0	b .8	.8	1.2	* 6.4	28	18	5.8	2.0
4	1.0	.5	1.0	* 1.0	.8	b .9	1.1	6.7	28	18	5.2	2.0
5	1.0	1.0	1.0	1.0	.8	b 1.0	1.1	6.7	28	17	4.9	2.7
6	1.0	1.0	1.1	1.0	b .8	b 1.0	1.1	5.8	34	16	4.6	2.9
7	.8	1.0	b 1.1	1.0	.8	b 1.0	1.1	5.8	* 45	15	4.0	2.5
8	.8	1.0	b 1.1	1.0	.8	1.0	1.1	5.5	41	13	4.0	2.2
9	.8	1.0	b 1.1	1.0	.8	1.0	1.1	5.2	36	12	3.8	2.2
10	.8	1.0	b 1.0	1.0	.8	1.0	1.1	4.6	28	11	3.8	1.8
11	1.0	.8	b 1.0	1.0	b .8	1.0	1.0	4.3	28	11	3.6	1.8
12	* 1.0	b 1.1	1.0	1.0	b .8	1.0	1.0	4.6	30	* 11	3.6	1.8
13	1.0	1.1	b 1.1	1.0	b .8	1.0	1.0	6.1	34	9.8	3.3	1.7
14	1.0	b 1.1	b 1.1	1.0	b .8	1.0	1.1	6.4	38	8.6	3.3	1.7
15	1.1	b 1.1	b 1.1	1.0	b .8	1.0	1.2	6.1	38	7.8	3.1	1.7
16	1.1	b 1.1	b 1.1	1.0	b .8	1.0	1.5	7.0	35	7.4	3.1	1.7
17	1.1	1.1	b 1.0	1.0	b .8	1.0	1.7	10	33	7.8	3.1	1.8
18	1.0	1.1	b 1.0	1.1	b .8	1.0	1.7	* 16	32	8.6	3.6	2.9
19	.8	b 1.1	b 1.1	1.1	b .8	b 1.0	* 1.8	20	31	8.6	3.3	3.1
20	1.0	b 1.1	b 1.1	1.1	.8	b 1.1	2.9	26	31	8.2	3.1	2.7
21	1.0	b 1.1	b 1.1	1.1	.7	b 1.1	4.0	33	* 28	7.8	2.9	2.2
22	1.0	b 1.1	b 1.1	1.1	.7	1.1	4.3	39	28	6.7	2.7	2.5
23	1.2	b 1.1	b 1.1	1.1	.7	1.1	4.0	34	28	6.7	2.7	2.5
24	1.1	b 1.1	b 1.1	1.1	.7	1.1	3.6	28	28	6.7	2.5	2.7
25	.8	b 1.1	1.1	1.1	.5	1.1	3.3	22	28	7.8	2.2	2.7
26	1.0	1.1	1.0	1.1	.7	1.1	3.1	18	24	6.7	2.2	3.1
27	1.2	1.1	1.0	1.1	.5	1.1	2.9	16	20	6.4	2.0	3.6
28	1.1	1.1	1.0	1.1	.7	1.1	2.5	13	20	5.8	2.0	4.3
29	1.1	1.1	1.0	1.1	-	* 1.0	2.7	13	20	5.2	2.0	4.3
30	1.2	* 1.1	b 1.0	1.1	-----	1.0	3.6	16	20	4.9	* 2.2	3.1
31	1.1	-----	b 1.0	1.1	-----	1.1	-----	23	-----	5.5	1.8	-----
Total	31.3	31.5	32.5	32.4	21.4	31.3	60.6	418.6	895	317.0	104.8	73.8
Mean	1.01	1.05	1.05	1.05	0.76	1.01	2.02	13.5	29.8	10.2	3.38	2.46
Ac-ft	62	62	64	64	42	62	120	830	1,780	629	208	146

Calendar year 1964: Max 68 Min - Mean 5.04 Ac-ft 3,660  
 Water year 1964-65: Max 45 Min 0.5 Mean 5.62 Ac-ft 4,070

Peak discharge (base, 25 cfs)

\* Discharge measurement made on this day.  
 b Stage-discharge relation affected by ice.

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-22	2015	3.64	43	6-13	2000	3.65	45
6-7	2130	3.73	55				

## BATTLEMENT CREEK BASIN

9-926. Battlement Creek near Grand Valley, Colo.

Location.--Lat 39°26'10", long 107°58'40", in NE¼SE¼ sec.15, T.7 S., R.95 W., on left bank 300 ft downstream from ford, 4½ miles upstream from mouth, and 5 miles southeast of Grand Valley.

Drainage area.--10.5 sq mi.

Records available.--October 1956 to September 1965 (discontinued).

Gage.--Water-stage recorder and concrete control. Altitude of gage is 6,630 ft (from topographic map).

Average discharge.--9 years, 8.34 cfs (6,040 acre-ft per year).

Extremes.--Maximum discharge during year, 63 cfs June 16 (gage height, 2.54 ft); minimum daily, 1.2 cfs Feb. 12-14.

1956-65: Maximum discharge, 102 cfs June 7, 1957 (gage height, 2.79 ft); maximum gage height, 2.96 ft May 26, 1958 (backwater from debris); minimum discharge not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Slight regulation by Battlement Reservoir. No diversion above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

1.4	1.0	2.1	15
1.6	3.1	2.2	19
1.8	5.7	2.4	37
1.9	8.2	2.6	68

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.8	2.4	2.4	2.4	1.6	1.4	2.8	10	25	30	11	6.4
2	1.9	* 2.6	2.4	2.4	1.6	1.4	2.7	13	25	28	* 12	6.2
3	2.0	2.4	2.3	2.4	1.6	1.4	2.1	* 13	25	25	12	6.4
4	2.1	2.2	2.3	2.3	1.6	1.4	1.9	13	28	25	11	6.2
5	2.3	2.2	2.2	2.2	* 1.6	* 1.6	* 1.6	12	29	25	11	7.2
6	2.3	2.2	2.2	2.2	1.6	1.6	1.6	11	33	24	9.8	7.4
7	2.6	2.2	2.2	2.2	1.6	1.6	1.7	9.8	* 43	23	9.2	6.7
8	2.8	2.2	2.2	2.1	1.5	1.6	1.7	9.8	48	22	8.9	6.7
9	2.9	2.2	2.4	2.1	1.5	1.6	1.8	8.5	48	21	8.5	6.4
10	3.1	2.3	2.4	2.1	1.4	1.6	1.7	8.0	48	21	8.5	6.2
11	3.3	2.1	2.3	2.1	1.4	1.6	1.6	8.2	47	22	8.5	5.7
12	* 3.3	2.2	2.3	2.0	1.2	1.6	1.6	10	51	* 21	8.2	5.7
13	3.3	2.4	2.2	2.0	1.2	1.6	1.6	13	51	21	8.0	5.6
14	3.3	2.4	2.2	2.0	1.2	1.6	1.4	14	56	19	8.0	5.4
15	3.2	2.4	2.2	2.0	1.4	1.6	1.6	13	58	19	7.7	5.2
16	3.0	2.4	2.4	1.9	1.4	1.6	2.0	15	61	18	7.7	5.2
17	3.0	2.4	2.2	1.9	1.4	* 1.6	2.3	* 20	60	17	8.0	5.7
18	2.9	2.4	2.0	1.9	1.4	1.6	2.2	27	58	17	8.9	7.0
19	2.9	2.6	2.2	1.9	1.4	1.4	* 3.1	29	60	17	8.2	6.7
20	2.9	2.6	2.2	1.9	1.4	1.4	4.4	27	58	17	7.7	6.2
21	2.9	2.7	2.2	1.8	1.4	1.6	4.8	30	58	17	7.2	5.7
22	2.9	2.6	2.1	1.8	1.4	1.6	4.6	33	* 58	16	7.2	6.0
23	2.9	2.6	2.7	1.6	1.3	1.7	4.6	30	58	15	7.0	5.7
24	2.9	2.4	3.0	1.6	1.3	1.6	4.5	26	58	15	6.7	6.0
25	2.8	2.6	2.4	1.6	1.3	1.4	4.4	23	58	15	6.7	6.0
26	2.8	2.6	2.1	1.6	1.3	1.6	4.2	19	54	14	6.4	6.0
27	2.8	2.6	2.2	1.4	1.3	1.7	3.9	18	47	13	6.4	6.2
28	2.4	2.4	1.8	1.6	1.4	1.7	3.6	18	40	12	6.2	6.7
29	2.3	2.4	1.6	1.6	-	1.8	4.1	18	34	11	6.4	7.0
30	2.4	* 2.4	1.8	1.6	-----	2.0	6.7	19	32	11	* 6.7	6.4
31	2.4	-----	2.6	1.8	-----	2.3	-----	22	-----	12	6.4	-----
Total	84.4	72.1	69.7	60.0	39.7	49.8	86.8	540.3	1,409	583	256.1	185.9
Mean	2.72	2.40	2.25	1.94	1.42	1.61	2.89	17.4	47.0	18.8	8.26	6.20
Ac-ft	167	143	138	119	79	99	172	1,070	2,790	1,160	508	369

Calendar year 1964: Max 63 Min - Mean 8.26 Ac-ft 6,000  
Water year 1964-65: Max 61 Min 1.2 Mean 9.42 Ac-ft 6,810

Peak discharge (base, 40 cfs).--June 16 (0600) 63 cfs (2.54 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4, 5, 12, 14-20, 27, Dec. 7-9, 14-20, 29-31, Jan. 1, 2, Feb. 10-17, Mar. 18-22, 24-26, Apr. 11-15. No gage-height record Jan. 21 to Feb. 5, Mar. 2-17 (stage-discharge relation affected by ice during part of periods).

9-942. Roan Creek above Clear Creek, near De Beque, Colo.

Location.--Lat 39°29'30", long 108°21'15", in SE¼NW¼ sec.32, T.6 S., R.98 W., on left bank 1.7 miles upstream from Clear Creek and 14 miles north of De Beque.

Drainage area.--151 sq mi.

Records available.--October 1962 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 5,560 ft (from topographic map).

Extremes.--Maximum discharge during year, about 800 cfs Aug. 14 (gage height, 7.26 ft); minimum daily, 1.2 cfs Feb. 12.  
1962-65: Maximum discharge, about 800 cfs Aug. 14, 1965 (gage height, 7.26 ft); minimum daily, 1.0 cfs Nov. 23, 1963.

Remarks.--Records fair except those for periods of ice effect, indefinite stage-discharge relation, or no gage-height record, which are poor. Diversions for irrigation of about 1,400 acres above station.

Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 2-13, 16-18, 20-31, June 1 to July 17, Aug. 14 to Sept. 30)

1.9	1.0	3.0	52
2.0	2.0	3.5	86
2.1	4.2	4.0	132
2.3	11	5.0	250
2.6	28	6.0	410

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.8	4.0	6.8	a 5.2	* 7.8	* 6.2	6.2	32	173	29	24	9.6
2	3.5	* 4.9	6.8	a 4.8	5.5	3.3	6.2	45	168	26	* 24	1.0
3	3.5	4.2	6.8	a 4.4	6.5	3.3	6.2	* 62	158	30	20	1.2
4	3.5	4.0	6.2	* a 5.6	6.8	5.5	6.5	76	145	35	18	1.4
5	3.5	4.0	4.2	5.8	7.5	5.5	6.8	* 74	138	33	16	2.1
6	4.2	4.0	4.2	6.8	6.8	7.5	7.2	88	128	33	16	1.8
7	4.2	4.0	2.4	9.2	6.5	7.5	7.2	* 92	* 113	33	15	1.6
8	4.0	4.0	2.9	9.6	5.2	7.2	6.8	100	97	33	14	1.5
9	4.0	4.0	4.9	6.5	5.2	7.8	8.6	96	89	31	14	1.4
10	3.8	4.0	4.0	7.2	4.2	8.2	8.9	96	95	28	14	1.2
11	3.5	4.5	5.5	6.8	1.6	7.2	8.9	100	77	26	13	1.2
12	* 3.5	3.8	4.5	6.8	1.2	7.2	8.6	98	74	* 27	12	1.1
13	3.5	5.2	1.9	6.5	1.6	7.8	9.2	115	72	23	13	9.2
14	3.5	4.0	3.1	6.5	2.4	7.2	7.8	145	71	22	e 35	1.1
15	3.3	4.2	3.8	6.8	2.4	7.2	7.5	199	71	23	e 70	1.2
16	3.3	4.9	4.0	7.5	1.4	* 5.8	7.2	216	73	22	26	1.4
17	3.1	5.2	3.5	6.8	1.8	6.2	7.5	* 258	68	23	21	1.6
18	2.7	5.5	2.2	6.5	2.7	4.9	7.8	* 369	60	28	20	2.4
19	2.9	5.8	3.8	6.8	3.5	2.7	* 7.5	326	54	30	16	2.6
20	3.3	4.2	4.9	6.8	4.0	2.4	8.6	376	55	24	14	2.0
21	3.8	4.5	5.2	6.8	4.0	3.5	10	354	* 53	20	14	1.8
22	4.0	4.5	6.2	6.2	3.8	4.0	12	362	44	20	13	1.7
23	4.0	6.2	8.9	4.9	* 5.8	4.9	16	340	36	19	12	1.6
24	4.2	5.5	23	6.5	4.0	5.2	23	* 313	36	19	11	1.5
25	4.2	6.2	12	6.8	5.8	4.2	24	a 280	37	30	10	1.4
26	4.2	6.2	7.8	b 3.6	7.8	5.8	23	a 240	35	22	10	1.2
27	3.8	6.8	21	b 2.6	8.2	6.8	28	a 220	31	25	9.6	1.2
28	3.5	5.2	12	b 3.8	7.8	8.2	27	a 190	30	22	9.2	1.2
29	4.0	6.5	5.8	7.5	-	* 8.2	28	a 180	30	20	9.2	1.2
30	4.0	* 6.2	a 5	7.2	-----	6.8	28	166	31	24	* 10	1.2
31	4.2	-----	a 5.2	1.4	-----	6.2	-----	170	-----	26	10	-----
Total	114.5	146.2	198.5	202.8	131.8	184.4	370.2	5,838	2,332	806	583.0	436.8
Mean	3.69	4.87	6.40	6.54	4.71	5.95	12.3	188	77.7	26.0	18.8	14.6
Ac-ft	227	290	394	402	261	366	734	11,580	4,630	1,600	1,160	866

Calendar year 1964: Max 26 Min 1.9 Mean 6.99 Ac-ft 5,080  
Water year 1964-65: Max 396 Min 1.2 Mean 31.1 Ac-ft 22,510

Peak discharge (base, 80 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-18	2130	6.05	430	8-15	1515	5.80	†500
8-14	1830	7.26	†800				

\* Discharge measurement made on this day.  
a No gage-height record.  
b Stage-discharge relation affected by ice.  
e Stage-discharge relation indefinite.

† About.

## ROAN CREEK BASIN

9-950. Roan Creek near De Beque, Colo.

Location.--Lat 39°27'15", long 108°19'00", on line between secs. 10 and 15, T.7 S., R.98 W., on left bank 15 ft downstream from bridge, half a mile downstream from Kimball Creek, and 11 miles north of De Beque.

Drainage area.--321 sq mi.

Records available.--April 1921 to September 1926, October 1962 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 5,380 ft (from topographic map). Prior to October 1962, chain gage at different datum.

Average discharge.--8 years, 45.3 cfs (32,800 acre-ft per year).

Extremes.--Maximum discharge during year, 466 cfs Aug. 14 (gage height, 4.30 ft); minimum daily, 4.0 cfs Dec. 13.

1921-26, 1962-65: Maximum discharge observed, 1,110 cfs May 21, 1922, from rating curve extended above 700 cfs; maximum gage height observed, 4.6 ft (datum then in use) May 6, 7, 1922; minimum daily discharge, 3.2 cfs Nov. 25, 1963, but may have been less during periods of no gage-height record.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for irrigation of about 3,500 acres above and about 500 acres below station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.3	8	9.8	9.8	* 13	* 8.4	8.8	52	182	26	28	17
2	6.3	* 9	9.8	7.7	9.1	5.8	8.8	72	170	23	* 29	18
3	6.3	8.3	9.5	7.0	10	6.0	8.8	* 94	158	26	28	20
4	6.1	7.7	9.2	* 8.0	12	7.4	8.4	107	150	30	25	23
5	5.7	8.0	b 7	8.4	14	9.4	9.8	* 105	144	29	22	27
6	5.9	8.0	b 5.5	9.1	13	10	10	114	132	29	21	27
7	5.9	8.0	b 4.6	11	12	10	9.8	* 112	* 121	32	22	23
8	5.9	6.5	b 4.2	14	10	9.8	9.8	114	114	32	22	24
9	5.9	6.8	b 6	10	10	10	10	111	106	30	19	25
10	5.7	6.3	b 5.5	10	9.4	9.8	12	107	95	28	18	23
11	5.3	6.8	b 7	10	6.2	9.1	12	106	91	27	16	21
12	* 6.1	5.9	b 6	10	4.8	9.4	11	98	88	* 32	17	19
13	6.8	6.8	b 4.0	* 9.8	5.2	9.4	12	116	78	34	21	16
14	6.5	5.5	b 4.8	9.8	5.8	8.0	11	140	70	28	78	18
15	6.5	5.5	5.3	11	6.2	8.8	10	182	69	28	93	19
16	6	5.3	5.9	13	5.8	* 7.7	10	231	67	27	38	20
17	6	5.7	5.9	12	6.2	7.7	10	* 297	67	26	34	21
18	5.5	5.9	b 5	10	8.4	6.8	10	* 352	59	34	30	27
19	5	6.5	b 5.5	10	10	5.8	* 11	342	53	34	22	34
20	6	5.7	6.1	10	14	6.0	11	372	49	34	21	27
21	7	5.5	7.7	10	13	6.0	15	370	* 50	22	20	29
22	7	5.5	9.2	9.4	13	6.2	20	372	46	21	21	27
23	7	7.1	10	b 8	* 9.1	6.8	33	350	33	21	21	24
24	7.5	5.5	44	b 9	7.4	7.0	39	* 330	29	20	20	23
25	8	7.4	42	10	9.8	6.5	42	312	28	31	17	21
26	7.5	7.4	24	b 7	13	6.8	39	289	29	26	13	20
27	7.5	8.3	43	b 5.5	13	7.4	45	261	29	27	13	18
28	7	7.1	48	b 7	10	9.1	42	233	27	25	16	16
29	8	8.3	15	10	-	* 11	45	212	27	24	19	15
30	8	* 8.9	8.8	10	-----	9.4	42	196	28	27	* 18	16
31	8	-----	9.8	27	-----	8.8	-----	189	-----	31	18	-----
Total	202.2	207.2	388.1	313.5	273.4	250.3	566.2	6,338	2,389	864	800	658
Mean	6.52	6.91	12.5	10.1	9.76	8.07	18.9	204	79.6	27.9	25.8	21.9
Ac-ft	401	411	770	622	542	496	1,120	12,570	4,740	1,710	1,590	1,310

Calendar year 1964: Max 90 Min 4.0 Mean 10.8 Ac-ft 7,860

Water year 1964-65: Max 372 Min 4.0 Mean 36.3 Ac-ft 26,280

Peak discharge (base, 100 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
12-27	2130	2.83	133	8-14	2015	4.30	466
5-20	1600	3.53	420				

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 14 to Nov. 2.

9-955. Colorado River near Cameo, Colo.

Location.--Lat 39°14'20", long 108°16'00", in SW¼SW¼ sec.30, T.9 S., R.97 W., on left bank 100 ft north of U. S. Highways 6 and 24, half a mile upstream from Jackson Canyon, 5.9 miles upstream from Grand Valley project diversion dam, and 7 miles northeast of Cameo.

Drainage area.--8,050 sq mi, approximately.

Records available.--October 1933 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 4,813.73 ft above mean sea level, datum of 1929. Prior to Oct. 10, 1934, staff gage on river and water-stage recorder on highline canal, about 10 miles downstream at different datum. Oct. 10, 1934, to Feb. 27, 1958, water-stage recorder at site 3 miles downstream at datum 22.55 ft lower.

Average discharge.--32 years, 3,897 cfs (2,821,000 acre-ft per year).

Extremes.--Maximum discharge during year, 23,000 cfs June 18 (gage height, 10.23 ft); minimum daily, 1,000 cfs Dec. 8. 1933-65: Maximum discharge, 36,000 cfs June 16, 1935; maximum gage height, 11.60 ft June 8, 1952 (site and datum then in use); minimum daily discharge, 700 cfs Dec. 29, 1939.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, and diversion for irrigation of about 160,000 acres. Records of chemical analyses and water temperatures for the water year 1965 are published in Part 2 of this report.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 9-12)

2.8	1,040	6.0	6,740
3.0	1,230	7.0	9,800
3.5	1,800	8.0	13,600
4.0	2,540	9.0	17,700
5.0	4,400	10.0	22,000

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.850	1.540	1.660	1.260	1.720	1.360	1.840	4.550	9.090	12.300	8.320	2.760
2	1.840	* 1.490	1.690	1.400	1.430	1.350	1.900	5.980	9.940	11.900	8.190	2.710
3	1.810	1.570	1.660	1.400	1.350	1.240	1.900	7.220	10.000	12.600	7.250	* 2.680
4	1.780	1.570	1.610	1.400	1.360	1.170	1.960	7.590	11.000	12.400	6.870	2.780
5	1.790	1.540	1.560	1.500	1.430	1.250	1.940	* 7.680	10.900	11.900	* 6.640	2.930
6	1.830	1.520	1.300	1.670	1.460	1.280	* 1.900	7.110	10.400	11.600	5.860	3.370
7	1.790	1.520	* 1.200	1.660	1.570	1.320	1.940	6.350	10.700	11.400	5.280	3.440
8	1.750	1.520	1.000	* 1.760	1.460	1.330	1.930	5.620	12.300	11.100	4.820	3.190
9	* 1.750	1.500	1.100	1.750	* 1.430	* 1.370	1.960	5.170	* 13.800	10.800	4.580	3.110
10	1.750	1.500	1.300	1.550	1.410	1.410	2.200	4.640	14.500	10.300	4.200	3.000
11	1.740	1.540	1.400	1.530	1.380	1.420	2.200	4.220	15.400	10.100	3.820	2.700
12	1.720	1.550	1.500	1.530	1.360	1.360	2.180	4.060	16.900	10.900	* 3.630	2.600
13	1.730	1.560	1.500	1.530	1.190	1.430	2.140	4.440	16.400	12.100	3.530	2.400
14	1.730	1.580	1.200	1.490	1.250	1.420	2.430	5.410	18.000	10.900	3.460	2.300
15	1.720	1.620	1.300	1.500	1.370	1.410	2.250	5.640	19.100	10.300	3.570	2.200
16	1.760	1.700	1.400	1.520	1.520	1.460	* 2.430	5.260	19.800	* 10.800	3.350	2.100
17	1.680	1.680	1.500	1.470	1.440	1.420	2.620	5.480	20.500	8.640	3.220	2.500
18	1.640	1.670	1.400	1.450	1.350	1.330	2.800	6.870	21.600	8.860	3.200	2.970
19	1.680	1.660	1.400	1.380	1.430	1.300	2.430	* 8.320	22.000	9.700	3.740	3.170
20	1.690	1.640	1.400	1.370	1.410	1.280	2.280	9.630	21.400	9.700	4.490	2.950
21	1.630	1.500	1.500	1.370	1.400	1.260	2.760	11.700	20.700	9.020	4.860	3.110
22	1.630	1.530	1.600	1.460	1.430	1.400	3.590	13.400	* 19.500	8.380	4.660	3.020
23	1.500	1.550	1.700	1.420	1.430	1.490	* 4.300	14.700	18.200	8.010	3.940	2.930
24	1.540	1.550	1.800	1.350	1.350	1.530	4.550	14.500	17.300	8.300	3.800	2.930
25	1.620	1.540	1.800	1.490	1.300	1.490	4.510	13.200	17.000	8.500	3.740	3.010
26	1.550	1.620	1.700	1.520	1.320	1.400	4.200	11.600	15.500	8.300	3.380	3.110
27	1.600	1.720	1.750	1.420	1.350	1.400	3.900	* 10.000	13.700	8.500	3.240	3.080
28	1.540	1.670	1.760	1.430	1.400	1.470	3.350	8.350	12.500	7.300	3.020	* 3.040
29	1.520	1.580	1.660	1.470	-	1.530	3.110	7.220	12.700	7.000	3.060	3.170
30	1.500	1.610	1.500	1.460	-----	1.490	3.570	7.030	13.000	6.770	2.830	3.380
31	1.530	-----	1.230	1.660	-----	1.580	-----	7.710	-----	6.840	2.970	-----
Total	52,190	47,340	46,080	46,170	39,300	42,950	81,070	240,650	463,830	305,220	137,520	86,640
Mean	1,684	1,578	1,486	1,489	1,404	1,385	2,702	7,763	15,461	9,846	4,436	2,888
Ac-ft	103,500	93,900	91,400	91,580	77,950	85,190	160,800	477,300	920,000	605,400	272,800	171,800
Calendar year 1964:	Max 13,700	Min 800	Mean 2,665	Ac-ft 1,934,000								
Water year 1964-65:	Max 22,000	Min 1,000	Mean 4,353	Ac-ft 3,152,000								

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 6-26, Jan. 2-5. No gage-height record July 24-28, Sept. 10-17.

## PLATEAU CREEK BASIN

9-961. Vega Reservoir near Collbran, Colo.

Location.--Lat 39°13'30", long 107°48'40", in sec.6, T.10 S., R.93 W., at dam on Plateau Creek, 10 miles southeast of Collbran.

Drainage area.--24.4 sq mi.

Records available.--April 1960 to September 1965.

Gage.--Staff gage read once daily. Datum of gage is 7,906 ft above mean sea level (Bureau of Reclamation bench mark); gage readings have been reduced to elevations above mean sea level.

Extremes.--Maximum contents observed during year, 34,570 acre-ft June 16-20 (elevation, 7,985.8 ft); minimum observed, 3,780 acre-ft Oct. 27 to Nov. 3 (elevation, 7,930.2 ft).

1960-65: Maximum contents observed, 34,570 acre-ft June 16-20, 1965 (elevation, 7,985.8 ft); minimum observed, 1,260 acre-ft Apr. 15, 1960 (elevation, 7,917.4 ft).

Remarks.--Reservoir is formed by an earth- and rock-fill dam. Dam completed by Bureau of Reclamation in 1960. Usable storage began in May 1958 while dam was under construction. Capacity of reservoir, 32,930 acre-ft between elevations 7,906 (bottom of outlet gate) and 7,984 ft (crest of spillway). Dead storage, 823 acre-ft. Figures given herein are usable contents. Reservoir is used to store water for irrigation and power development.

Cooperation.--Records furnished by Bureau of Reclamation.

Month-end elevation and contents, water year October 1964 to September 1965

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	7,930.9	3,960	-
Oct. 31.....	7,930.2	3,780	-180
Nov. 30.....	7,931.4	4,100	+320
Dec. 31.....	7,932.9	4,500	+400
Calendar year 1964	-	-	-810
Jan. 31.....	7,934.6	4,980	+480
Feb. 28.....	7,935.9	5,370	+390
Mar. 31.....	7,937.5	5,860	+490
Apr. 30.....	7,944.7	8,350	+2,490
May 31.....	7,972.1	23,250	+14,900
June 30.....	7,985.0	33,840	+10,590
July 31.....	7,980.7	30,050	-3,790
Aug. 31.....	7,967.0	19,720	-10,330
Sept. 30.....	7,959.2	15,000	-4,720
Water year 1964-65.....	-	-	+11,040

† Elevation at 0800.



9-965. Plateau Creek near Collbran, Colo.

Location.--Lat 39°15'00", long 107°50'25", in NE¼ sec.26, T.9 S., R.94 W., on right bank 10 ft downstream from private bridge, 1½ miles downstream from Leon Creek, and 6 miles east of Collbran.

Drainage area.--80.4 sq mi.

Records available.--September 1921 to September 1965. Prior to October 1933 monthly discharge only, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 7,130 ft (from topographic map).

Extremes.--Maximum discharge during year, 708 cfs June 15 (gage height, 4.23 ft); minimum daily, 3.6 cfs Feb. 13.  
1921-65: Maximum discharge, 3,080 cfs May 27, 1922 (gage height, 6.90 ft), from rating curve extended above 1,300 cfs; minimum daily, 1.9 cfs Feb. 26, 1961 (result of storage in Vega Reservoir); minimum daily prior to construction of Vega Reservoir, 3 cfs Sept. 21, 1926.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by storage in Vega Reservoir since 1959, transbasin diversion to Surface Creek in Gunnison River basin, diversions above station for irrigation of about 800 acres above and about 8,400 acres below, and about 550 acres in Buzzard Creek drainage, and for power development.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.8	2.8	2.0	68
1.0	5.5	2.5	133
1.2	10	3.0	223
1.4	18	3.5	370
1.6	31	4.0	580

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.2	4.9	4.8	4.4	6	4.6	5.5	9.5	60	76	59	22
2	* 9.0	5.0	4.8	4.0	7	4.2	5.4	8.0	50	70	52	20
3	9.2	* 5.2	4.8	4.0	5.5	3.8	4.9	16	55	60	56	24
4	8.2	5.2	4.8	4.0	5.0	4.4	4.9	29	60	46	* 37	22
5	8.2	5.0	4.8	4.0	4.8	* 4.6	4.8	28	50	38	30	33
6	8.2	5.0	4.8	3.9	4.8	4.9	4.9	25	90	37	25	56
7	8.5	5.0	5.0	3.9	4.8	4.0	4.8	25	140	30	25	31
8	8.8	5.0	* 5.2	* 3.9	* 4.8	4.0	* 5.0	24	* 161	33	20	* 31
9	9.5	5.0	5.2	3.9	4.6	4.0	5.2	22	144	37	16	33
10	10	5.0	5.0	3.8	4.4	4.0	5.6	22	99	37	22	23
11	10	5.5	5.0	3.8	4.2	4.0	5.0	23	55	58	26	21
12	9.8	5.0	4.9	3.8	4.0	4.0	4.4	23	121	46	26	25
13	10	5.4	4.6	3.8	3.6	4.0	4.6	25	278	46	24	23
14	10	5.2	4.8	3.8	3.8	4.0	4.8	25	405	39	21	19
15	10	5.0	5.0	3.8	4.2	4.0	5.0	23	530	35	21	18
16	8.8	5.0	5.2	3.9	4.0	4.0	5.4	24	494	35	22	17
17	8.8	4.6	5.0	3.9	4.2	4.0	5.4	33	441	35	25	19
18	8.8	4.6	4.9	4.0	4.6	3.8	5.2	* 40	417	35	30	37
19	7.5	4.6	4.9	4.2	4.8	3.8	5.0	60	377	43	27	42
20	8.5	4.4	4.9	4.2	4.8	3.8	5.0	90	332	38	26	37
21	8.5	4.6	4.9	4.2	5.0	4.0	5.2	130	248	* 38	20	30
22	8.2	4.6	5.0	4.0	5.0	4.2	28	180	* 238	34	21	32
23	9.5	4.6	5.2	4.2	5.0	4.6	67	150	217	37	18	37
24	8.2	4.6	5.2	4.8	* 5.0	4.2	69	100	215	42	17	59
25	7.1	4.8	5.2	4.6	4.8	3.8	70	90	228	106	19	77
26	6.9	4.8	5.0	4.4	4.9	3.8	65	70	211	61	18	95
27	7.8	4.8	5.0	4.4	5.0	4.2	36	55	177	47	16	101
28	6.5	4.6	5.0	4.6	5.0	4.3	6.9	50	138	45	16	103
29	5.2	4.8	4.8	4.4	-	4.6	5.2	50	110	34	18	81
30	5.0	4.6	4.6	4.4	-----	4.9	6.1	50	90	40	24	59
31	4.9	-----	4.8	4.6	-----	5.4	-----	55	-----	70	22	-----
Total	258.8	146.4	153.1	127.6	133.6	129.9	459.2	1554.5	6231	1428	799	1227
Mean	8.35	4.88	4.94	4.12	4.77	4.19	15.3	50.1	208	46.1	25.8	40.9
Ac-ft	513	290	304	253	265	258	911	3,080	12,360	2,830	1,580	2,430

Calendar year 1964: Max 503 Min 2.0 Mean 24.3 Ac-ft 17,630  
Water year 1964-65: Max 530 Min 3.6 Mean 34.7 Ac-ft 25,070

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 12, 14, 15, 18-25, 28, Dec. 3, 5-11, 13-17, 29-31, Jan. 1-5, 18, 22, 23, 25-27, Feb. 1-4, 9-18, 25, Mar. 8, 9, 18-21, 24-26. No gage-height record Feb. 21-24, Feb. 27 to Mar. 5 (stage-discharge relation affected by ice during part of periods), Apr. 10-22, May 18 to June 7.

## PLATEAU CREEK BASIN

9-968. Buzzard Creek below Owens Creek, near Heiberger, Colo.

Location.--Lat 39°14'10", long 107°38'00", in N½ sec.35, T.9 S., R.92 W., on left bank 500 ft downstream from Owens Creek, 2½ miles upstream from Porter Creek, 4½ miles southeast of Hightower ranger station, and 8½ miles southeast of Heiberger.

Drainage area.--52.2 sq mi.

Records available.--October 1955 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 8,206 ft (from topographic map).

Average discharge.--10 years, 24.9 cfs (18,030 acre-ft per year).

Extremes.--Maximum discharge during year, 430 cfs May 22 (gage height, 4.78 ft); minimum daily determined, 0.3 cfs Oct. 6, 8. 1955-65: Maximum discharge, 636 cfs June 4, 1957 (gage height, 5.82 ft); no flow at times most years.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by diversions above station from Owens Creek to West Divide Creek basin for irrigation (see records for West Divide Creek near Raven for figures of diversion).

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.5	0	2.4	26
1.6	1.0	2.7	48
1.7	2.2	3.0	77
1.9	5.5	3.5	152
2.1	11	4.5	350

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 0.7	1.0					4.4	226	200	35	12	2.4
2	.6	(*)					5.5	248	176	35	8.9	2.0
3	.5						8	236	190	32	12	2.8
4	.5						15	* 200	190	31	* 7.0	3.5
5	.4						15	180	159	30	6.0	3.8
6	.3						14	150	178	27	5.3	7.5
7	.4						16	130	* 202	24	4.6	5.3
8	.3						18	140	196	18	4.5	* 4.1
9	.4					2	20	110	186	22	4.0	4.1
10	.4						16	95	166	16	3.6	3.3
11	.5						14	* 90	174	24	3.3	2.8
12	.4						12	108	242	31	3.2	3.0
13	.4						14	156	220	22	3.0	3.0
14	.4						18	166	216	13	2.8	2.2
15	.4						22	122	224	8.9	6.5	2.0
16	.5	1	0.8	1	1.5		28	154	208	7.8	4.6	2.0
17	.6					* 2.4	32	234	188	7.2	4.5	2.1
18	.6					2.2	36	280	170	13	6.5	5.8
19	.4					2.0	40	290	150	17	10	13
20	.5					2.2	50	* 312	137	13	6.8	12
21	.6					2.4	88	328	122	* 11	4.8	8.9
22	.6					2.4	98	342	106	8.0	4.5	8.0
23	.6					2.2	118	290	* 92	7.0	3.6	9.2
24	.7					2.0	102	210	102	6.2	2.8	12
25	.6					2.2	116	165	108	12	2.4	13
26	.6					2.2	94	150	77	7.5	2.0	13
27	.8					2.2	66	144	60	5.3	1.6	14
28	.7					2.0	74	143	53	5.2	1.5	12
29	.8					2.4	120	156	46	4.1	1.7	14
30	.9					3.0	166	165	35	3.8	4.1	12
31	.9					3.4	190	190	10	3.3	3.3	
Total	17.0	30.0	24.8	31	42.0	67.2	1,439.9	5,910	4,573	507.0	151.4	202.8
Mean	0.55	1.0	0.8	1	1.5	2.17	48.0	191	152	16.4	4.88	6.76
Ac-ft	34	60	49	61	83	133	2,860	11,720	9,070	1,010	300	402

Calendar year 1964: Max 328 Min 0 Mean 22.2 Ac-ft 16,120  
 Water year 1964-65: Max 342 Min - Mean 35.6 Ac-ft 25,780

Peak discharge (base, 200 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-2	1830	4.45	342	6-15	1830	4.15	280
5-22	2030	4.78	430				

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 2 to Mar. 16 (stage-discharge relation affected by ice during most of period), May 4-11. Stage-discharge relation affected by ice Mar. 18 to Apr. 20.

9-975. Buzzard Creek near Collbran, Colo.

Location.--Lat 39°16'20", long 107°51'00", in sec.14, T.9 S., R.94 W., on right bank 150 ft upstream from county bridge, half a mile upstream from Brush Creek, and 7 miles east of Collbran.

Drainage area.--139 sq mi.

Records available.--September 1921 to September 1965. Prior to October 1933 monthly discharge only, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 6,955 ft (from topographic map).

Average discharge.--44 years, 47.2 cfs (34,170 acre-ft per year).

Extremes.--Maximum discharge during year, 611 cfs Apr. 21 (gage height, 4.91 ft); minimum daily, 1.0 cfs Oct. 1.  
1921-65: Maximum discharge, 1,630 cfs May 14, 1941 (gage height, 7.80 ft), from rating curve extended above 900 cfs; no flow for many days in 1959-60, 1963.

Remarks.--Records fair except those for period of ice effect, which are poor. Diversions for irrigation of about 1,300 acres above station. Erie Canal imports water from Plateau Creek for irrigation of about 280 acres above station. Small diversions above station from Middleton and Uhl Creeks to West Mamm Creek (Mamm Creek basin).

Cooperation.--One measurement furnished by Bureau of Reclamation.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.0	2.7	2.8	3.0	5.5	4.4	1.0	354	230	55	26	5.8
2	* 1.2	2.9	2.8	3.0	6	4.0	12	410	182	55	21	5.5
3	1.4	* 3.5	2.8	2.8	6	3.8	30	384	182	51	22	6.5
4	1.6	3.3	2.6	3.0	5.5	3.6	31	* 372	182	47	* 20	5.5
5	1.8	3.1	2.4	3.2	5.5	* 4.0	31	346	150	44	15	8.2
6	1.8	2.9	2.2	3.4	6	4.0	27	268	157	41	11	11
7	1.9	2.7	2.4	3.6	6	4.0	* 32	196	* 188	39	8.2	13
8	2.2	3.1	* 2.6	* 3.6	* 6	4.2	36	212	182	35	6.5	* 12
9	2.2	3.1	2.8	3.4	6	4.4	40	146	180	39	5.0	10
10	2.4	2.9	2.8	3.2	5.5	* 4.6	33	123	155	35	4.5	8.2
11	2.4	3.0	2.6	3.2	5	5	27	106	169	39	5.0	6.2
12	2.5	2.8	2.4	3.2	4.6	5	22	128	292	51	5.0	6.8
13	2.5	3.0	2.0	3.0	4.2	4.8	30	198	254	52	4.8	5.8
14	2.7	3.2	2.4	3.0	4.4	4.8	35	248	240	34	3.9	5.5
15	2.7	3.2	2.6	3.2	4.6	4.8	55	175	246	25	3.7	4.8
16	2.7	3.2	2.6	3.0	4.4	4.8	77	173	242	20	3.9	4.5
17	2.7	3.2	2.4	3.0	4.6	4.6	87	294	212	19	4.8	5.2
18	2.5	3.0	2.2	3.2	4.8	4.4	93	* 354	200	21	5.2	16
19	2.5	2.8	2.4	3.4	4.8	4.4	148	364	173	30	7.0	30
20	2.7	2.6	2.6	* 3.6	5	4.6	270	386	153	* 30	9.4	32
21	2.5	2.4	2.8	3.6	5	4.8	322	400	138	24	6.8	25
22	2.7	2.6	2.8	3.4	5.5	4.6	308	406	* 120	21	6.0	22
23	2.9	2.8	3.0	3.6	5	4.0	276	384	107	18	6.2	20
24	2.9	2.6	3.2	4.0	* 4.8	3.8	238	264	113	19	5.8	21
25	2.9	2.8	3.2	4.0	4.4	4.2	200	198	128	25	4.1	24
26	2.7	3.0	3.0	3.8	4.0	4.4	196	192	106	26	3.7	22
27	2.7	3.0	2.8	4.0	4.2	4.2	144	198	81	19	3.3	25
28	2.5	2.8	2.6	4.4	4.4	4.4	138	177	72	16	2.9	21
29	2.4	3.0	2.4	4.6	-	5	212	208	68	14	3.7	26
30	2.4	3.0	2.6	4.8	-----	5.5	282	198	54	12	4.5	28
31	2.5	-----	2.8	5	-----	7	-----	206	-----	16	5.5	-----
Total	72.5	88.2	81.6	109.2	141.7	140.1	3,442	8,068	4,956	972	244.4	436.5
Mean	2.34	2.94	2.63	3.52	5.06	4.52	115	260	165	31.4	7.88	14.6
Ac-ft	144	175	162	217	281	278	6,830	16,000	9,830	1,930	485	866

Calendar year 1964: Max 527 Min 1.0 Mean 37.4 Ac-ft 27,170  
Water year 1964-65: Max 410 Min 1.0 Mean 51.4 Ac-ft 37,200

Peak discharge (base, 350 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-21	2200	4.91	611	5-22	0145	4.73	5 51
5- 3	0100	4.53	530	6-12	0800	3.84	3 50

\* Discharge measurement made on this day.  
Note.--Stage-discharge relation affected by ice Nov. 11 to Apr. 3 (no gage-height record Nov. 17 to Dec. 8).

## PLATEAU CREEK BASIN

9-976. Brush Creek near Collbran, Colo.

Location.--Lat 39°19'30", long 107°50'30", in W½ sec.36, T.8 S., R.94 W., on right bank at site of former highway bridge, 1 mile downstream from West Brush Creek, 4 miles upstream from mouth, and 8½ miles northeast of Collbran.

Drainage area.--9.57 sq mi.

Records available.--October 1955 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 8,183 ft (from topographic map).

Average discharge.--10 years, 7.08 cfs (5,130 acre-ft per year).

Extremes.--Maximum discharge during year, 162 cfs May 21 (gage height, 3.67 ft); minimum not determined.

1955-65: Maximum discharge, 317 cfs June 7, 1957 (gage height, 4.35 ft); minimum daily determined, 0.1 cfs Apr. 1, 2, 1961.

Remarks.--Records good except those for period of no gage-height record, which are poor. One small diversion for hay meadows above station.

Rating table (gage height, in feet, and discharge,  
in cubic feet per second)  
(Shifting-control method used Apr. 1 to June 14, July 4 to Aug. 31)

1.9	0.2	3.0	30
2.0	.9	3.3	70
2.2	3.3	3.7	138
2.4	7.0	4.0	218
2.7	21		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 1.0	1.0					1.1	36	58	12	4.7	1.4
2	1.0	* 1.0					1.1	40	52	11	4.5	1.4
3	.9	1.0					1.2	44	53	9.8	4.8	2.0
4	.8	1.0					1.2	* 40	52	9.4	* 3.8	2.0
5	.9	1.0					1.2	33	48	8.2	3.5	2.5
6	.9						1.2	26	52	7.4	3.3	2.8
7	1.0						* 1.2	23	* 62	6.6	3.0	2.3
8	1.0						1.2	20	64	6.6	2.8	* 2.3
9	.9						1.6	18	54	6.4	3.0	2.1
10	.9						2.0	15	45	6.0	2.9	1.7
11	1.0						2.0	14	45	6.6	2.5	1.4
12	1.0						1.6	18	49	6.4	2.5	1.7
13	.9						2.0	24	48	6.0	2.4	1.6
14	.8						2.4	27	48	5.2	2.5	1.4
15	.8						3.0	26	45	5.0	2.4	1.3
16	.8		0.8	0.7	0.9	1	3.6	32	42	5.0	2.5	1.2
17	.9	1.0					4.0	57	36	5.4	2.5	1.4
18	.9						5	* 61	30	5.2	2.3	2.1
19	.9						6	81	29	5.8	2.9	2.1
20	.9						7	128	28	* 6.6	2.9	2.5
21	1.0						10	143	26	6.2	2.3	2.1
22	1.1						12	148	* 24	5.6	2.3	2.0
23	1.1						14	110	22	5.2	2.3	2.8
24	1.1						12	64	22	5.2	2.1	4.2
25	1.1						14	49	20	6.4	1.9	4.2
26	1.1						11	37	18	5.4	1.8	4.2
27	1.1						10	32	15	4.7	1.6	4.0
28	1.1						20	27	13	4.2	1.6	3.3
29	1.0						24	30	12	4.0	1.6	2.6
30	1.0						30	38	12	4.5	2.0	2.1
31	1.0							52		5.2	1.7	
Total	29.9	30.0	24.8	21.7	25.2	31	206.6	1,493	1,124	197.2	82.9	68.7
Mean	0.96	1.00	0.8	0.7	0.9	1	6.89	48.2	37.5	6.36	2.67	2.29
Ac-ft	59	60	49	43	50	61	410	2,960	2,230	391	164	136

Calendar year 1964: Max 121 Min - Mean 6.98 Ac-ft 5,070  
Water year 1964-65: Max 148 Min - Mean 9.14 Ac-ft 6,610

Peak discharge (base, 50 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-3	Unknown	3.12	60	6-7	1830	3.21	73
5-21	1630	3.67	162				

\* Discharge measurement made on this day.  
Note.--No gage-height record Nov. 2 to May 4 (stage-discharge relation affected by ice during part of period).

9-1050, Plateau Creek near Cameo, Colo.

Location.--Lat 39°11'00", long 108°16'10", in NW¼SW¼ sec.18, T.10 S., R.97 W., on left bank 300 ft from State Highway 65, 1.1 miles upstream from mouth, and 4 miles northeast of Cameo.

Drainage area.--604 sq mi.

Records available.--October 1935 to September 1965. Prior to May 1936 monthly discharge only, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 4,836 ft (from topographic map). Prior to Aug. 27, 1936, staff gage at same site and datum.

Average discharge.--30 years, 187 cfs (135,400 acre-ft per year).

Extremes.--Maximum discharge during year, 1,470 cfs June 15 (gage height, 5.40 ft); minimum daily, 55 cfs Feb. 13.  
1935-65: Maximum discharge, 3,920 cfs May 27, 1942 (gage height, 7.73 ft), from rating curve extended above 3,000 cfs; minimum daily, 13 cfs July 31, 1959.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by storage reservoirs, diversions for irrigation of about 25,000 acres, return flow from irrigated areas, and for power development.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Dec. 14

Dec. 15 to Sept. 30

2.4	60	2.3	45	4.0	580
2.6	90	2.6	93	5.0	1,170
2.8	128	3.0	190	6.0	1,960
		3.5	350		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		71	80	93	97	69	170	530	520	250	208	132
2	(*)	82	82	71	69	61	185	665	426	250	220	125
3		* 80	77	68	78	57	158	650	* 460	238	196	* 130
4		76	76	93	72	74	152	565	540	223	170	140
5		77	67	93	76	61	140	550	410	208	* 150	150
6		77	b 65	91	74	66	* 140	426	414	193	138	200
7		77	b 65	93	76	66	135	340	600	* 190	130	240
8	110	77	* b 65	* 87	* 76	72	132	362	580	185	120	160
9		76	b 65	70	74	* 85	150	274	560	190	95	140
10		77	b 70	65	82	70	128	241	* 495	190	80	150
11		79	b 70	70	80	70	108	208	480	202	82	140
12		76	b 75	70	b 65	70	93	226	742	220	* 74	140
13		82	b 75	70	b 55	70	106	* 304	886	244	78	150
14		79	b 85	70	b 60	70	102	386	1,000	202	85	160
15		79	104	75	b 65	80	108	322	1,230	172	80	150
16	120	87	104	75	b 70	95	* 142	274	1,200	165	78	150
17	118	90	132	75	b 70	95	180	418	1,050	158	89	160
18	118	87	76	75	b 75	95	182	585	976	162	160	340
19	110	79	158	75	b 70	90	182	* 650	880	199	150	354
20	108	73	172	70	b 75	85	346	730	772	* 280	140	343
21	112	74	170	65	80	85	445	* 832	615	223	125	315
22	108	77	155	65	93	100	490	910	510	182	122	294
23	99	79	158	66	85	110	* 465	922	440	221	128	274
24	77	74	241	68	* 61	130	490	570	440	258	138	280
25	77	79	132	78	63	140	370	455	* 505	253	128	298
26	77	80	93	68	69	150	422	460	450	247	125	287
27	77	85	113	68	78	170	358	475	378	211	130	301
28	77	76	106	84	80	170	262	406	326	202	111	* 304
29	79	82	74	76	-	135	304	406	287	185	111	301
30	74	77	57	74	-----	140	* 390	410	259	170	145	290
31	74	-----	95	108	-----	155	-----	418	-----	205	140	-----
Total	3,155	2,364	3,157	2,369	2,068	2,986	7,035	14,970	18,431	6,478	3,926	6,598
Mean	102	78.8	102	76.4	73.9	96.3	234	483	614	209	127	220
Ac-ft	6,260	4,690	6,260	4,700	4,100	5,920	13,950	29,690	36,560	12,850	7,790	13,090

Calendar year 1964: Max 1,260 Min 33 Mean 130 Ac-ft 94,380

Water year 1964-65: Max 1,230 Min 55 Mean 201 Ac-ft 145,900

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 1-15, Jan. 9-22, Mar. 10-27, Sept. 3-17.

## GUNNISON RIVER BASIN

9-1085. Taylor Park Reservoir at Taylor Park, Colo.

Location.--Lat 38°49'05", long 106°36'15", in sec.24, T.14 S., R.83 W., at dam on Taylor River just downstream from Taylor Park, 17 miles northeast of Almont.

Drainage area.--254 sq mi.

Records available.--October 1937 to September 1965. Prior to October 1938, published in WSP 1313.

Gage.--Staff gage read once or twice daily. Datum of gage is 9,187 ft above mean sea level (Bureau of Reclamation bench mark); gage readings have been reduced to elevations above mean sea level.

Extremes.--Maximum contents observed during year, 109,400 acre-ft July 13 (elevation, 9,331.50 ft); minimum, 38,110 acre-ft May 18, 19 (elevation, 9,285.80 ft).

1937-65: Maximum contents observed, 111,000 acre-ft July 1, 1957 (elevation, 9,332.35 ft); minimum (after first filling), 8,780 acre-ft Oct. 19, 20, 1956 (elevation, 9,240.70 ft).

Remarks.--Reservoir is formed by an earth- and rock-fill dam. Dam completed by Bureau of Reclamation in September 1937. Capacity of reservoir, 106,200 acre-ft between elevations 9,187 (bottom of outlet gates) and 9,330 ft (crest of spillway). No dead storage. Water used for irrigation in Uncompahgre Valley. Figures given herein are usable contents.

Cooperation.--Records furnished by Uncompahgre Valley Water Users Association.

Month-end elevation and contents, water year October 1964 to September 1965

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	9,312.90	74,740	-
Oct. 31.....	9,306.00	63,390	-11,350
Nov. 30.....	9,307.10	65,150	+1,760
Dec. 31.....	9,308.90	68,080	+2,930
Calendar year 1964.....	-	-	+30,280
Jan. 31.....	9,310.70	71,060	+2,980
Feb. 28.....	9,312.10	73,390	+2,330
Mar. 31.....	9,312.60	74,230	+840
Apr. 30.....	9,289.90	42,700	-31,530
May 31.....	9,295.60	49,630	+6,930
June 30.....	9,328.00	102,100	+52,470
July 31.....	9,331.00	108,300	+6,200
Aug. 31.....	9,329.80	105,800	-2,500
Sept. 30.....	9,325.20	96,470	-9,330
Water year 1964-65.....	-	-	+21,730

† Elevation at 0800.

9-1090. Taylor River below Taylor Park Reservoir, Colo.

Location.--Lat 38°48'50", long 106°36'40", in sec.24, T.14 S., R.83 W., on left bank 500 ft downstream from Taylor Park Reservoir Dam, 3½ miles upstream from Lottis Creek, and 16 miles northeast of Almont.

Drainage area.--254 sq mi.

Records available.--June 1929 to September 1934 (monthly discharge only, published in WSP 1313), October 1938 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 9,169.67 ft above mean sea level (Bureau of Reclamation bench mark). Prior to Nov. 11, 1952, at site 1,000 ft downstream at datum 1.00 ft lower. Oct. 15, 1946, to May 4, 1952, supplementary chain and staff gages just downstream from reservoir outlet at different sites and datums used during winter months.

Average discharge.--32 years, 185 cfs (133,900 acre-ft per year).

Extremes.--Maximum discharge during year, 1,150 cfs July 13 (gage height, 6.09 ft); minimum daily, 23 cfs Nov. 23.  
1938-65: Maximum discharge, 2,270 cfs July 1, 1957 (gage height, 7.56 ft); no flow May 1 to July 3, 1940, May 7-22, 1942, May 5-21, 1943.

Remarks.--Records good. Flow regulated by Taylor Park Reservoir (see preceding page) since 1937. One small diversion from Willow Creek above reservoir.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

2.6	23	4.0	265
3.0	61	5.0	640
3.5	137	6.0	1,100

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	108	111	* 26	26	26	26	159	330	100	436	604	472
2	178	111	26	26	26	26	31	268	100	444	548	472
3	220	111	26	26	26	26	28	452	100	556	508	472
4	220	* 48	26	26	26	26	28	* 500	100	797	* 476	468
5	363	26	26	26	26	26	124	500	100	702	440	464
6	* 433	26	26	26	26	26	223	440	102	846	422	464
7	433	26	26	26	26	26	391	360	102	950	388	464
8	430	25	26	26	26	26	652	342	* 98	995	352	456
9	430	26	26	26	26	26	743	342	97	1,000	328	452
10	430	28	26	26	26	26	743	332	98	936	307	452
11	430	26	26	26	26	26	738	468	98	918	300	452
12	430	27	26	26	26	26	833	620	98	1,080	282	448
13	433	27	26	26	26	26	955	620	98	1,090	268	452
14	366	27	26	26	26	26	980	628	98	* 936	293	452
15	324	28	26	26	26	26	980	628	100	820	321	452
16	268	28	26	26	26	26	975	628	102	752	304	456
17	235	28	26	26	26	26	970	628	102	712	310	456
18	232	29	26	26	26	26	970	548	102	684	370	456
19	232	29	26	26	26	26	965	528	103	672	416	452
20	151	29	26	26	26	26	* 960	416	105	640	377	452
21	105	31	26	26	26	42	960	177	105	600	338	229
22	108	28	26	26	26	51	960	98	* 106	580	346	98
23	113	23	26	26	26	53	541	100	102	572	321	97
24	113	25	26	26	26	53	217	100	235	572	290	100
25	115	27	26	26	26	53	220	97	324	588	256	100
26	115	27	26	26	26	53	293	97	324	632	232	102
27	115	27	26	26	26	53	572	97	328	620	* 324	100
28	115	27	26	26	26	53	640	97	328	596	448	102
29	115	26	26	26	-	125	636	97	405	540	464	97
30	110	26	26	26	-----	* 165	636	98	436	508	472	96
31	110	-----	26	26	-----	192	-----	98	-----	560	* 476	-----
Total	7,580	1,083	806	806	728	1,413	18,123	10,734	4,696	22,334	11,581	10,285
Mean	245	36.1	26	26	26	45.6	604	346	157	720	374	343
Ac-ft	15,030	2,150	1,600	1,600	1,440	2,800	35,950	21,290	9,310	44,300	22,970	20,400

Calendar year 1964: Max 707 Min 3.8 Mean 105 Ac-ft 76,340  
Water year 1964-65: Max 1,090 Min 23 Mean 247 Ac-ft 178,800

\* Discharge measurement made on this day.

Note.--Discharge computed on basis of records of release from reservoir Oct. 25-31, Dec. 1 to Mar. 30.

## GUNNISON RIVER BASIN

9-1100. Taylor River at Almont, Colo.

Location.--Lat 38°40', long 106°51', in sec.22, T.51 N., R.1 E., on left bank at Almont, 15 ft downstream from bridge on State Highway 306 and 800 ft. upstream from confluence with East River.

Drainage area.--477 sq mi.

Records available.--July 1910 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 8,010.76 ft above mean sea level, datum of 1929. Prior to Apr. 16, 1922, staff gage at same site and datum.

Average discharge.--55 years, 340 cfs (246,100 acre-ft per year).

Extremes.--Maximum discharge during year, 1,640 cfs July 12 (gage height, 3.70 ft), from rating curve extended above 1,300 cfs; minimum not determined.

1910-65: Maximum discharge observed, 3,760 cfs June 9, 1920, from rating curve extended above 2,300 cfs; maximum gage height, 5.32 ft July 1, 1957; minimum discharge observed before storage began in Taylor Park Reservoir, 50 cfs for several days in August 1913 (gage height, 1.2 ft); minimum daily, 24 cfs Mar. 12, 1938.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Flow regulated since September 1937 by Taylor Park Reservoir (see elsewhere in this report), 24 miles above station. Diversions for irrigation of about 360 acres above station.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1-12)

Oct. 1 to Mar. 30

Mar. 31 to Sept. 30

0.8	44	1.6	225	1.1	70	2.0	335
1.0	73	2.0	385	1.3	105	2.5	590
1.3	135	2.5	650	1.5	150	3.0	935
				1.7	210	3.7	1,640

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	163	150	(*)		(*)		282	730	601	994	944	628
2	200	150					107	562	606	1,000	884	623
3	256	150					79	812	628	1,060	812	656
4	260	*128				(*)	79	*867	634	1,310	*768	658
5	344	71		(*)			113	850	601	1,270	710	645
6	*470	71					278	756	579	1,350	678	652
7	475	71					400	658	678	1,440	634	640
8	470	68					710	618	*736	1,490	568	628
9	465	70				60	850	574	762	1,460	520	628
10	465	71					835	552	756	1,400	495	623
11	460	71					835	596	798	1,360	490	618
12	465	75					910	850	867	1,570	470	618
13	470	b 70					1,050	867	820	1,540	450	612
14	420	70					1,090	857	828	*1,340	460	606
15	362	75					1,090	858	876	1,210	490	606
16	328	b 75	65	60	55		1,090	901	960	1,150	475	606
17	288	b 75				b 70	1,100	952	1,000	1,110	475	606
18	280	b 80				b 70	1,100	*944	1,040	1,100	546	623
19	280	75				b 65	1,090	935	1,040	1,040	645	628
20	236	75				b 70	*1,120	892	1,050	978	590	628
21	150	80				b 75	1,150	742	1,030	935	510	460
22	148	75				80	1,180	678	969	892	540	226
23	152	60				90	858	690	*901	867	495	218
24	155	65				90	430	664	1,000	876	455	214
25	152	70				90	420	623	1,060	918	425	214
26	148	70				90	435	568	986	1,000	400	210
27	148	70				90	716	520	935	1,000	420	210
28	148	70				90	820	475	926	952	540	207
29	152	75			-	170	858	475	978	858	612	210
30	152	80				*200	901	495	1,010	805	645	204
31	152					*240		540		876	*634	
Total	3,814	2,456	2,015	1,860	1,540	2,540	21,976	22,111	25,655	35,151	17,780	14,905
Mean	284	81.9	65	60	55	81.9	733	713	855	1,134	574	497
Ac-ft	17,480	4,870	4,000	3,690	3,050	5,040	43,590	43,860	50,890	69,720	35,270	29,560

Calendar year 1964: Max 794 Min 38 Mean 199 Ac-ft 144,100  
Water year 1964-65: Max 1,570 Min - Mean 430 Ac-ft 311,000

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 14, 15, Nov. 19 to Mar. 16, Mar. 22-31 (stage-discharge relation affected by ice during most of periods).



9-1122. East River below Cement Creek, near Crested Butte, Colo.

Location.--Lat 38°47'25", long 106°52'20", in sec.34, T.14 S., R.85 W., on left bank at downstream side of private bridge, 1.1 miles downstream from Cement Creek and 8 miles southeast of Crested Butte.

Drainage area.--235 sq mi.

Records available.--October 1963 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 8,450 ft (from topographic map).

Extremes.--Maximum discharge during year, 2,650 cfs June 21 (gage height, 7.96 ft); minimum daily, 42 cfs Mar. 27.  
1963-65: Maximum discharge, 2,650 cfs June 21, 1965 (gage height, 7.96 ft); minimum daily, 38 cfs Jan. 14, 1964.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 4,500 acres above and below station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

3.8	42	6.0	700
4.0	60	7.0	1,510
4.5	150	8.0	2,690
5.0	300		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	92	72	* 66	58	54	50	53	646	1,280	1,730	675	232
2	88	83	76	b 55	*b 55	b 45	55	896	1,290	1,830	634	217
3	86	81	b 65	b 60	b 50	b 45	56	1,090	1,380	1,920	630	282
4	85	* 74	b 60	b 60	b 50	*b 50	57	* 1,180	1,420	1,860	* 606	324
5	83	74	b 60	* 62	b 55	b 45	56	1,090	1,290	1,830	658	318
6	* 83	76	b 60	65	57	b 45	57	831	1,360	1,810	514	406
7	81	74	b 55	67	57	b 45	58	756	1,630	1,800	474	352
8	81	72	b 60	67	57	b 45	59	735	* 1,880	1,740	454	352
9	83	71	66	66	57	b 45	62	630	1,910	1,600	422	338
10	83	77	66	b 60	56	48	60	630	1,790	1,560	414	293
11	81	76	65	64	56	48	60	622	1,840	1,630	410	276
12	79	68	67	62	b 50	48	58	756	1,840	2,020	374	259
13	76	81	a 50	b 60	a 45	48	62	920	1,680	1,600	374	256
14	72	79	b 60	61	56	48	60	845	1,840	* 1,470	438	235
15	71	81	65	60	55	48	61	780	2,050	1,360	406	223
16	70	85	64	58	b 50	48	65	888	2,240	1,290	370	211
17	70	81	61	b 55	b 50	46	68	1,150	2,260	1,460	370	199
18	71	77	b 55	b 55	b 50	45	76	* 1,420	2,390	1,360	386	235
19	68	60	60	60	b 50	b 45	88	1,630	2,400	1,280	360	290
20	68	58	60	59	b 50	b 45	* 124	1,800	2,480	1,170	324	293
21	67	66	62	59	b 50	47	165	1,920	2,530	1,190	300	256
22	66	64	62	61	53	46	202	2,060	* 2,480	1,030	307	253
23	66	66	64	b 60	52	47	244	2,040	2,390	928	290	259
24	68	64	65	58	b 50	45	314	1,750	2,290	880	286	250
25	68	76	60	57	b 45	43	366	1,470	2,240	880	265	253
26	67	72	57	b 55	b 50	45	422	1,220	1,920	859	247	244
27	67	67	59	b 50	50	42	386	1,020	1,720	774	232	244
28	66	68	53	58	50	45	352	859	1,780	750	223	247
29	66	76	48	57	-	46	422	838	1,900	705	253	276
30	67	66	b 50	58	-----	* 44	510	936	1,920	675	318	253
31	71	-----	56	58	-----	48	-----	1,140	-----	710	* 253	-----
Total	2,310	2,185	1,877	1,845	1,460	1,430	4,678	34,558	57,420	41,701	12,267	8,126
Mean	74.5	72.8	60.5	59.5	52.1	46.1	156	1,115	1,914	1,345	396	271
Ac-ft	4,580	4,330	3,720	3,660	2,900	2,840	9,280	68,540	113,900	82,710	24,330	16,120

Calendar year 1964: Max 1,810 Min 38 Mean 253 Ac-ft 183,400  
Water year 1964-65: Max 2,530 Min 42 Mean 465 Ac-ft 336,900

Peak discharge (base, 1,500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-22	2400	7.67	2,190	7- 3	0530	7.46	2,010
6- 9	0430	7.42	1,940	7-12	0500	7.64	2,230
6-21	0600	7.96	2,650				

\* Discharge measurement made on this day.  
a No gage-height record.  
b Stage-discharge relation affected by ice.

## GUNNISON RIVER BASIN

9-1125. East River at Almont, Colo.

Location.--Lat 38°40', long 106°51', in sec.22, T.51 N., R.1 E., on left bank at Almont, 200 ft upstream from bridge on State Highway 135 and 400 ft upstream from confluence with Taylor River.

Drainage area.--295 sq mi.

Records available.--April to October 1905, July 1910 to September 1922, October 1934 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 8,006.29 ft above mean sea level, datum of 1929. Apr. 16 to Sept. 30, 1905, and July 27, 1910, to Apr. 30, 1922, staff gages at bridge 200 ft downstream at different datums. Oct. 1, 1934, to Sept. 22, 1954, water-stage recorder at present site at datum 2.00 ft higher.

Average discharge.--43 years, 344 cfs (249,000 acre-ft per year).

Extremes.--Maximum discharge during year, 2,910 cfs June 21 (gage height, 6.23 ft); minimum daily, 45 cfs Mar. 19. 1905, 1910-22, 1934-65: Maximum discharge observed, 6,500 cfs June 15, 1921 (gage height, 6.6 ft, site and datum then in use), from rating curve extended above 3,000 cfs; minimum daily, 19 cfs Aug. 13, 1913.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 7,400 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used May 1-5)

1.8	30	4.0	900
2.0	62	5.0	1,660
2.4	165	6.0	2,610
3.0	390	7.0	3,830
3.5	610		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	95	62	* 71	70	b 60	55	57	732	1,180	1,740	726	246
2	92	67	85	65	* 60	50	60	942	1,160	1,840	708	235
3	90	69	67	70	55	50	60	1,140	1,280	1,980	708	278
4	83	* 64	62	70	55	* 55	60	* 1,250	1,360	1,980	680	322
5	85	74	64	* 70	60	b 50	62	1,170	1,200	1,940	640	302
6	* 83	76	60	b 70	60	b 50	62	924	1,300	1,930	600	382
7	76	71	55	b 75	60	b 55	64	828	1,570	1,920	520	342
8	71	69	60	b 75	60	b 50	69	834	* 1,890	1,880	480	326
9	76	69	75	b 75	60	b 50	74	666	2,010	1,700	440	326
10	78	83	75	b 70	60	b 50	71	684	1,930	1,650	420	298
11	76	102	75	b 75	60	50	69	640	2,040	1,740	402	278
12	74	90	70	75	55	48	67	804	2,060	2,210	370	270
13	71	98	60	70	50	48	74	988	1,800	1,720	358	260
14	62	98	65	70	60	48	76	912	1,920	* 1,530	406	249
15	60	98	75	70	60	48	80	846	2,060	1,400	382	238
16	59	100	75	70	55	47	90	942	2,300	1,290	342	228
17	60	98	70	65	55	48	95	1,200	2,320	1,440	342	214
18	60	95	65	65	55	47	108	* 1,530	2,500	1,370	362	235
19	59	b 70	70	70	55	45	120	1,760	2,480	1,290	342	266
20	57	b 65	70	70	55	48	* 150	1,970	2,510	1,160	310	282
21	57	b 70	70	70	55	48	196	1,970	2,660	1,160	286	266
22	57	b 75	70	70	60	48	242	2,170	* 2,600	1,040	290	256
23	55	b 80	75	70	60	50	290	2,150	2,490	924	274	260
24	55	b 75	75	70	55	48	354	1,800	2,370	894	270	252
25	57	90	70	70	50	47	394	1,460	2,340	888	256	252
26	55	88	70	65	55	48	442	1,170	1,950	912	242	246
27	55	80	70	b 60	55	47	406	974	1,720	828	224	246
28	55	78	65	b 65	55	48	382	780	1,800	798	221	249
29	55	88	60	b 65	-	50	434	744	1,880	744	242	266
30	57	74	60	b 65	-----	* 50	525	870	1,930	708	306	256
31	57	-----	65	b 65	-----	50	-----	1,030	-----	744	* 266	-----
Total	2,082	2,416	2,119	2,145	1,595	1,526	5,233	35,880	58,610	43,350	12,415	8,126
Mean	67.2	80.5	68.4	69.2	57.0	49.2	174	1,157	1,954	1,398	400	271
Ac-ft	4,130	4,790	4,200	4,250	3,160	3,030	10,380	71,170	116,300	85,980	24,620	16,120

Calendar year 1964: Max 1,800 Min 36 Mean 243 Ac-ft 176,600  
Water year 1964-65: Max 2,660 Min 45 Mean 481 Ac-ft 348,100

Peak discharge (base, 1,600 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-23	0230	5.79	2,420	7-4	0530	5.46	2,110
6-12	0400	5.58	2,230	7-12	0700	5.81	2,450
6-21	0830	6.23	2,910				

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 6 to Jan. 5, Jan. 12-26, Feb. 2 to Mar. 4 (stage-discharge relation affected by ice during most of periods), Aug. 4-10.

9-1133. Ohio Creek at Baldwin, Colo.

Location.--Lat 38°45'55", long 107°03'30", in NE¼ sec.12, T.15 S., R.87 W., on left bank three quarters of a mile northwest of Baldwin and 0.2 mile downstream from Castle Creek.

Drainage area.--48 sq mi, approximately.

Records available.--October 1958 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 8,600 ft (from topographic map).

Average discharge.--7 years, 45.4 cfs (32,870 acre-ft per year).

Extremes.--Maximum discharge during year, 541 cfs May 20 (gage height, 3.40 ft); minimum not determined.

1958-65: Maximum discharge, about 550 cfs May 9, 1962; maximum gage height, 3.77 ft May 12, 1962; minimum daily discharge determined, 3.8 cfs July 29, 1963.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions above station for irrigation of about 580 acres of hay meadows. Two diversions above station for irrigation of about 1,000 acres below station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 25 to May 8, Aug. 30 to Sept. 4)

1.3	6.0	2.5	135
1.5	12	2.8	210
1.8	36	3.3	445
2.2	85		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.7		(*)				11	172	210	250	104	36
2	9.4						11	214	207	281	96	34
3	9.4						12	250	214	286	* 88	76
4	9.4						12	*263	207	272	82	53
5	9.4			(*)			12	220	183	268	68	59
6	* 10						12	172	204	263	59	62
7	10						11	170	258	268	55	52
8	10						12	162	* 300	268	55	52
9	10						12	133	290	238	52	48
10	11						11	131	290	220	53	42
11	10					10	11	127	315	263	52	39
12	10						12	151	370	310	48	37
13	10						12	207	335	258	54	36
14	10						11	183	355	* 231	55	33
15	10						12	162	360	201	51	30
16	10	8	9	9	10		14	192	390	192	48	28
17	10						15	272	401	224	48	28
18	10						17	*340	418	228	62	38
19	9.5						20	350	434	210	55	45
20	9.0						35	385	434	165	45	43
21	9.0					9	59	370	396	165	46	37
22	9.5					8	82	412	* 412	147	44	35
23	10					9	101	418	385	143	40	35
24	10					* 9	113	330	380	139	36	35
25	9.5					10	112	263	360	135	34	36
26	9.0					10	101	217	310	129	31	34
27	9.0					10	82	183	276	127	29	33
28	9.5					10	77	153	268	121	26	33
29	9.7					10	96	153	276	112	38	40
30	10					10	133	168	268	102	49	38
31	10					10		195		107	* 43	
Total	302.0	24.0	279	279	280	305	1,231	7,118	9,506	6,323	1,646	1,227
Mean	9.74	8	9	9	10	9.84	41.0	230	317	204	53.1	40.9
Ac-ft	599	476	553	553	555	603	2,440	14,120	18,850	12,540	3,260	2,430

Calendar year 1964: Max 355 Min - Mean 36.8 Ac-ft 26,680  
Water year 1964-65: Max 434 Min - Mean 78.7 Ac-ft 56,980

Peak discharge (base, 300 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-4	1630	2.98	335	7-12	0100	3.27	418
5-20	1700	3.40	541	7-18	2130	3.32	445
6-20	1830	3.37	523				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 19-22, 25-28, Nov. 1 to Mar. 27 (no gage-height record Nov. 4 to Mar. 24), Mar. 30 to Apr. 5, Apr. 7, 10-12, 14-16.

## GUNNISON RIVER BASIN

9-1135. Ohio Creek near Baldwin, Colo.

Location.--Lat 38°42', long 107°00", in SW¼ sec.34, T.15 S., R.86 W., on right bank 600 ft upstream from bridge, 800 ft downstream from Mill Creek, 5½ miles southeast of Baldwin, and 11 miles upstream from mouth.

Drainage area.--124 sq mi.

Records available.--April 1940 to September 1950, October 1958 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 8,180 ft (by barometer). Prior to Apr. 3, 1942, staff gage at present site and datum. Apr. 3, 1942, to Sept. 30, 1950, water-stage recorder at present site and datum.

Average discharge.--17 years, 89.7 cfs (64,940 acre-ft per year).

Extremes.--Maximum discharge during year, 944 cfs May 21 (gage height, 3.61 ft); minimum not determined.

1940-50, 1958-65: Maximum discharge, 1,260 cfs May 19, 1948 (gage height, 4.65 ft), from rating curve extended above 560 cfs; minimum daily, 6.9 cfs Sept. 12, 1960.

Floods in May 1952 and June 1957 reached a stage of 5.5 ft, from floodmarks (discharge, about 1,500 cfs).

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of 3,850 acres above station.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 19

Apr. 20 to Sept. 30

0.3	15	0.6	44	2.0	330
.5	26	.8	67	2.5	500
		1.0	94	3.0	700
		1.5	185	3.5	900

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19		(*)				15	360	402	412	200	60
2	18				(*)		18	430	392	451	180	56
3	17						19	490	412	454	* 160	118
4	16					(*)	20	* 496	412	434	150	84
5	16			(*)			20	416	370	430	137	83
6	* 18						20	315	388	430	125	94
7	18						20	291	482	430	114	80
8	18					14	20	291	* 536	454	107	80
9	18						20	240	* 552	420	100	76
10	18						20	231	528	402	98	65
11	18						20	222	588	479	95	62
12	18						20	255	740	588	90	60
13	18						20	364	596	395	90	59
14	18						22	324	604	* 351	94	52
15	17						30	291	612	327	86	48
16	17	13	13	13	14	13	36	348	648	315	83	46
17	18					13	40	476	648	351	87	46
18	18					13	50	* 612	648	357	108	61
19	14					13	70	676	660	370	102	75
20	14					14	* 123	744	664	276	88	71
21	14					16	160	768	660	282	81	61
22	15					18	195	792	* 644	249	81	56
23	17					18	237	748	624	240	76	56
24	18					16	258	604	620	231	71	56
25	15					14	231	496	576	231	66	55
26	14					11	192	420	476	240	62	52
27	14					11	140	354	440	213	57	51
28	15					12	132	309	440	216	55	51
29	16					12	182	297	444	182	70	63
30	16					* 13	276	327	440	172	94	60
31	16					14		370		175	* 71	
Total	516	390	403	403	392	431	2,626	13,357	16,246	10,557	3,078	1,937
Mean	16.6	13	13	13	14	13.9	87.5	431	542	341	99.3	64.6
Ac-ft	1,020	774	799	799	778	855	5,210	26,490	32,220	20,940	6,110	3,840

Calendar year 1964: Max 439 Min - Mean 57.1 Ac-ft 41,450  
 Water year 1964-65: Max 792 Min - Mean 138 Ac-ft 99,840

Peak discharge (base, 450 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-2	2000	2.97	688	7-12	0300	3.42	868
5-21	2230	3.61	944	7-18	2300	2.96	684
6-12	0400	3.53	912				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 19-22, 25-28, Nov. 1 to Apr. 19 (no gage-height record Nov. 20 to Mar. 16).

9-1145. Gunnison River near Gunnison, Colo.

Location.--Lat 38°32'50", long 106°57'00", on line between secs. 34 and 35, T.50 N., R.1 W., on right bank 1,570 ft downstream from Antelope Creek and 1 mile west of Gunnison. Prior to Mar. 24, 1965, at site 70 ft upstream.

Drainage area.--1,010 sq mi, approximately.

Records available.--October 1910 to December 1928, October 1944 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 7,670 ft (from river-profile map). Nov. 25, 1910, to Dec. 31, 1928, staff or chain gages (supplementary water-stage recorder Apr. 28, 1916, to June 17, 1918) at bridge about 1 mile downstream at various datums. Apr. 11, 1945, to Mar. 23, 1965, water-stage recorder at site 70 ft upstream at same datum.

Average discharge.--39 years, 786 cfs (569,000 acre-ft per year).

Extremes.--Maximum discharge during year, 4,960 cfs July 12 (gage height, 5.22 ft); minimum daily, 120 cfs Dec. 7, Feb. 24, 25. 1910-28, 1944-65: Maximum discharge observed, 11,400 cfs June 13, 1918 (gage height, 4.05 ft, site and datum then in use), from rating curve extended above 5,000 cfs; minimum daily, 80 cfs Dec. 27, 1962.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Flow regulated by Taylor Park Reservoir (see elsewhere in this report), 37 miles above station. Diversions for irrigation of about 22,000 acres above station.

Rating tables, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 24 to Apr. 20)

Oct. 1 to Apr. 20

Apr. 21 to Sept. 30

1.2	135	2.0	500	1.7	420	4.0	2,980
1.4	195	3.0	1,250	2.0	610	5.0	4,560
1.6	270	3.5	1,680	2.5	1,020	5.1	4,740
				3.0	1,570		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	223	250	216	160	170	140	424	1,950	2,030	3,360	2,130	* 911
2	230	254	* 220	180	160	130	348	1,960	2,020	3,470	1,950	893
3	292	254	200	190	* 170	* 130	270	* 2,500	2,130	3,580	* 1,860	1,080
4	284	242	170	190	160	130	254	2,620	2,260	3,780	1,700	1,120
5	320	* 180	140	190	160	140	246	2,460	2,060	3,710	1,570	1,060
6	451	177	130	* 200	170	150	465	1,980	2,120	3,700	1,510	1,200
7	* 451	186	120	210	160	150	521	1,670	2,580	3,840	1,380	1,120
8	* 472	189	130	210	150	150	822	1,650	3,100	3,970	1,280	1,090
9	465	183	150	210	140	140	994	1,420	3,280	3,780	1,190	1,070
10	493	186	170	200	140	140	970	1,400	* 3,240	3,570	1,120	990
11	500	202	180	180	140	150	970	1,350	3,440	3,570	1,080	950
12	507	192	180	180	130	150	1,020	1,740	3,970	4,600	1,000	930
13	514	212	140	190	140	150	1,180	2,050	3,470	3,920	970	902
14	486	226	160	180	150	150	1,230	1,980	3,440	3,410	1,030	884
15	406	223	180	180	150	140	1,260	1,790	3,550	* 3,100	1,040	866
16	394	223	190	180	130	150	1,300	1,920	3,870	2,840	970	822
17	370	220	200	170	140	* 150	1,340	* 2,410	3,950	2,950	950	806
18	364	212	200	160	140	140	1,380	2,860	4,050	2,850	1,060	866
19	354	b 190	200	160	140	130	1,430	3,130	4,140	2,820	1,190	930
20	320	b 160	200	170	140	130	1,540	3,410	4,460	2,460	1,050	970
21	234	180	210	170	140	140	* 1,650	3,440	4,480	2,460	960	806
22	220	b 190	200	160	140	160	1,770	3,580	4,350	2,290	980	582
23	223	b 190	190	150	130	170	1,700	3,600	* 4,210	2,080	920	575
24	226	b 190	220	160	120	* 183	1,230	3,220	4,180	2,060	866	561
25	223	b 200	240	160	120	183	1,210	2,710	4,240	2,120	794	554
26	216	b 210	230	150	130	212	1,210	2,300	3,730	2,380	743	547
27	220	b 210	220	150	130	250	1,330	1,910	3,360	2,170	722	540
28	230	b 200	230	160	130	242	1,350	1,590	3,330	2,130	830	540
29	246	b 200	200	160	-	270	1,470	1,470	3,470	1,910	911	582
30	250	216	170	170	-----	* 332	1,700	1,590	3,570	1,900	1,040	554
31	250	-----	140	170	-----	354	-----	1,820	-----	2,010	950	-----
Total	10,434	6,147	5,726	5,450	4,020	5,336	32,584	69,480	102,080	92,800	35,746	25,301
Mean	337	205	185	176	144	172	1,086	2,241	3,403	2,994	1,153	843
Ac-ft	20,700	12,190	11,360	10,810	7,970	10,580	64,630	137,800	202,500	184,100	70,900	50,180

Calendar year 1964: Max 2,430 Min 100 Mean 487 Ac-ft 353,700

Water year 1964-65: Max 4,600 Min 120 Mean 1,082 Ac-ft 783,700

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 2 to Mar. 23 (stage-discharge relation affected by ice during part of period).

## 9-1155. Tomichi Creek at Sargents, Colo..

Location.--Lat 38°24', long 106°25', in SW¼ sec.21, T.48 N., R.5 E., on right bank 300 ft from U. S. Highway 50, half a mile downstream from Marshall Creek, and three-quarters of a mile south of Sargents.

Drainage area.--155 sq mi.

Records available.--October 1916 to September 1922, October 1937 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 8,420 ft (estimated from railroad elevation). May 12 to Oct. 5, 1917, staff gage and Oct. 6, 1917, to Sept. 30, 1922, water-stage recorder, at railroad bridge 1,000 ft upstream at different datum. Apr. 18, 1938, to Sept. 9, 1953, water-stage recorder at present site at datum 1.00 ft higher.

Average discharge.--34 years, 64.0 cfs (46,330 acre-ft per year).

Extremes.--Maximum discharge during year, 447 cfs June 16 (gage height, 2.54 ft); maximum gage height, 2.87 ft Apr. 5 (backwater from ice); minimum daily discharge, 12 cfs Dec. 14.

1916-22, 1937-65: Maximum discharge, 804 cfs June 6, 1957 (gage height, 3.66 ft); maximum gage-height, 3.74 ft Mar. 24, 1963 (backwater from ice); minimum discharge recorded, 6 cfs Nov. 16, 1920.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 1,900 acres above station. Larkspur ditch diverts water above station to Arkansas River basin (see elsewhere in this report).

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.8	18	1.6	146
1.0	38	2.0	258
1.3	78	2.6	450

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30	22	22	24	24	26	30	163	245	209	134	* 48
2	29	22	* 22	22	26	28	46	187	255	204	* 129	46
3	28	20	22	20	* 28	* 30	60	215	271	190	105	56
4	28	20	20	24	28	30	75	229	274	176	90	52
5	27	20	18	24	26	30	90	* 223	258	168	80	48
6	27	22	16	* 24	24	28	80	206	252	156	76	57
7	* 28	24	15	22	22	26	70	190	274	151	73	50
8	27	24	13	22	22	24	75	187	296	153	68	50
9	27	22	18	22	24	22	60	165	* 322	144	65	48
10	27	22	22	20	22	20	50	163	322	136	62	45
11	28	24	24	22	20	20	42	156	367	136	61	44
12	27	24	22	24	18	20	46	151	396	158	57	44
13	27	24	18	22	16	22	58	163	357	134	57	41
14	27	24	12	22	18	24	59	163	354	124	62	40
15	27	26	20	24	20	24	68	153	370	* 120	68	39
16	27	26	24	24	19	22	75	156	418	115	67	40
17	27	26	24	22	19	20	86	181	434	115	72	39
18	27	26	22	20	20	14	98	218	431	112	72	41
19	24	24	24	22	22	13	115	* 229	405	103	75	52
20	24	22	24	24	22	13	153	252	396	98	70	50
21	24	22	22	24	22	16	* 170	296	383	100	70	48
22	24	22	22	24	20	17	187	344	357	88	72	45
23	26	22	24	22	19	16	201	380	* 332	82	62	45
24	27	22	26	24	18	15	198	373	332	86	56	46
25	24	24	28	26	20	18	168	332	309	92	52	46
26	22	24	26	24	22	19	148	300	277	110	50	46
27	24	24	22	22	24	20	122	261	258	100	47	45
28	24	24	20	22	24	18	110	226	239	92	46	44
29	26	22	16	22	-	17	112	212	220	82	52	46
30	26	22	15	24	-----	18	132	215	209	88	58	47
31	26	-----	18	24	-----	* 20	-----	226	-----	110	53	-----
Total	816	692	641	708	609	650	2,984	6,915	3,613	3,932	2,161	1,388
Mean	26.3	23.1	20.7	22.8	21.8	21.0	99.5	223	320	127	69.7	46.3
Ac-ft	1,620	1,370	1,270	1,400	1,210	1,290	5,920	13,720	19,070	7,800	4,290	2,750

Calendar year 1964: Max 428 Min 12 Mean 56.5 Ac-ft 41,000  
Water year 1964-65: Max 434 Min 12 Mean 85.2 Ac-ft 61,710

Peak discharge (base, 200 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-23	2000	1.98	264	6-16	1530	2.54	447
5-23	2230	2.48	428				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 19-22, 25-28, Nov. 1 to Apr. 12 (no gage-height record Nov 5 to Mar. 15).

9-1170. Tomichi Creek at Parlin, Colo.

Location.--Lat 38°29'50", long 106°43'30", in NW¼ sec.23, T.49 N., R.2 E., on left bank 70 ft upstream from bridge, 0.2 mile south of Parlin, and 0.4 mile upstream from Quartz Creek.

Drainage area.--427 sq mi.

Records available.--October 1944 to September 1951, October 1963 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,910 ft (from topographic map). Prior to October 1963 at site 800 ft downstream at different datum.

Average discharge.--9 years, 65.0 cfs (47,060 acre-ft per year).

Extremes.--Maximum discharge during year, 599 cfs June 12 (gage height, 6.27 ft), from rating curve extended above 370 cfs; minimum daily, 10 cfs Oct. 21, 23.

1944-51, 1963-65: Maximum discharge, 669 cfs May 25, 1948 (gage height, 6.37 ft, site and datum then in use), from rating curve extended above 400 cfs; minimum daily, 0.5 cfs Sept. 10-12, 1950.

Remarks.--Records fair except those for period of ice effect, which are poor. Diversions for irrigation of about 11,000 acres above station.

Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1 to Nov. 7, May 4-6, June 18 to Aug. 8)

2.7	10	4.0	185
2.8	17	5.0	355
3.0	38	6.1	565
3.5	107		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	12	40	30	28	36	50	209	222	194	217	* 62
2	18	14	* 38	30	26	36	65	222	228	188	* 221	56
3	18	19	36	28	* 26	* 32	80	239	229	166	197	62
4	14	17	34	28	26	30	85	258	239	150	159	70
5	14	* 16	32	30	26	32	80	* 273	251	142	137	63
6	13	16	30	* 30	28	34	90	265	244	128	124	71
7	* 12	17	28	30	28	34	100	239	231	114	112	70
8	13	16	28	28	28	32	110	217	241	124	101	64
9	13	23	32	26	26	30	130	209	* 258	153	94	60
10	14	30	36	26	26	30	150	187	289	137	89	56
11	14	34	38	26	26	30	163	180	326	126	88	53
12	13	34	36	28	24	32	102	163	535	174	82	51
13	13	32	32	26	22	32	156	161	551	188	73	50
14	12	32	24	26	24	32	156	161	431	143	76	46
15	11	38	32	28	26	32	114	148	375	* 122	90	44
16	11	40	36	28	26	32	134	145	362	113	83	43
17	11	42	36	26	26	28	130	148	389	119	88	43
18	11	40	34	26	28	24	155	155	427	120	98	27
19	11	38	34	26	28	22	153	* 188	438	125	106	31
20	11	38	36	28	28	22	172	214	423	128	98	51
21	10	38	36	30	28	24	* 199	241	393	132	89	55
22	11	36	30	30	28	26	210	270	387	155	95	53
23	10	36	30	26	26	26	231	321	* 368	136	89	51
24	11	38	36	30	24	24	304	384	340	113	78	50
25	11	40	38	32	26	28	316	473	328	106	69	49
26	12	42	36	30	28	28	267	457	304	174	63	43
27	12	42	32	28	30	28	217	389	268	194	58	42
28	11	40	28	26	34	26	180	341	244	169	55	40
29	11	38	26	26	-	26	180	287	222	136	56	42
30	11	40	26	28	-	28	187	243	205	122	73	43
31	12	- - - -	28	30	- - - -	* 32	- - - -	224	- - - -	148	71	- - - -
Total	385	938	1,018	870	750	908	4,666	7,611	9,748	4,439	3,129	1,541
Mean	12.4	31.3	32.8	28.1	26.8	29.3	156	246	325	143	101	51.4
Ac-ft	764	1,860	2,020	1,730	1,490	1,800	9,250	15,100	19,330	8,800	6,210	3,060

Calendar year 1964: Max 477 Min 10 Mean 57.1 Ac-ft 41,470

Water year 1964-65: Max 551 Min 10 Mean 98.6 Ac-ft 71,410

Peak discharge (base, 250 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-24	1430	5.06	366	6-12	2300	6.27	599
5-5	2300	4.47	284	6-19	1400	5.36	441
5-26	0130	5.77	495				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 10 to Apr. 10.

## GUNNISON RIVER BASIN

9-1180. Quartz Creek near Ohio City, Colo.

Location.--Lat 38°33'35", long 106°38'10", in SW¼SW¼ sec.27, T.50 N., R.3 E., on left bank 10 ft downstream from bridge on State Highway 162, 0.7 mile downstream from Willow Creek, 1.3 miles southwest of Ohio City, and 1.4 miles downstream from Gold Creek.

Drainage area.--106 sq mi.

Records available.--October 1937 to September 1950 (published as "near Ohio"), October 1959 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 8,430 ft (from topographic map). Prior to Oct. 1, 1945, at site 75 ft upstream at datum 3.00 ft higher. Oct. 1, 1945, to Sept. 30, 1950, at site 75 ft upstream at datum 2.00 ft higher.

Average discharge.--19 years, 54.1 cfs (39,170 acre-ft per year).

Extremes.--Maximum discharge during year, 585 cfs June 18 (gage height, 3.59 ft); maximum gage height, 4.09 ft Mar. 16 (backwater from ice); minimum discharge not determined.

1937-50, 1959-65: Maximum discharge, 640 cfs May 26, 1942 (gage height, 5.90 ft, present datum), from rating curve extended above 470 cfs; maximum gage-height, 7.73 ft (present datum) July 31, 1945 (backwater from Flick Gulch, 225 ft below station); minimum daily discharge, 8.5 cfs Sept. 30, 1950.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 700 acres above and 200 acres below station. Slight regulation prior to 1946 by small powerplant 3 miles above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.6	14	2.5	150
1.8	26	3.0	325
2.0	45	3.5	540
2.2	74		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	26	24	(*)	(*)	(*)	15	21	92	168	243	180	*66
2	26	24					21	110	174	243	184	66
3	25	24					21	126	190	240	*174	78
4	25	22					21	132	198	226	156	76
5	24	*20					21	*132	184	212	132	72
6	23	20	20	16	15	(*)	21	120	187	201	123	81
7	*23	19					22	108	236	187	108	72
8	24	19					22	98	274	177	103	71
9	22	19					24	92	*305	162	96	66
10	23	20					24	89	278	156	92	64
11	24	19	20	16	15	(*)	23	85	309	153	89	63
12	24	20					23	87	321	184	85	60
13	24	19					25	89	297	168	85	58
14	24	20					26	87	329	153	87	57
15	24	21					28	85	377	*144	89	53
16	24	22	20	16	15	18	32	96	468	138	81	53
17	25	22					35	120	526	141	85	53
18	25	22					40	156	526	144	96	55
19	25	20					45	*171	504	126	101	61
20	25	20					58	208	504	118	96	58
21	25	20	20	16	15	17	*71	264	464	120	83	54
22	25	20					72	285	446	113	89	53
23	26	20					83	278	*423	106	83	52
24	25	21					83	264	414	103	76	52
25	24	22					19	74	240	365	110	74
26	24	22	20	16	15	19	64	204	321	138	72	46
27	24	22					57	162	274	141	71	43
28	24	22					54	135	271	159	71	46
29	24	22					58	123	271	150	71	52
30	24	22					20	71	129	260	153	76
31	24	-----	-----	-----	-----	*20	-----	138	-----	168	69	-----
Total	754	629	620	496	420	522	1,240	4,505	9,864	4,977	3,077	1,783
Mean	24.3	21.0	20	16	15	16.8	41.3	145	329	161	99.3	59.4
Ac-ft	1,500	1,250	1,230	984	833	1,040	2,460	8,940	19,560	9,870	6,100	3,540

Calendar year 1964: Max 357 Min 12 Mean 44.0 Ac-ft 31,930  
 Water year 1964-65: Max 526 Min - Mean 79.1 Ac-ft 57,310

Peak discharge (base, 220 cfs)--May 21 (2330) 301 cfs (2.87 ft); June 18 (0100) 585 cfs (3.59 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4 to Mar. 16 (no gage-height record Nov. 20 to Mar. 15), Mar. 18-22, 25, 26.



9-1190. Tomichi Creek at Gunnison, Colo.

Location.--Lat 38°31'20", long 106°56'25", in NE¼SW¼ sec.11, T.49 N., R.1 W., on right bank 300 ft downstream from highway bridge, 1.8 miles southwest of post office in Gunnison, and 2 miles upstream from mouth.

Drainage area.--1,020 sq mi, approximately.

Records available.--November and December 1910 (gage heights and discharge measurements only), October 1937 to September 1965. Monthly discharge only for some periods, published in WSP 1313. Published as "near Gunnison" 1910.

Gage.--Water-stage recorder. Datum of gage is 7,628.58 ft above mean sea level, datum of 1929. Nov. 25 to Dec. 24, 1910, staff gage 300 ft upstream at different datum. Apr. 20, 1938, to Oct. 2, 1940, water-stage recorder at present site at datum 1.00 ft higher.

Average discharge.--28 years, 172 cfs (124,500 acre-ft per year).

Extremes.--Maximum discharge during year, 1,160 cfs June 13 (gage height, 3.31 ft); minimum daily, 29 cfs Oct. 10. 1937-65: Maximum discharge, 1,900 cfs June 8, 1957 (gage height, 4.10 ft); minimum daily, 12 cfs Oct. 4, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 24,000 acres above station. Water diverted above station by Larkspur ditch to Arkansas River basin since 1935 and by Tarbell ditch to Rio Grande basin since 1914 (see elsewhere in this report).

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 26 to May 6, July 31 to Aug. 10)

0.7	22	2.1	400
.9	40	2.6	640
1.1	70	3.0	880
1.5	170	3.3	1,120

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	49	82	110	80	70	70	182	428	440	585	670	224
2	48	82	* 110	80	65	65	232	470	445	585	635	208
3	46	82	100	80	70	* 60	240	510	465	560	* 615	240
4	46	80	90	* 75	* 75	60	252	555	475	535	510	252
5	49	78	85	80	75	65	240	565	500	495	460	232
6	48	* 78	75	80	75	70	260	* 545	510	470	432	256
7	* 50	80	75	75	70	75	324	495	* 525	455	392	256
8	50	78	80	70	65	75	352	445	565	500	352	232
9	39	80	85	70	65	75	408	424	620	525	340	220
10	29	90	90	70	65	75	440	388	690	485	328	204
11	35	115	100	75	60	80	336	372	726	470	324	200
12	37	98	100	75	55	85	240	352	1,070	565	304	191
13	37	92	70	70	60	85	304	344	1,120	600	284	188
14	37	112	80	65	65	85	320	324	952	555	284	185
15	37	125	90	70	65	85	264	300	845	* 450	304	173
16	36	138	100	75	60	* 80	292	284	838	424	296	164
17	35	138	95	75	65	b 60	316	288	928	416	308	158
18	35	138	90	70	70	b 50	352	308	1,020	450	344	146
19	34	b 100	85	65	70	b 55	348	* 344	1,040	475	396	158
20	34	b 85	95	70	70	b 60	376	384	1,050	470	352	191
21	34	b 85	95	75	70	b 65	* 424	440	1,030	470	324	200
22	34	b 90	80	70	65	b 70	445	540	1,010	495	324	191
23	33	b 95	80	65	60	70	485	605	* 968	485	308	176
24	36	b 100	95	70	55	72	545	665	896	470	272	173
25	36	110	110	75	55	74	560	744	852	460	248	167
26	37	115	100	70	60	74	510	786	798	545	228	161
27	45	122	90	70	65	70	445	696	708	540	216	152
28	56	128	90	80	70	82	392	590	645	545	204	146
29	56	112	80	80	-	115	376	510	615	485	212	158
30	58	118	65	80	-----	* 140	392	555	605	432	* 264	161
31	76	-----	70	75	-----	161	-----	436	-----	525	256	-----
Total	1,312	3,026	2,760	2,280	1,835	2,408	10,652	14,692	22,951	15,522	10,786	5,763
Mean	42.3	101	89.0	73.5	65.5	77.7	355	474	765	501	348	192
Ac-ft	2,600	6,000	5,470	4,520	3,640	4,780	21,130	29,140	45,520	30,790	21,390	11,430

Calendar year 1964: Max 768 Min 29 Mean 142 Ac-ft 102,800  
Water year 1964-65: Max 1,120 Min 29 Mean 257 Ac-ft 186,400

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 2 to Mar. 16 (stage-discharge relation affected by ice during most of period).

## GUNNISON RIVER BASIN

9-1225. Soap Creek near Sapinero, Colo.

Location.--Lat 38°33'40", long 107°19'30", in SW¼ sec.29, T.50 N., R.4 W., on right bank 1½ miles upstream from Cow Creek and 6½ miles north of Sapinero.

Drainage area.--57.3 sq mi.

Records available.--August 1955 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,790 ft (from topographic map).

Average discharge.--10 years, 59.8 cfs (43,290 acre-ft per year).

Extremes.--Maximum discharge during year, 474 cfs June 20; maximum gage height, 3.40 ft Apr. 30; minimum discharge not determined.

1955-65: Maximum discharge, about 1,000 cfs sometime during period June 4-6, 1957; maximum gage height, 6.07 ft June 6, 1957; minimum daily discharge, 2.4 cfs Sept. 18, 1962.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. One small diversion for irrigation of hay meadows above station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.9						50	390	268	271	50	13
2	6.0						100	398	268	286	49	* 15
3	5.6	(*)					100	387	280	292	42	57
4	5.2						80	348	277	286	40	30
5	5.0						70	286	268	274	* 35	26
6	5.0						80	* 235	277	271	33	28
7	4.8						80	220	359	262	30	22
8	* 4.8						80	217	398	262	28	22
9	5.0						90	178	387	241	26	22
10	5.4					4	90	155	* 352	214	24	20
11	5.6						85	142	352	226	22	20
12	5.2						85	150	394	247	22	19
13	5.2						75	211	380	* 220	22	18
14	5.6						95	226	380	193	22	17
15	5.8						110	196	394	172	20	* 16
16	5.3	5	4.5	4.5	4		120	214	408	158	22	15
17	5.3						168	301	412	145	18	14
18	5.8					(*)	188	376	426	138	26	26
19	5.5						208	387	440	138	26	35
20	5.5						274	* 398	454	126	24	32
21	5.5					5	320	404	443	116	20	25
22	6					7	356	426	412	90	19	22
23	6					9	362	394	398	71	19	22
24	5.5					8	352	304	* 394	62	17	23
25	5					7	304	238	380	76	15	23
26	5.5					8	283	199	317	66	14	21
27	5.5					7	229	168	286	54	13	19
28	5.5					10	202	148	274	47	12	19
29	5.5					16	259	155	277	41	15	28
30	5.5					14	373	182	277	38	22	28
31	5					25	223	223		44	16	
Total	168.0	150	139.5	139.5	112	196	5,268	8,266	10,632	5,127	763	697
Mean	5.42	5	4.5	4.5	4	6.3	176	267	354	165	246	23.2
Ac-ft	333	298	277	277	222	389	10,450	16,400	21,090	10,170	1,510	1,380

Calendar year 1964: Max 478 Min - Mean 44.1 Ac-ft 32,000

Water year 1964-65: Max 454 Min - Mean 86.7 Ac-ft 62,800

Peak discharge (base, 300 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-23	1730	3.30	436	5-22	0100	3.29	450
4-30	2100	3.40	471	6-20	2000	3.14	474

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 19 to Mar. 25 (stage-discharge relation affected by ice during part of period), Aug. 11-17, 20-29, 31, Sept. 1, 2, 10-15. Stage-discharge relation affected by ice Mar. 26 to Apr. 16.

9-1245. Lake Fork at Gateview, Colo.

Location.--Lat 38°17'50", long 107°13'50", in sec.29, T.47 N., R.3 W., on left bank at old village of Gateview, 15 ft downstream from private bridge, a quarter of a mile upstream from Indian Creek, and 15 miles upstream from mouth.

Drainage area.--338 sq mi.

Records available.--October 1937 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 7,827.66 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1938, at datum 2.00 ft higher and Oct. 1, 1938, to Sept. 30, 1945, at datum 1.00 ft higher.

Average discharge.--28 years, 246 cfs (178,100 acre-ft per year).

Extremes.--Maximum discharge during year, 1,990 cfs June 21 (gage height, 3.62 ft); minimum daily, 38 cfs Mar. 3.  
1937-65: Maximum discharge, 2,700 cfs June 29, 1957 (gage height, 4.30 ft); minimum daily determined, 25 cfs Dec. 5, 1955, Jan. 10, 17, 18, 1957.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 1,600 acres above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

0.2	48	2.0	600
.5	82	2.5	940
.9	148	3.0	1,350
1.3	260	3.5	1,880
1.7	440		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	99	57	60	55	* 55	46	* 70	505	769	1,200	552	* 222
2	96	59	60	50	50	* 40	65	727	846	1,300	648	222
3	93	59	60	45	46	38	65	804	924	1,370	660	228
4	90	54	55	* 50	46	40	65	762	1,030	1,290	588	216
5	88	* 55	50	50	48	44	60	* 642	900	1,250	* 535	204
6	85	56	48	50	55	46	65	552	825	1,250	490	250
7	82	56	46	55	55	46	70	490	1,010	1,230	450	246
8	* 81	57	50	55	50	44	75	455	1,270	1,150	415	236
9	81	57	55	55	48	44	80	400	* 1,350	1,120	380	232
10	78	58	55	50	46	48	75	385	1,140	1,040	355	219
11	83	57	55	50	44	48	70	365	1,040	1,010	336	207
12	80	52	55	50	42	46	70	385	916	1,170	312	195
13	76	50	46	50	40	48	75	410	932	1,120	320	185
14	76	55	42	55	42	46	75	395	1,190	1,040	336	172
15	74	57	48	55	44	44	80	370	1,440	956	316	161
16	72	69	55	55	46	46	93	355	1,570	* 853	296	155
17	74	76	55	50	46	48	112	410	1,320	818	320	150
18	72	68	50	48	46	46	139	525	1,470	804	420	204
19	70	60	46	50	46	42	* 163	* 660	1,640	908	405	253
20	69	50	55	50	48	40	216	916	1,840	1,120	350	250
21	68	50	50	50	50	50	288	1,030	1,770	1,030	316	219
22	65	55	50	48	55	55	365	1,210	1,640	884	312	204
23	68	55	55	46	46	60	505	1,240	1,510	811	284	198
24	64	60	65	50	40	55	600	964	* 1,560	811	260	201
25	62	70	65	48	42	50	540	769	1,330	846	236	216
26	60	65	60	46	44	50	495	624	1,160	790	216	225
27	63	65	60	46	46	55	420	530	1,020	684	207	239
28	62	60	60	50	50	55	332	465	1,120	612	195	256
29	63	65	55	50	-	55	296	445	1,230	570	201	272
30	63	* 65	44	55	-----	60	350	510	1,280	594	242	242
31	59	-----	50	55	-----	70	-----	576	-----	594	253	-----
Total	2,316	1,772	1,660	1,572	1,316	1,505	5,974	18,876	37,042	30,225	11,206	6,479
Mean	74.7	59.1	53.5	50.7	47.0	48.5	199	609	1,235	975	361	21.6
Ac-ft	4,590	3,510	3,290	3,120	2,610	2,990	11,850	37,440	73,470	59,950	22,230	12,850

Calendar year 1964: Max 1,330 Min - Mean 190 Ac-ft 137,600  
Water year 1964-65: Max 1,840 Min 38 Mean 329 Ac-ft 237,900

Peak discharge (base, 1,400 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-9	0500	3.12	1,430	7-3	0130	3.14	1,470
6-21	0200	3.62	1,990				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3, 14, Nov. 19 to Apr. 14 (no gage-height record Mar. 4 to Apr. 1).

## GUNNISON RIVER BASIN

9-1247. Gunnison River below Blue Mesa Dam, Colo.

Location.--Lat 38°27'08", long 107°20'52", in NE¼ sec.5, T.48 N., R.4 W., on left bank 0.2 mile downstream from Pine Creek, 0.7 mile downstream from Blue Mesa Dam, and 11 miles east of Cimarron.

Drainage area.--3,453 sq mi.

Records available.--May 1963 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 7,155.30 ft above mean sea level (Bureau of Reclamation bench mark).

Extremes.--Maximum discharge during year, 8,880 cfs June 21 (gage height, 11.71 ft); minimum daily, 220 cfs Dec. 7.  
1963-65: Maximum discharge, 8,880 cfs June 21, 1965 (gage height, 11.71 ft); minimum daily, 220 cfs Jan. 14, Dec. 7, 1964.

Remarks.--Records good except those for period of ice effect, which are poor. Natural flow of stream affected by transmountain diversions, transbasin diversions, Taylor Park Reservoir (see elsewhere in this report), diversions for irrigation of about 56,000 acres, and return flow from irrigated areas.

Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Nov. 2-18, Apr. 27 to June 13, Sept. 26-30)

0	430	4.0	1,980
.2	470	6.0	3,220
.8	620	8.0	4,900
1.0	680	10.0	6,930
2.0	1,040	11.6	8,750

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	520	502	420	360	400	400	900	4,080	3,960	6,030	3,960	1,670
2	532	502	480	380	360	380	850	4,540	4,170	6,280	3,840	* 1,620
3	552	506	440	400	340	360	800	5,200	4,390	6,460	3,790	1,880
4	572	494	400	400	* 340	340	750	5,430	4,630	6,440	3,380	1,920
5	* 552	456	340	420	380	340	700	5,080	4,430	6,350	3,090	1,840
6	662	* 432	280	440	400	360	805	* 4,270	4,300	6,290	2,900	2,040
7	686	434	220	480	420	380	1,030	3,600	4,940	6,380	2,650	1,980
8	716	442	260	500	420	380	1,260	3,450	5,980	6,410	2,450	1,860
9	713	438	300	480	400	380	1,780	2,980	6,410	6,340	2,290	1,850
10	713	446	360	460	380	400	1,800	2,790	* 6,260	5,980	2,140	1,730
11	734	474	400	440	360	420	1,620	2,620	6,210	5,810	2,100	1,670
12	752	464	400	420	320	440	1,460	2,950	7,140	7,260	1,980	1,630
13	755	454	380	400	320	440	1,720	3,300	6,890	* 6,800	* 1,900	1,580
14	761	492	360	420	340	440	* 1,880	3,380	6,860	5,950	1,980	1,520
15	680	498	380	420	360	420	1,880	3,090	7,200	5,280	2,000	1,460
16	665	530	420	400	340	420	1,960	3,090	7,590	4,750	1,950	1,420
17	635	548	460	380	340	420	2,060	3,620	* 7,690	4,710	1,940	1,360
18	620	530	460	380	360	420	2,250	4,500	7,950	4,720	2,140	1,490
19	602	480	440	400	360	400	2,320	5,000	8,270	4,840	2,380	1,730
20	587	400	420	420	380	380	2,720	* 5,680	8,570	4,740	2,170	1,800
21	518	360	400	400	400	400	3,210	6,070	* 8,750	4,690	1,980	1,780
22	480	400	420	380	400	440	* 3,500	6,390	8,560	4,430	1,960	1,380
23	476	420	440	360	380	500	3,830	6,660	8,150	4,050	1,870	1,290
24	476	440	460	360	360	480	3,510	5,930	7,880	3,980	1,740	1,260
25	472	460	460	360	340	460	3,360	5,260	7,800	4,010	1,600	1,260
26	462	480	460	360	340	460	3,210	4,650	7,030	4,390	1,480	1,260
27	468	460	460	380	360	500	2,920	4,060	6,170	3,980	1,400	1,260
28	482	440	460	400	400	600	2,700	3,390	6,060	3,920	1,450	* 1,260
29	486	460	440	420	-	700	2,740	3,070	6,230	3,540	1,570	1,300
30	490	460	400	420	-----	800	3,230	3,140	6,480	3,450	1,880	1,300
31	494	-----	360	420	-----	900	-----	3,440	-----	3,540	1,820	-----
Total	18,313	13,902	12,380	12,660	10,300	14,160	62,755	130,710	196,940	161,800	69,780	47,400
Mean	591	463	399	408	368	457	2,092	4,216	6,565	5,219	2,251	1,580
Ac-ft	36,320	27,570	24,560	25,110	20,430	28,090	124,500	259,300	390,600	320,900	138,400	94,020

Calendar year 1964: Max 6,200 Min 220 Mean 1,104 Ac-ft 801,700  
Water year 1964-65: Max 8,750 Min 220 Mean 2,058 Ac-ft 1,490,000

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 19 to Apr. 5 (no gage-height record Feb. 16 to Apr. 1).

9-1250. Curecanti Creek near Sapinero, Colo.

Location.--Lat 38°29'15", long 107°24'55", in sec.21, T.49 N., R.5 W., on downstream side of left pier of bridge on State Highway 92, 2½ miles upstream from mouth and 6 miles west of Sapinero.

Drainage area.--35.0 sq mi.

Records available.--October 1945 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 7,867.43 ft above mean sea level, datum of 1929. Prior to Oct. 1, 1947, at site 65 ft upstream at datum 3.00 ft higher. Oct. 1, 1947, to Sept. 17, 1952, at site 65 ft upstream at datum 1.00 ft higher.

Average discharge.--20 years, 33.2 cfs (24,040 acre-ft per year).

Extremes.--Maximum discharge during year, 328 cfs June 12 (gage height, 3.89 ft); minimum daily determined, 3.2 cfs Oct. 20.

1945-65: Maximum discharge, 480 cfs June 5, 1957; maximum gage height, 4.30 ft June 28, 1957; minimum daily discharge, 2.0 cfs Aug. 1-3, 1948, but may have been less during periods of ice effect.

Remarks.--Records good except those for periods of ice effect, which are poor. One diversion above station for irrigation in Smith Fork drainage.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Aug. 4-11)

2.1	3.0	2.9	44
2.3	7.5	3.2	82
2.5	15	3.5	160
2.7	27	4.0	360

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.2	3.8			(*)	5	* 12	136	160	133	27	7.8
2	4.0	4.0				* 5	11	188	154	148	27	* 7.8
3	3.8	* 4.4	(*)			4.0	12	192	164	151	21	28
4	3.8	4.4				4.2	12	192	174	145	20	18
5	3.6	4.6				4.4	10	170	157	142	* 17	16
6	3.6	4.6				4.4	9	* 136	164	142	16	20
7	3.6	4.6		(*)		4.4	9	122	219	136	14	16
8	* 3.6	4.0				4.4	9	120	267	133	13	16
9	3.6	4.4				4.4	9.5	96	255	120	12	16
10	3.8	4.4				4.2	9.5	80	* 247	105	11	13
11	3.8	4.2				4.4	9.5	74	259	110	11	12
12	3.6	4.0				4.4	9	79	311	125	9.6	12
13	3.6	3.8				4.4	10	102	287	* 110	8.9	11
14	3.6	4.2				4.4	11	118	267	91	8.6	10
15	3.6	4.6				4.4	13	100	247	75	8.6	8.9
16	3.6	4.6	5	4.8	5	4.0	16	103	247	70	8.2	8.2
17	3.6	4.4				3.6	25	139	239	63	8.6	8.9
18	3.6	4.2				3.6	29	188	239	60	11	12
19	3.4	4.0				3.8	* 40	207	231	54	13	15
20	3.2	4.0				3.8	50	* 243	231	52	9.6	15
21	3.4	4.0				4.0	64	263	231	48	8.2	13
22	3.6	4.0				4.2	79	283	219	41	8.2	13
23	3.8	4.2				4.2	89	271	211	38	7.2	13
24	3.8	4.4				5	100	203	* 203	34	6.8	13
25	3.6	4.6				4.8	82	164	203	33	6.2	13
26	3.6	4.4				5.5	77	136	181	30	5.8	12
27	3.8	4.8				6.5	61	112	157	29	5.5	12
28	3.8	4.6				8	52	98	142	22	5.5	* 12
29	4.0	5			-	9.5	60	103	139	20	8.2	15
30	4.0	4.8				11	98	115	145	18	16	14
31	4.2					13		130		20	10	
Total	114.8	130.0	155	148.8	140	160.9	1,077.5	4,663	6,350	2,498	362.7	401.6
Mean	3.70	4.33	5	4.8	5	5.19	35.9	150	212	80.6	11.7	13.4
Ac-ft	228	258	307	295	278	319	2,140	9,250	12,600	4,950	719	797

Calendar year 1964: Max 295 Min - Mean 29.1 Ac-ft 21,090

Water year 1964-65: Max 311 Min - Mean 44.4 Ac-ft 32,140

Peak discharge (base, 250 cfs).--May 22 (2200) 311 cfs (3.88 ft); June 12 (2200) 328 cfs (3.89 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 12, 14, Nov. 17 to Apr. 16 (no gage-height record Nov. 19 to Mar. 17, Mar. 24 to Apr. 1).

## GUNNISON RIVER BASIN

9-1260. Cimarron Creek near Cimarron, Colo.

Location.--Lat 38°15'30", long 107°32'40", in sec.8, T.46 N., R.6 W., on right bank 0.2 mile downstream from highway bridge, 0.5 mile upstream from headgate on Cimarron ditch, 2.5 miles downstream from West Fork, and 13 miles south of Cimarron.

Drainage area.--66.8 sq mi.

Records available.--October 1954 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 8,650 ft (from topographic map).

Average discharge.--11 years, 90.9 cfs (65,810 acre-ft per year).

Extremes.--Maximum discharge during year, 870 cfs July 16 (gage height, 6.25 ft); minimum daily, 14 cfs Nov. 4, Dec. 6, 7.

1954-65; Maximum discharge, 1,790 cfs June 28, 1957 (gage height, 8.32 ft); minimum daily, 8 cfs Dec. 27, 28, 1962, Jan. 13, 1963.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversion above station through Owl Creek ditch into Uncompahgre River basin. Diversion below station by Cimarron ditch for water year 1965 is given below.

Month	Diversion in acre-feet	Month	Diversion in acre-feet
October.....	430	April.....	0
November.....	333	May.....	2,490
December.....	0	June.....	7,490
	-----	July.....	8,000
Celendar year 1964..	23,670	August.....	5,080
	-----	September.....	2,780
January.....	0		
February.....	0	Water year 1964-65..	26,600
March.....	0		

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 23 to May 15, June 18 to Aug. 3)

3.5	12	4.5	140
3.6	17	5.0	260
3.8	30	6.0	650
4.1	65	6.5	890

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40	16	22	19	16	17	21	218	260	418	170	106
2	37	17	23	19	16	16	20	290	254	490	212	110
3	36	18	22	19	15	15	19	* 260	302	430	178	120
4	31	* 14	21	17	16	16	18	239	318	410	172	110
5	* 30	16	17	17	16	17	16	198	272	406	148	110
6	29	16	14	17	16	19	17	56	278	418	* 132	118
7	28	16	14	17	15	19	18	46	* 358	406	122	98
8	27	17	16	17	15	19	16	36	418	474	120	98
9	28	17	20	16	15	19	16	114	434	358	112	90
10	28	18	22	16	16	19	16	108	378	334	106	80
11	27	18	22	16	17	19	15	106	410	378	96	76
12	24	22	22	16	17	19	15	108	522	* 446	92	71
13	24	27	16	16	18	19	16	130	486	442	110	68
14	24	24	18	18	18	17	16	156	546	410	96	62
15	24	24	20	17	19	16	15	134	590	310	80	59
16	23	24	22	16	19	18	18	132	582	386	76	55
17	24	23	22	16	19	* 16	22	* 168	542	438	84	61
18	24	22	20	16	18	16	26	202	618	418	114	92
19	21	20	20	17	19	16	30	212	642	394	116	84
20	21	18	19	16	19	16	40	245	674	358	114	80
21	21	16	19	17	19	19	46	326	618	287	90	71
22	21	16	19	18	19	18	60	426	610	260	92	71
23	20	17	19	17	19	18	108	382	578	278	76	72
24	19	18	19	16	18	16	118	272	614	310	68	72
25	19	22	17	17	18	19	96	228	* 494	278	62	72
26	18	26	17	16	18	18	82	202	422	263	57	70
27	18	28	19	18	17	19	54	166	390	* 228	52	71
28	17	32	16	18	18	20	50	154	446	220	50	70
29	17	27	16	18	-	20	86	156	486	202	90	68
30	17	* 24	18	16	-----	18	150	168	422	198	* 144	68
31	18	-----	19	17	-----	20	-----	200	-----	188	146	-----
Total	755	613	590	526	485	553	1,240	5,838	13,964	10,836	3,377	2,453
Mean	24.4	20.4	19.0	17.0	17.3	17.8	41.3	188	465	350	109	81.8
Ac-ft	1,500	1,220	1,170	1,040	962	1,100	2,460	11,580	27,700	21,490	6,700	4,870

Calendar year 1964: Max 795 Min - Mean 104 Ac-ft 75,410  
Water year 1964-65: Max 674 Min 14 Mean 113 Ac-ft 81,790

Peak discharge (base, 400 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5- 2	1500	5.88	506	7-11	2230	5.85	690
5-22	2200	5.80	546	7-16	1915	6.25	870
6-19	2030	6.22	800	7-24	2000	5.58	534
7- 2	2030	5.75	626				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 3-9, 19-26, Dec. 5-15, Feb. 3-9, 24-28, Mar. 1-5, Apr. 3-6, 8-22.

## 9-1265. Cimarron Craek at Cimarron, Colo.

Location.--Lat 38°26'28", long 107°33'13", in SW¼SW¼ sec.5, T.48 N., R.6 W., on left bank at Cimarron, 100 ft from U. S. Highway 50, 1,100 ft upstream from Squaw Creek, and 1.2 miles upstream from mouth. Prior to Sept. 16, 1965, at site 700 ft downstream.

Drainage area.--212 sq mi.

Records available.--October 1902 to November 1905, April 1962 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 6,890.07 ft above mean sea level, datum of 1929. Prior to Apr. 1, 1962, staff gage at site 100 ft downstream at different datum. Apr. 1, 1962, to Sept. 15, 1965, at site 700 ft downstream at datum 5.10 ft lower.

Average discharge.--6 years, 118 cfs (85,430 acre-ft per year).

Extremes.--Maximum discharge during year, 1,110 cfs June 16 (gage height, 4.62 ft, site and datum then in use); maximum gage height, 5.18 ft Feb. 6, site and datum then in use (backwater from ice); minimum daily discharge, 21 cfs Nov. 1.

1902-5, 1962-65: Maximum discharge, about 1,600 cfs May 12, 13, 1962 (gage height not determined); minimum daily, 8 cfs Dec. 26, 27, 1962.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by Cimarron and Owl Creek ditches for irrigation of about 5,000 acres in Uncompahgre River drainage, imported water from Blue Creek drainage, diversions for irrigation of about 3,000 acres, and return flow from irrigated areas.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 22 to June 21)

Oct. 1 to June 19

June 20 to Sept. 15

Sept. 16-30

2.5	20	3.6	375	2.3	62	3.3	330	2.4	28	3.0	103
2.7	45	4.0	650	2.5	100	3.7	590	2.6	48	3.2	140
3.0	105	4.3	940	3.0	210	4.0	840	2.8	81		
3.3	220										

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	21	46	28	42	30	110	315	235	420	150	100
2	66	23	46	22	44	28	*100	399	230	541	178	*86
3	62	27	*44	26	46	24	100	*423	250	513	160	114
4	55	*26	40	28	*46	28	82	393	290	444	136	116
5	52	26	36	30	40	*30	55	348	270	426	110	94
6	50	27	30	30	38	30	78	285	295	426	*73	126
7	48	26	30	*32	36	28	72	255	*370	414	66	86
8	*48	24	34	30	36	26	80	230	494	492	60	80
9	48	26	36	28	36	26	82	200	521	426	55	90
10	50	26	36	28	34	26	57	190	448	315	55	70
11	50	26	36	30	30	28	38	*190	494	320	55	60
12	47	37	32	32	30	28	42	188	556	*499	55	50
13	47	44	28	34	32	26	54	225	549	485	60	45
14	48	45	34	34	34	26	50	240	618	408	70	40
15	50	48	36	32	34	26	57	193	704	320	55	35
16	48	55	36	30	32	28	72	193	780	*315	50	32
17	48	52	34	30	30	28	89	*250	634	444	50	*36
18	48	45	32	30	30	28	111	305	677	378	55	71
19	45	45	36	32	30	26	120	310	686	408	76	103
20	34	34	40	34	30	24	167	375	662	360	96	134
21	28	32	42	34	30	26	188	474	654	320	80	123
22	28	30	38	34	30	28	*250	578	562	228	65	119
23	30	32	36	34	28	30	275	535	548	252	60	116
24	28	34	36	36	26	30	245	387	*569	336	55	119
25	26	36	34	38	26	29	198	300	548	320	50	121
26	26	40	34	34	26	28	180	255	432	295	45	112
27	28	42	32	30	28	29	126	211	372	240	35	110
28	26	38	30	34	30	38	114	151	432	205	30	*108
29	26	36	28	36	-	62	123	129	464	185	60	112
30	26	38	24	38	-----	82	206	139	*464	175	*114	112
31	26	-----	28	40	-----	120	-----	159	-----	180	128	-----
Total	1,312	1,041	1,084	988	934	1,046	3,521	8,825	14,808	11,090	2,387	2,720
Mean	42.3	34.7	35.0	31.9	33.4	33.7	117	285	494	358	77.0	90.7
Ac-ft	2,600	2,060	2,150	1,960	1,850	2,070	6,980	17,500	29,370	22,000	4,730	5,400

Calendar year 1964: Max 880 Min 19 Mean 112 Ac-ft 81,180  
Water year 1964-65: Max 780 Min 21 Mean 136 Ac-ft 98,670

\* Discharge measurement made on this date.

Note.--Stage-discharge relation affected by ice Nov. 21 to Mar. 23 (no gage-height record Feb. 2-4, Feb. 12 to Mar. 5). No gage-height record Apr. 1, 2, May 8-11, Aug. 8-18, 21-29, Sept. 8-15.

## GUNNISON RIVER BASIN

9-1275. Crystal Creek near Maher, Colo.

Location.--Lat 38°33'05", long 107°30'20", in SE¼ sec.35, T.50 N., R.6 W., on left bank 640 ft downstream from private bridge, half a mile upstream from diversion dam for Cattleman's ditch, 0.7 mile downstream from Dyer Creek, 7 miles upstream from mouth, and 7 miles southeast of Maher.

Drainage area.--42.2 sq mi.

Records available.--July 1945 to September 1954, October 1960 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 8,070 ft (from topographic map). July 6, 1945, to Sept. 30, 1954, at site 140 ft upstream at datum 1.45 ft higher.

Average discharge.--14 years, 28.9 cfs (20,920 acre-ft per year).

Extremes.--Maximum discharge during year, 348 cfs May 22 (gage height, 3.22 ft); minimum daily, 4.2 cfs Oct. 2-7, 11-13, Nov. 4. 1945-54, 1960-65: Maximum discharge, 542 cfs Apr. 29, 1948 (gage height, 5.05 ft, site and datum then in use), from rating curve extended above 200 cfs; minimum daily, 1.8 cfs Aug. 29, 31, 1954.

Remarks.--Records good except those for periods of ice effect, which are poor. Small diversions for irrigation of hay meadows above station. Diversions above station for irrigation of about 800 acres below station and about 700 acres in Iron Creek basin

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Sept. 21-30)

1.1	3.0	2.1	75
1.2	6.0	2.5	155
1.6	23	3.0	280
1.8	37	3.5	415

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.8	4.5	6	6	5	4.8	13	180	132	103	25	12
2	4.2	4.6	6.0	5.5	5	4.6	13	208	124	114	25	12
3	4.2	4.4	6.0	5.5	5.5	4.6	13	208	135	112	21	32
4	4.2	4.2	6.4	6	5.5	4.8	12	200	140	108	20	20
5	4.2	* 5.4	5.5	6	5.5	5	* 11	168	122	99	18	17
6	4.2	5.1	5	6	5.5	5	11	132	124	99	16	18
7	* 4.2	5.1	5	6	5.5	5	11	118	* 172	96	15	16
8	4.5	5.1	5	6	5	5.5	10	118	200	94	14	15
9	4.5	4.8	5.5	5.5	4.8	* 5.5	11	94	198	82	14	15
10	4.5	5.1	6	5.5	* 4.6	5.5	11	84	190	70	12	13
11	4.2	4.8	6	* 6	4.6	5	11	* 80	195	78	* 12	12
12	4.2	5.5	5.5	6.0	4.6	5.5	13	92	258	85	12	12
13	4.2	5.7	5	6	4.8	5.5	12	116	268	* 77	11	11
14	4.5	6	5	6	5	5.4	11	130	278	63	11	10
15	4.5	6.5	5.5	5.5	5	5.5	12	106	270	56	11	9.6
16	4.5	6.4	6	5.5	5	5.5	15	105	270	47	12	9.2
17	4.8	6.4	6	5.5	5	5.5	18	140	272	40	22	8.8
18	4.8	6.5	5.5	5.5	5.5	5.5	22	200	260	36	27	11
19	4.5	6	5.5	5.5	5.5	5.5	24	225	245	35	24	14
20	5.1	6	6	6	5.5	5.5	48	255	240	33	20	16
21	4.8	6	6.5	6	5.5	5.5	99	275	* 240	31	18	14
22	4.8	6	6.5	5.5	5	5.5	* 122	302	225	29	13	14
23	5.1	6.5	6.5	5.5	4.6	5.4	152	268	212	28	11	16
24	5.1	6.5	6.5	6	4.6	5.5	132	* 170	210	28	10	18
25	4.5	6.5	6	5.5	5	5	112	124	185	28	9.6	17
26	4.5	6.5	6.0	5.5	5.5	7.2	99	103	152	25	8.8	15
27	5.4	6.5	6.0	5.5	5.5	5.7	70	87	124	24	9.2	14
28	4.8	7	6.0	6	5.5	6.0	68	82	118	22	8.8	13
29	5.1	6.8	5.5	6	—	7.2	101	90	120	20	15	14
30	5.1	6.5	5	6	—	8	150	108	110	20	* 20	14
31	5.1	—	5.5	5.5	—	10	—	120	—	20	14	—
Total	143.1	172.9	178.4	178.5	143.6	175.7	1407	4688	5789	1802	479.4	432.6
Mean	4.62	5.76	5.75	5.76	5.13	5.67	46.9	151	193	58.1	15.5	14.4
Ac-ft	284	343	354	354	285	348	2,790	9,300	11,480	3,570	951	858

Calendar year 1964: Max 350 Min 2.8 Mean 29.6 Ac-ft 21,500  
Water year 1964-65: Max 302 Min 4.2 Mean 42.7 Ac-ft 30,920

Peak discharge (base, 160 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-23	1730	2.99	275	5-22	2100	3.22	348
5-2	2000	3.08	300	6-16	2000	3.16	312

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 1, 2, 12, 14, 15, 18-28, 30, Dec. 1, 5-25, 29-31, Jan. 1-11, Jan. 13 to Mar. 13, Mar. 15-22, 24, 25, 30, 31, Apr. 1-5.



## 9-1280. Gunnison River below Gunnison tunnel, Colo.

**Location.**--Lat 38°32', long 107°39', in NW¼ sec.10, T.49 N., R.7 W., on left bank a quarter of a mile downstream from east portal of Gunnison tunnel, 5 miles downstream from Crystal Creek, and 12 miles northeast of Montrose.

**Drainage area.**--3,980 sq mi, approximately.

**Records available.**--October 1903 to September 1965. Monthly discharge only for some periods, published in WSP 1313. Published as "at east portal of Gunnison tunnel" 1905-6 and as "at River Portal" 1907-11.

**Gage.**--Water-stage recorder. Datum of gage is 6,526.06 ft above mean sea level, datum of 1929. Apr. 9, 1905, to Aug. 20, 1915, staff gage at site 300 ft upstream from diversion dam at east portal of Gunnison tunnel at different datum. Aug. 21, 1915, to Jan. 19, 1943, staff gage at site 500 ft downstream from diversion dam at east portal of Gunnison tunnel at different datum. Jan. 20, 1943, to Sept. 30, 1956, water-stage recorder at same site at datum 1.0 ft higher.

**Average discharge.**--62 years, 1,461 cfs, unadjusted (1,058,000 acre-ft per year).

**Extremes.**--Maximum discharge during year, 10,300 cfs June 21 (gage height, 11.12 ft); minimum daily, 50 cfs Oct. 21, 24, 26, 27.

1903-65: Maximum discharge observed, 19,000 cfs June 15, 1921 (gage height, about 15.8 ft, present datum), from rating curve extended above 14,000 cfs; no flow Sept. 25, 26, 1936, Oct. 8, 1949, Sept. 5, 6, 15, 16, 1950.

**Remarks.**--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by transmountain diversions, transbasin diversion (see below), Taylor Park Reservoir (see elsewhere in this report), diversions for irrigation of about 63,000 acres, and return flow from irrigated areas. Record of diversion through Gunnison tunnel for irrigation of about 75,000 acres in Uncompahgre Valley during the water year 1965 is given below:

Month	Diversion in acre-feet	Month	Diversion in acre-feet
October.....	34,390	April.....	24,220
November.....	11,070	May.....	51,450
December.....	0	June.....	39,440
	-----	July.....	42,050
Calendar year 1964....	350,700	August.....	54,480
	-----	September.....	34,810
January.....	0		
February.....	0	Water year 1964-65....	291,900
March.....	0		

**Cooperation.**--Record of diversion through Gunnison tunnel furnished by Uncompahgre Valley Water Users Association.

## Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	110	65	480	500	440	420	1,100	4,280	3,830	5,910	3,570	784
2	120	70	490	480	400	400	1,200	4,950	4,010	6,400	3,510	705
3	130	* 75	480	400	380	380	1,150	5,940	4,270	6,700	3,440	* 994
4	100	75	* 450	480	420	360	1,080	6,320	4,600	6,570	3,020	1,140
5	70	80	350	500	440	380	1,020	5,950	4,360	6,560	2,750	982
6	120	85	250	490	480	400	1,050	4,760	4,140	6,330	2,300	1,170
7	70	80	220	480	460	400	988	* 3,850	4,780	6,450	2,000	1,620
8	95	85	240	480	450	420	1,030	3,560	6,080	6,570	1,790	1,230
9	* 100	90	280	460	430	420	1,330	3,000	6,740	6,540	1,570	1,210
10	120	100	400	440	420	420	1,370	2,760	6,510	5,890	1,370	1,090
11	130	132	420	450	410	440	1,210	2,540	* 6,330	5,590	* 1,310	1,010
12	130	190	440	470	360	440	1,040	2,730	7,550	7,310	1,110	964
13	140	157	400	440	350	460	1,200	3,170	7,730	7,140	970	910
14	130	222	340	460	360	460	1,350	3,380	8,190	5,950	1,050	844
15	110	365	380	460	380	440	1,370	3,060	8,190	5,140	1,070	925
16	90	636	460	440	360	440	1,490	2,980	8,750	4,570	1,010	1,190
17	110	656	520	420	360	440	1,640	3,580	8,750	4,590	1,020	640
18	95	636	520	420	* 400	440	2,210	4,500	9,090	4,520	1,220	772
19	90	600	510	440	420	420	2,650	5,060	9,600	4,720	1,540	1,060
20	80	* 450	500	460	400	400	3,250	5,960	9,950	4,670	1,350	1,360
21	50	420	540	440	440	420	3,860	* 6,740	* 10,100	4,550	1,120	1,500
22	75	440	530	460	440	460	* 3,940	7,490	9,810	4,210	1,070	1,190
23	65	490	520	400	420	480	4,280	7,900	9,360	4,340	976	1,030
24	50	480	580	480	380	520	4,040	6,760	9,040	4,230	802	1,140
25	55	500	600	400	360	480	3,740	5,430	8,880	4,240	665	1,220
26	50	510	580	400	360	460	3,470	4,710	7,950	4,490	552	1,200
27	50	500	560	440	380	500	2,890	4,010	6,570	4,020	464	1,200
28	55	490	540	460	400	600	2,620	3,290	6,330	3,860	484	1,110
29	60	490	500	480	-	* 800	2,630	2,860	6,500	3,290	592	* 1,110
30	65	480	440	480	-----	950	3,230	2,890	6,860	3,060	1,010	1,140
31	60	-----	400	460	-----	1,050	-----	3,190	-----	3,160	1,020	-----
Total	2,775	9,649	13,920	14,070	11,300	15,100	63,428	137,600	214,850	161,570	45,725	32,440
Mean	89.5	322	449	454	404	487	2,114	4,439	7,162	5,212	1,475	1,081
Ac-ft	5,500	19,140	27,610	27,910	22,410	29,950	125,800	272,900	426,100	320,500	90,690	64,340

Calendar year 1964: Max 7,600 Min 50 Mean 830 Ac-ft 602,500  
 Water year 1964-65: Max 10,100 Min 50 Mean 1,979 Ac-ft 1,433,000

\* Discharge measurement made on this day.

**Note.**--No gage-height record Oct. 1 to Nov. 10. Stage-discharge relation affected by ice Nov. 20 to Apr. 3.

## GUNNISON RIVER BASIN

9-1285. Smith Fork near Crawford, Colo.

Location.--Lat 38°44', long 107°31', in sec.24, T.15 S., R.91 W., on left bank 20 ft upstream from county bridge, 0.4 mile upstream from Second Creek, 6 miles northeast of Crawford, and 6½ miles upstream from Iron Creek.

Drainage area.--42 sq mi, approximately.

Records available.--October 1935 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 7,200 ft (by barometer). Prior to Nov. 16, 1938, staff gage at same site and datum.

Average discharge.--30 years, 42.6 cfs (30,840 acre-ft per year).

Extremes.--Maximum discharge during year, 402 cfs May 20 (gage height, 4.70 ft); minimum daily, 3.5 cfs Oct. 2-6.

1935-65: Maximum discharge, about 1,050 cfs June 6, 1957; maximum gage height, 5.56 ft June 8, 1957; minimum daily discharge determined, 1.8 cfs July 30, 31, Aug. 1, 1963.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of a few acres of hay meadows above station. Saddle Mountain ditch diverts water above station for irrigation of about 800 acres below. One small ditch diverts from Virginia Creek to Iron Creek drainage, and Head and Ferrier ditch diverts water from Curecanti Creek drainage.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 31 to Apr. 18)

Oct. 1 to July 6

July 7 to Sept. 30

2.1	3.0	3.5	104	2.5	7.0	3.5	80
2.3	8.5	3.9	168	2.7	15	3.8	130
2.5	17	4.3	265	3.0	33		
2.9	44	4.7	410				

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.8	7.3	7.0	6	6	11	42	250	186	117	27	8.6
2	3.5	7.3	7.3	5	6	10	42	283	188	117	27	9.0
3	3.5	7.6	7	5.5	6	10	34	312	208	116	24	21
4	3.5	7.0	7	6	6.5	11	26	289	220	105	23	15
5	3.5	* 7.0	6.5	6.5	7	12	* 19	255	200	101	21	17
6	3.5	6.7	6	6.5	7.5	13	18	210	208	97	18	17
7	* 3.8	7.0	5	6.5	8	13	19	192	* 260	86	17	24
8	4.0	7.0	* 5.5	6	8	13	19	198	292	82	16	30
9	4.0	7.0	6	5.5	8	* 13	24	164	283	72	15	28
10	4.0	7.0	6	5.5	* 7.5	14	23	142	268	63	15	25
11	4.0	7.6	6.7	* 5.5	7	14	21	* 133	283	69	* 14	24
12	6.4	7.0	6	6	7	14	19	151	302	72	13	22
13	6.4	8.2	5.5	5.5	6.5	14	20	164	326	* 69	13	21
14	4.5	7.6	6	5	7	14	23	172	323	62	13	19
15	4.5	7.9	6	5	7	14	30	162	302	59	12	19
16	4.2	8.5	6.5	5.5	7	14	42	149	286	64	13	18
17	4.2	7.9	7	5.5	7.5	14	47	186	277	61	11	18
18	4.2	7.3	6.5	5.5	8	13	51	245	271	59	16	22
19	4.0	7.3	6.5	5.5	9	12	64	277	271	58	16	28
20	3.8	7	6.5	5	10	12	111	312	252	50	13	31
21	4.2	6.5	6.5	5.5	11	13	151	346	* 228	51	13	29
22	4.2	6	7	6	10	14	* 164	354	212	43	13	27
23	4.2	6.5	7	6	9.5	15	170	362	186	38	11	27
24	4.2	7	7	6	9	15	170	* 289	175	35	10	27
25	4.2	7	7	5.5	9.5	13	149	202	172	34	9.4	28
26	5.2	7.0	7	5	10	14	138	164	155	32	8.6	29
27	7.6	7	7	5	11	15	115	132	138	30	7.8	28
28	7.6	7	6.5	5.5	12	16	112	119	130	27	7.4	27
29	7.6	7.0	6	5.5	—	18	140	123	130	25	9.4	31
30	7.6	7	5.5	5.5	—	26	198	138	126	25	* 12	29
31	7.6	—	6	5.8	—	31	—	162	—	27	10	—
Total	147.5	215.2	199.0	174.3	228.5	445	2,201	6,637	6,858	1,946	448.6	698.6
Mean	4.76	7.17	6.42	5.62	8.16	14.4	73.4	214	229	62.8	14.5	23.3
Ac-ft	293	427	395	346	453	883	4,370	13,160	13,600	3,860	890	1,390

Calendar year 1964: Max 386 Min 3.5 Mean 33.1 Ac-ft 24,060  
 Water year 1964-65: Max 362 Min 3.5 Mean 55.3 Ac-ft 40,070

Peak discharge (base, 260 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-3	0230	4.50	350	6-14	0130	4.54	350
5-20	2245	4.70	402				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 20-25, 27, 28, 30, Dec. 3-10, 12-31, Jan. 1-28, Feb. 1 to Mar. 9, Mar. 11, 14, 15, 18-21, 23-26, Apr. 12, 13.

9-1306. West Muddy Creek near Ragged Mountain, Colo.

Location.--Lat 39°07'50", long 107°34'30", in NW¼ sec.5, T.11 S., R.91 W., on left bank 100 ft upstream from Gold Creek and 9½ miles northwest of Ragged Mountain.

Drainage area.--7.52 sq mi.

Records available.--October 1955 to September 1965 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 8,658 ft (from topographic map).

Average discharge.--10 years, 4.76 cfs (3,450 acre-ft per year).

Extremes.--Maximum discharge during year, 72 cfs May 4 (gage height, 4.07 ft); maximum gage height, 4.76 ft Apr. 22 (backwater from ice); minimum discharge not determined.

1955-65: Maximum discharge, about 260 cfs May 10, 1962 (gage height, 5.80 ft, from floodmark); no flow at times in 1956, 1959-60.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station.

Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 20 to Nov. 2, June 11 to July 10, July 27 to Aug. 15)

2.2	0.4	2.8	8.4
2.3	.7	3.0	14
2.4	1.3	3.5	35
2.5	2.4	4.0	62
2.6	3.9		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*0.6	0.6					1.5	36	23	7	6.7	1.0
2	.6	*.7					1.5	45	19	7	5.8	1.2
3	.6						1.4	46	19	7	5.0	1.6
4	.5						1.4	47	20	6.7	*3.8	2.2
5	.5						1.4	40	18	6.5	3.4	2.4
6	.5						1.3	28	18	5.8	2.8	2.8
7	.5						1.3	30	22	5.2	2.6	2.4
8	.5						1.3	24	*21	6.0	2.3	2.0
9	.5						1.3	20	20	6.2	2.1	1.6
10	.5						1.3	20	20	5.0	1.7	*1.4
11	.5						1.3	25	22	6.2	1.7	1.1
12	.6						1.3	32	31	7.2	1.7	1.2
13	.5						*1.3	40	27	5.8	1.6	1.1
14	.6						1.6	32	26	4.5	2.2	.9
15	.6						2.0	32	27	3.6	2.3	.9
16	.6	.7	0.6	0.5	0.6	1	3.0	37	27	3.2	1.7	.8
17	.6						5	41	26	4.5	2.7	.9
18	.6						6	41	22	6.0	3.3	2.4
19	.6						7	41	24	5.4	3.0	5.2
20	.6						10	*44	22	4.3	2.2	3.3
21	.6						13	42	22	*4.1	1.7	2.6
22	.6						15	40	20	3.4	1.7	2.4
23	.6						13	36	*18	3.2	1.4	2.2
24	.6						12	27	19	2.8	1.1	2.4
25	.6						11	23	20	6.0	1.0	2.4
26	.6						10	23	14	3.6	.9	2.6
27	.6						9	22	12	3.9	.7	2.6
28	.6						8.5	18	10	3.4	.7	2.6
29	.6						9	16	8	3.6	1.1	2.2
30	.6						20	17	7	7.2	1.6	1.7
31	.6							21		8.4	1.1	
Total	17.7	20.9	18.6	15.5	16.8	31	172.7	986	604	162.7	71.6	60.1
Mean	0.57	0.70	0.6	0.5	0.6	1	5.76	31.8	20.1	5.25	2.31	2.00
Ac-ft	35	41	37	31	33	61	343	1,960	1,200	323	142	119

Calendar year 1964: Max 81 Min - Mean 4.12 Ac-ft 2,980  
Water year 1964-65: Max 47 Min - Mean 5.97 Ac-ft 4,320

Peak discharge (base, 40 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-4	1730	4.07	72	6-12	0230	3.52	42
5-13	1700	3.88	60	7-30	1945	3.59	44
5-17	1830	3.90	61				

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 2 to Apr. 13 (stage-discharge relation affected by ice during most of period), June 27 to July 3, Sept. 1-10, 21-30. Stage-discharge relation affected by ice Apr. 14-30.

## GUNNISON RIVER BASIN

9-1312. West Muddy Creek near Somerset, Colo.

Location.--Lat 39°05'25", long 107°30'15", in N½ sec.24, T.11 S., R.91 W., on right bank 300 ft downstream from Cow Creek, 1½ miles southeast of West Muddy ranger station, and 13 miles north of Somerset.

Drainage area.--50.1 sq mi.

Records available.--October 1961 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 8,020 ft (from topographic map).

Extremes.--Maximum discharge during year, 545 cfs May 5 (gage height, 2.45 ft); minimum not determined.

1961-65: Maximum discharge, about 900 cfs May 11, 1962 (gage height not determined); minimum daily, 0.1 cfs Aug. 1, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Small diversions above station for irrigation of hay meadows. Some regulation by Overland Reservoir (capacity, 6,280 acre-ft) on Cow Creek above station. Diversion above station for use outside Muddy Creek drainage by Overland ditch.

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.0	1.0	0.8	29
.2	3.0	1.0	54
.3	4.5	1.2	90
.4	6.5	1.5	165
.5	9.5	2.0	335
.6	14	2.5	580

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 3.8	1.6					3.2	288	122	53	18	5.3
2	3.0	* 1.6					3.2	348	100	59	16	5.7
3	2.7	1.6					3.0	335	100	68	14	7.4
4	3.0	1.4					3.0	358	96	70	* 14	8.3
5	2.7	1.2					3.0	307	88	68	13	8.6
6	2.7	1.2				1	2.8	222	90	67	9.5	1.2
7	2.7	1.2					2.8	219	100	57	8.0	8.9
8	2.6	1.4					2.8	189	* 90	43	7.1	7.7
9	2.7	1.6					2.8	135	86	54	6.5	6.8
10	2.7	1.6					2.8	144	80	40	5.9	* 5.9
11	2.8	1.4					2.8	174	94	41	5.5	5.3
12	2.4	1.2					2.8	204	168	51	5.9	5.3
13	2.1	1.2					2.8	264	122	47	5.1	5.1
14	2.2	1.4					3.0	228	108	47	6.5	4.7
15	2.6	1.4					* 3.4	204	96	41	8.0	4.4
16	2.2	1.4	0.8	0.8	0.8	2	b 4.4	236	86	20	5.5	4.7
17	1.5	1.4					b 6	299	70	14	6.3	4.5
18	1.4	1.4					8.6	327	64	23	10	7.4
19	1.3	1.2					12	371	56	20	12	20
20	1.3	1.0					19	395	51	16	7.4	14
21	1.3	1.0					30	395	47	* 14	5.7	12
22	1.5	1.0					54	390	43	10	5.7	16
23	2.0	1.2					70	348	* 39	8.6	5.5	24
24	1.5	1.2					84	270	108	8.3	5.1	23
25	1.4	1.2					90	198	195	14	4.7	23
26	1.4	1.2				3	82	122	195	12	4.4	25
27	1.3	1.2					59	120	115	9.2	4.4	27
28	1.4	1.0					64	106	74	9.2	4.4	29
29	1.5	1.0					102	100	59	6.5	4.7	36
30	2.1	1.0					174	106	51	8.3	7.1	32
31	2.0							112		25	5.7	
Total	65.8	38.4	24.8	24.8	22.4	63	903.2	7,514	2,793	1,024.1	241.6	399.0
Mean	2.12	1.28	0.8	0.8	0.8	2.0	30.1	242	93.1	33.0	7.79	13.3
Ac-ft	131	76	49	49	44	125	1,790	14,900	5,540	2,030	479	791

Calendar year 1964: Max 351 Min - Mean 18.4 Ac-ft 13,370

Water year 1964-65: Max 395 Min - Mean 35.9 Ac-ft 26,000

Peak discharge (base, 250 cfs).--May 5 (1830) 545 cfs (2.45 ft); May 20 (2030) 525 cfs (2.41 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 2 to Apr. 15 (stage-discharge relation affected by ice during most of period).

9-1325, North Fork Gunnison River near Somerset, Colo.

Location.--Lat 38°55'45", long 107°26'55", in sec.9, T.13 S., R.90 W., on right bank 1½ miles east of Somerset and 4 miles upstream from Hubbard Creek.

Drainage area.--521 sq mi.

Records available.--October 1933 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 6,038.6 ft above mean sea level, datum of 1929.

Average discharge.--32 years, 435 cfs (314,900 acre-ft per year).

Extremes.--Maximum discharge during year, 4,440 cfs May 22 (gage height, 4.84 ft); minimum daily, 32 cfs Feb. 18.

1933-65: Maximum discharge, 7,860 cfs June 4, 1957 (gage height, 6.14 ft); minimum daily, 17 cfs Nov. 10, 1950.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Natural flow of stream affected by small diversions for irrigation in nearby drainage areas, irrigation of about 3,000 acres above station, storage in Overland Reservoir (capacity, 6,280 acre-ft), and Paonia Reservoir (capacity, 18,300 acre-ft). Month-end contents of Paonia Reservoir are given below.

Month-end contents, water year October 1964 to September 1965

Date	Contents (acre-feet)	Date	Contents (acre-feet)
Sept. 30.....	9,510	Apr. 30.....	2,860
Oct. 31.....	3,530	May 31.....	12,080
Nov. 30.....	4,260	June 30.....	18,800
Dec. 31.....	4,550	July 31.....	18,570
Jan. 31.....	5,610	Aug. 31.....	18,370
Feb. 28.....	6,670	Sept. 30.....	17,920
Mar. 31.....	6,820		

Cooperation.--Records of contents of Paonia Reservoir furnished by North Fork Conservancy District.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 4-10, June 1 to Sept. 30)

0.2	27	0.9	155	2.5	1,050
.4	50	1.5	390	3.0	1,550
.6	80	2.0	670	4.6	4,000

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	179	40	53	50	35	55	173	2,170	1,490	1,360	544	158
2	176	40	65	50	34	50	192	2,880	1,420	1,510	495	161
3	173	40	54	50	34	50	224	2,900	1,490	1,550	440	248
4	170	40	50	55	34	55	260	2,840	1,470	1,490	415	260
5	170	* 40	46	55	36	55	* 244	2,580	1,360	1,450	390	276
6	170	40	46	77	42	55	* 248	2,280	1,530	1,410	354	358
7	170	40	46	64	41	55	264	2,200	2,180	1,360	332	284
8	* 170	40	* 46	54	38	55	280	2,220	2,500	1,300	300	260
9	176	45	55	56	36	* 55	332	1,900	* 2,440	1,180	280	236
10	176	66	66	55	* 35	62	332	1,830	2,170	1,140	260	164
11	173	72	59	60	33	62	318	1,600	2,220	1,240	* 256	216
12	173	70	55	* 53	34	65	304	* 1,470	2,700	1,380	236	213
13	173	72	55	46	34	70	318	1,700	2,400	* 1,210	232	213
14	170	71	50	53	35	70	345	1,660	2,530	1,060	264	210
15	170	71	50	49	37	66	415	1,500	* 2,640	960	248	210
16	170	72	50	49	34	71	544	1,580	2,580	934	224	205
17	170	72	50	50	34	74	610	1,980	2,540	1,060	210	202
18	170	70	50	50	32	76	634	2,460	2,470	934	280	228
19	167	60	54	50	34	70	688	2,830	2,500	886	350	272
20	170	44	54	50	36	68	934	3,030	2,520	807	264	280
21	170	50	52	50	40	80	* 1,250	2,940	* 2,500	878	228	268
22	170	55	50	52	45	74	1,870	3,880	2,260	730	224	256
23	170	62	52	38	44	71	1,950	3,920	2,060	652	220	256
24	170	60	66	36	40	40	1,980	3,360	2,050	622	228	268
25	50	74	68	38	38	44	1,810	* 2,530	2,120	646	244	276
26	40	70	56	36	42	40	1,570	1,880	1,770	634	244	268
27	40	62	58	34	46	41	1,250	1,670	1,540	562	232	272
28	40	64	60	38	64	50	1,140	1,550	1,520	506	228	272
29	40	62	54	35	-	40	1,330	1,540	1,570	456	256	284
30	40	60	50	35	-----	80	1,590	1,440	1,520	435	* 304	288
31	40	-----	50	36	-----	120	-----	1,370	-----	522	182	-----
Total	4,406	1,724	1,670	1,504	1,067	1,919	23,399	69,690	62,060	30,864	8,964	7,363
Mean	142	57.5	53.9	48.5	38.1	61.9	780	2,248	2,069	996	289	245
Ac-ft	8,740	3,420	3,310	2,980	2,120	3,810	46,410	138,200	123,100	61,220	17,780	14,600

Calendar year 1964: Max 3,880 Min 26 Mean 372 Ac-ft 270,200  
 Water year 1964-65: Max 3,920 Min 32 Mean 588 Ac-ft 425,700

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 5-8, 25-31, Nov. 1-9. Stage-discharge relation affected by ice Nov. 21, 22, 30, Dec. 4, 6-9, 12-18, 30, 31, Jan. 1-5, 10, 13, 17-21, 23, 24, 27, Feb. 2-5, 12, 13, 16-21, 24-27, Mar. 1-9 (no gage-height record Mar. 6-8).

## GUNNISON RIVER BASIN

9-1327. Hubbard Creek near Paonia, Colo.

Location.--Lat 39°03'25", long 107°37'40", in NE¼ sec.35, T.11 S., R.92 W., on left bank 100 ft upstream from Overland ditch crossing, 2 miles southwest of Hubbard Park, and 13 miles north of Paonia.

Drainage area.--1.24 sq mi.

Records available.--October 1960 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 9,710 ft (from topographic map).

Average discharge.--5 years, 1.68 cfs (1,220 acre-ft per year).

Extremes.--Maximum discharge, 24 cfs June 17 (gage height, 3.34 ft); maximum gage height, 4.77 ft May 1 (backwater from ice); minimum discharge not determined.

1960-65: Maximum discharge, 24 cfs May 6, 1963, June 17, 1965; maximum gage height, 4.77 ft May 1, 1965 (backwater from ice); minimum daily discharge determined, 0.1 cfs Oct. 1-8, 1961, many days in September to December 1963, January to March 1964, and February 1965.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.2	0.1	2.7	1.7
2.3	.2	2.8	3.0
2.4	.3	3.0	8.5
2.5	.4	3.2	18
2.6	.9		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.3							b 3.0	8.2	* 8.5	2.9	0.4
2	.3							b 5	* 7.0	9.4	4.2	* .4
3	.3							3.7	8.5	9.0	2.9	.9
4	.3							3.2	8.2	9.0	2.1	.8
5	.3							2.1	7.3	9.4	1.6	.9
6	.3							1.3	9.8	10	1.4	1.5
7	.3							1.2	12	10	1.2	.7
8	.3	0.3					0.3	1.1	13	11	1.0	.5
9	.3							.9	11	11	.9	.4
10	.3							.9	10	9.4	.9	.4
11	.3							1.0	9.4	13	.9	.4
12	.3							1.3	11	13	* 1.0	.4
13	.2							1.3	13	10	.9	.4
14	* .2						(*)	1.2	16	8.2	.8	.3
15	.3		0.2	0.2	0.1	0.2		1.1	16	7.3	1.1	.3
16	.3							2.0	* 16	7.6	1.4	.4
17	.3							5.7	17	7.3	1.5	.4
18	.3							7.0	14	6.6	1.5	.6
19	.2							8.2	13	5.4	1.0	.7
20	.2							9.8	13	4.9	.8	.6
21	.3							11	12	4.7	.7	.9
22	.3	.2						12	11	3.2	.6	.7
23	.3						.4	9.8	12	* 2.7	.7	.9
24	.3							6.6	14	2.4	.4	1.5
25	.3							4.4	13	6.6	.4	1.6
26	.2							2.9	9.8	2.7	.4	2.0
27	.2							2.1	7.9	2.5	.3	1.7
28	.3							1.8	6.2	2.0	.3	1.7
29	.3							2.6	8.5	1.6	.7	1.4
30	.3							5.2	7.6	2.2	.8	1.4
31	.3							9.0		3.0	.4	
Total	8.7	7.5	6.2	6.2	2.8	6.2	10.5	128.4	335.4	213.6	35.7	25.2
Mean	0.28	0.25	0.2	0.2	0.1	0.2	0.35	4.14	11.2	6.89	1.15	0.84
Ac-ft	17	15	12	12	5.6	12	21	255	665	424	71	50

Calendar year 1964: Max 13 Min - Mean 1.33 Ac-ft 968  
 Water year 1964-65: Max 17 Min - Mean 2.15 Ac-ft 1,560

Peak discharge (base, 20 cfs).--June 17 (1530) 24 cfs (3.34 ft); July 25 (0015) 22 cfs (3.24 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 13, 14, 19-30, Apr. 29, 30, May 1, 2. No gage-height record Nov. 1 to Apr. 28 (stage-discharge relation affected by ice during most of period).

9-1328. Middle Hubbard Creek near Paonia, Colo.

Location.--Lat 39°02'55", long 107°37'10", in SW $\frac{1}{4}$  sec.36, T.11 S., R.92 W., on left bank 100 ft upstream from Overland ditch crossing, 2 miles southwest of Hubbard Park, and 12 miles north of Paonia.

Drainage area.--1.65 sq mi.

Records available.--October 1960 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 9,650 ft (from topographic map).

Average discharge.--5 years 1.80 cfs (1,300 acre-ft per year).

Extremes.--Maximum discharge during year, 33 cfs June 24 (gage height, 4.02 ft); minimum daily determined, 0.1 cfs for many days.  
1960-65: Maximum discharge, 36 cfs June 21, 1962 (gage height, 4.10 ft); maximum gage height, 4.67 ft May 21, 1964 (backwater from ice); minimum daily discharge determined, 0.1 cfs for many days in each year.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

2.9	0.3	3.3	3.1
3.0	.7	3.5	6.8
3.1	1.2	3.8	18
3.2	2.0	4.0	29

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4							3.4	5.0	* 1.3	4.1	0.6
2	.4							5.0	*4.4	1.4	5.4	* .5
3	.3							4.0	6.0	1.1	4.0	1.2
4	.3							3.0	5.8	1.0	2.9	1.2
5	.3							2.0	5.4	1.1	2.2	1.3
6	.3							1.4	6.8	1.1	2.0	1.7
7	.3							1.2	9.7	1.1	1.8	1.0
8	.3						0.3	1.0	10	1.6	1.5	.8
9	.3							.8	9.7	1.1	1.4	.8
10	.3							.8	8.4	1.0	1.6	.6
11	.3							1.0	7.8	1.7	1.7	.6
12	.3							1.2	8.4	1.6	* 1.3	.5
13	.3	(*)	-					1.2	11	1.1	1.2	.5
14	* .5						(*)	1.2	15	8.4	1.0	.5
15	.4							1.0	18	6.8	1.4	.4
16	.4	0.2	0.2	0.2	0.1	0.2		2.4	* 1.8	7.1	1.9	.4
17	.4							4.0	1.8	6.4	1.6	.4
18	.4							5	1.8	5.6	1.8	.6
19	.4							6	1.8	5.2	1.3	.8
20	.4							7	2.0	4.3	1.0	.8
21	.4							7.5	1.9	3.8	1.0	1.0
22	.4							8	2.0	3.1	1.0	.8
23	.4						6	6	2.0	* 2.9	.8	1.0
24	.4							5	2.3	2.9	.7	1.5
25	.4							4.0	2.2	7.1	.7	1.5
26	.4							3.0	1.4	3.1	.6	1.7
27	.4							2.4	1.2	2.9	.5	1.7
28	.4							2.0	1.2	2.6	.5	1.8
29	.4							2.6	1.3	2.2	1.0	1.4
30	.5							4.0	1.1	2.7	1.1	1.2
31	.4							5.5		3.4	.8	
Total	11.3	6.0	6.2	6.2	2.8	6.2	13.5	102.6	389.4	242.5	49.8	28.8
Mean	0.36	0.2	0.2	0.2	0.1	0.2	0.45	3.31	13.0	7.82	1.61	0.96
Ac-ft	22	12	12	12	5.6	12	27	204	772	481	99	57

Calendar year 1964: Max 13 Min - Mean 1.45 Ac-ft 1,050  
Water year 1964-65: Max 23 Min - Mean 2.37 Ac-ft 1,720

Peak discharge (base, 20 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-15	1730	3.96	27	7- 8	1900	3.92	29
6-24	1630	4.02	33	7-11	0230	3.95	31
7- 1	1800	3.83	22	7-25	0100	3.88	27

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 25-29, 31, Nov. 1-5. No gage-height record Nov. 6 to June 2 (stage-discharge relation affected by ice during part of period).

## GUNNISON RIVER BASIN

9-1329. West Hubbard Creek near Paonia, Colo.

Location.--Lat 39°01'55", long 107°36'50", in SE¼ sec.1, T.12 S., R.92 W., on left bank 75 ft upstream from Overland ditch crossing, 3 miles south of Hubbard Park, and 11 miles north of Paonia.

Drainage area.--2.59 sq mi.

Records available.--October 1960 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 9,640 ft (from topographic map).

Average discharge.--5 years, 3.52 cfs (2,550 acre-ft per year).

Extremes.--Maximum discharge during year, 52 cfs July 8; maximum gage height, 4.35 ft June 15; minimum discharge not determined. 1960-65: Maximum discharge, that of July 8, 1965; maximum gage height, that of June 15, 1965; minimum daily discharge determined, 0.1 cfs Apr. 4, 8, 1964.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 12-24)

2.7	0.2	3.2	4.8
2.8	.5	3.4	11
2.9	1.0	3.7	23
3.0	1.8	4.0	38
3.1	3.0		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.8						0.5	5	16	* 24	7.3	1.4
2	.8						.5	9	* 14	26	14	* 1.3
3	.8						.4	7	12	23	9.3	2.4
4	.8						.4	6	16	21	6.5	2.4
5	.8						.4	5	15	21	5.1	2.6
6	.8						.4	2.6	19	21	4.4	3.5
7	.7						.4	2.2	23	21	4.1	2.2
8	.7						.4	2.0	26	32	3.5	1.8
9	.7						.4	1.8	23	27	3.4	1.7
10	.7						.4	1.6	21	20	3.4	1.5
11	.6						.4	1.8	19	32	3.2	1.5
12	.6						.3	2.2	20	28	* 2.8	1.5
13	.6	(*)					.3	2.4	27	21	2.8	1.4
14	* .6						* .3	2.2	31	17	2.8	1.3
15	.6						.4	2.0	36	14	3.0	1.3
16	.6	0.4	0.4	0.3	0.3	0.4	.5	3.0	* 32	13	3.7	.9
17	.6						.5	10	34	12	3.2	.9
18	.6						.4	14	31	11	3.4	1.6
19	.8						.5	16	34	9.3	2.6	1.9
20	.8						1.1	18	34	8.3	2.4	1.7
21	.8						1.6	22	32	7.3	2.4	1.6
22	.8						1.7	24	32	6.5	2.0	1.6
23	.5						1.8	18	32	* 6.2	2.0	2.0
24	.6						1.8	12	36	6.6	1.7	2.5
25	.6						1.6	10	34	13	1.6	2.6
26	.6						1.7	7	26	6.8	1.6	2.8
27	.7						1.5	5	22	5.9	1.4	2.9
28	.6						1.3	4	22	5.4	1.3	1.9
29	.5						1.8	5	23	4.6	1.8	2.6
30	.6						3.0	8	22	5.1	2.0	2.4
31	.5							16		5.4	1.6	
Total	20.8	12.0	12.4	9.3	8.4	12.4	26.7	244.8	764	474.4	110.3	57.7
Mean	0.67	0.4	0.4	0.3	0.3	0.4	0.89	7.90	25.5	15.3	3.56	1.92
Ac-ft	41	24	25	18	17	25	53	486	1,520	941	219	114

Calendar year 1964: Max 30 Min - Mean 2.98 Ac-ft 2,160  
 Water year 1964-65: Max 36 Min - Mean 4.80 Ac-ft 3,480

Peak discharge (base, 40 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-15	1630	4.35	48	7-25	0015	4.04	42
7-8	1900	4.25	52	8-2	1630	4.00	40
7-11	0200	4.17	48				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 25-28, 31, Nov. 1, 2. No gage-height record Nov. 3 to Apr. 14 (stage-discharge relation affected by ice during part of period), Apr. 29 to June 2.



9-1345. Leroux Creek near Cedaredge, Colo.

Location.--Lat 38°55'35", long 107°47'35", in NW¼ sec.16, T.13 S., R.93 W., on right bank 200 ft upstream from headgate of Overland ditch, 400 ft upstream from Cow Creek, and 7 miles northeast of Cedaredge.

Drainage area.--35.1 sq mi.

Records available.--October 1936 to September 1956, October 1960 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 7,160 ft (by barometer).

Average discharge.--25 years, 47.6 cfs (34,460 acre-ft per year).

Extremes.--Maximum discharge during year, 680 cfs May 21 (gage height, 3.99 ft); minimum not determined.

1936-56, 1960-65: Maximum discharge, 1,310 cfs May 26, 1942 (gage height, 4.95 ft), from rating curve extended above 650 cfs; maximum gage height, 5.10 ft May 10, 1937 (backwater from diversion dam); minimum daily discharge, 1.8 cfs Nov. 10, 1950.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. One small diversion and several small reservoirs above station for irrigation below.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Dec. 7-10, May 2-20, June 16 to July 2)

0.7	2	1.6	43
.8	4	1.9	90
1.0	8	2.4	200
1.2	15	3.0	360
1.4	26	3.5	520

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	8.6	6.6	4.2		4.0	7.2	162	270	85	59	28
2	16	9.5	7.0	4.0		4.0	6.2	205	255	86	61	28
3	16	9.8	6.8	4.0		4.0	5.4	202	298	79	61	36
4	16	8.6	b 6	4.0		4.0	5.2	192	275	72	51	35
5	16	*b 6	b 6	3.8		4.0	4.6	170	272	69	44	37
6	15	b 6	b 6	3.8		4.0	* 4.8	94	306	66	38	47
7	* 15	b 7	* 6.6	3.8		4.0	4.8	76	* 333	64	32	34
8	13	b 8	6.6	3.8		* 4.0	4.6	77	333	85	29	32
9	13	b 8	6.6	3.8	(*)	b 4.0	5.0	59	292	88	30	32
10	11	8.9	7.0	3.8		3.6	b 5	59	262	77	* 38	28
11	10	6.4	7.0	3.8		3.6	b 5	90	235	88	39	30
12	8.3	b 7	6.8	* 3.8		3.6	b 5	* 142	268	106	39	31
13	7.8	b 7	6.2	3.8		3.6	b 5	210	268	92	38	30
14	8.0	b 8	6.2	3.6		3.6	b 5.5	160	288	76	44	31
15	9.5	b 8	6.0	3.8		3.8	b 6.5	122	303	* 59	48	35
16	9.2	8.6	6.0	3.8	4	3.8	b 8.5	195	278	52	52	37
17	9.5	8.3	5.6	3.8		3.6	9.2	285	250	47	48	37
18	8.3	b 8	5.6	3.8		b 3.6	8.9	306	235	44	55	40
19	7.8	b 7	5.8	3.8		b 3.6	12	363	225	39	47	44
20	9.2	b 6	5.8	3.8		b 4.0	27	393	212	35	43	40
21	9.2	b 6	5.6	3.8		4.0	47	441	198	38	42	32
22	9.5	b 6	5.4	3.6		3.6	* 58	471	* 182	37	42	32
23	10	b 7	5.4	3.6		3.6	66	381	162	32	39	38
24	10	b 7	5.6	3.6		3.8	74	252	182	39	31	51
25	9.5	6.4	4.8	3.6		4.0	74	* 195	182	67	29	53
26	9.5	6.4	5.0	3.8		3.8	67	142	142	50	38	55
27	11	b 6	4.4	4.0		3.8	53	118	112	43	36	43
28	11	b 6	4.0	4.0		3.8	53	116	98	41	36	42
29	10	6.8	4.6	4.0	-	4.2	79	150	86	38	39	40
30	10	7.0	4.6	4.0		4.8	118	222	93	53	43	36
31	9.5	-----	4.2	4.0	-----	6.2	-----	295	-----	66	* 32	-----
Total	343.8	219.3	179.8	118.8	112	122.0	834.4	6345	6885	1913	1303	1114
Mean	11.1	7.31	5.80	3.83	4	3.94	27.8	205	230	61.7	42.0	37.1
Ac-ft	682	435	357	236	222	242	1,660	12,590	13,660	3,790	2,580	2,210

Calendar year 1964: Max 710 Min 2.0 Mean 39.2 Ac-ft 28,420  
Water year 1964-65: Max 471 Min - Mean 53.4 Ac-ft 38,660

Peak discharge (base, 600 cfs).--May 21 (1900) 680 cfs (3.99 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Jan. 27 to Mar. 8 (stage-discharge relation affected by ice during part of period).

## GUNNISON RIVER BASIN

9-1347. Cow Creek near Cedaredge, Colo.

Location.--Lat 38°55'35", long 107°47'25", in N½ sec.16, T.13 S., R.93 W., on right bank at mouth 300 ft upstream from Overland ditch diversion headgate and 7 miles northeast of Cedaredge.

Drainage area.--6.90 sq mi.

Records available.--October 1960 to September 1965.

Gage.--Water-stage recorder.

Average discharge.--5 years, 12.2 cfs (8,830 acre-ft per year).

Extremes.--Maximum discharge during year, 232 cfs May 17 (gage height, 3.29 ft), from rating curve extended above 61 cfs; no flow for many days.

1960-65: Maximum discharge, about 350 cfs May 17, 1964 (gage height, 4.20 ft, backwater from debris); no flow for many days in most years.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Natural flow of stream affected by one small diversion above station to Dever Creek drainage. Most of flow is water imported by Overland ditch from Overland Reservoir (capacity, 6,280 acre-ft) in West Muddy Creek drainage. Overland ditch also intercepts intermediate tributaries to North Fork Gunnison River during high flows.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 28 to June 25)

1.3	0	2.3	13
1.4	.2	2.5	23
1.5	.5	2.6	33
1.6	1.0	2.8	70
2.0	5.0	3.0	130

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1						0	0.5	61	15	5.6	55	40
2						0	.5	73	11	5.6	59	40
3						0	.5	46	7.9	4.1	52	45
4						0	.5	45	6.4	2.7	46	48
5		(*)				0	.5	30	5.2	2.6	46	55
6						0	* .6	30	4.7	2.6	45	48
7	(*)		(*)			0	1.3	16	* 4.1	3.0	39	48
8						* 0	1.3	16	4.7	4.0	45	48
9					(*)	0	1.3	14	4.7	6.2	45	46
10						0	1.1	14	9.1	3.0	* 46	46
11						0	1.0	32	9.4	20	46	46
12				(*)		0	.9	* 57	20	30	45	48
13						0	1.1	66	16	* 26	45	46
14						0	1.9	44	15	33	46	45
15						0	3.2	38	18	39	50	44
16						0	4.9	59	17	45	50	40
17						0	6.8	104	14	50	48	38
18						0	6.0	84	12	46	55	45
19						0	8.8	87	13	42	46	46
20						0	12	87	12	40	44	44
21						0	14	101	11	36	42	44
22						0	* 12	92	* 11	32	42	28
23						0	15	76	11	30	39	14
24						0	14	* 33	11	29	44	13
25						0	14	20	12	48	42	11
26						0	14	17	10	42	42	4.2
27						0	12	16	11	45	40	1.0
28						.1	13	16	9.7	45	40	0
29					-	.2	21	19	8.8	44	40	0
30					-----	.3	34	19	6.2	57	36	0
31		-----			-----	.4	-----	24	-----	52	* 42	-----
Total	0	0	0	0	0	1.0	217.7	1,436	320.9	870.4	1,402	1,021.2
Mean	0	0	0	0	0	0.03	7.26	46.3	10.7	28.1	45.2	34.0
Ac-ft	0	0	0	0	0	2.0	432	2,850	636	1,730	2,780	2,030

Calendar year 1964: Max 84 Min 0 Mean 11.1 Ac-ft 8,050

Water year 1964-65: Max 104 Min 0 Mean 14.4 Ac-ft 10,460

\* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record Nov. 5 to Apr. 6 (stage-discharge relation affected by ice part of period), May 5-11, July 5-8, Sept. 27.

9-1362. Gunnison River near Lazear, Colo.

Location.--Lat 38°47'00", long 107°50'15", in NE¼ sec.1, T.15 S., R.94 W., on left bank 300 ft downstream from North Fork Gunnison River and 3 miles west of Lazear.

Drainage area.--5,260 sq mi, approximately.

Records available.--May 1962 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 5,090 ft (from topographic map).

Extremes.--Maximum discharge during year, 12,900 cfs June 21 (gage height, 5.83 ft); minimum daily, 208 cfs Oct. 25, 26.  
1962-65: Maximum discharge, 14,800 cfs May 13, 1962 (gage height, 6.30 ft); minimum daily, 115 cfs Oct. 6, 1963.

Remarks.--Records good except those for periods of ice effect, which are poor. Natural flow of stream affected by transmountain and transbasin diversions, storage reservoirs, and diversions for irrigation of about 150,000 acres, part of which is in the Uncompahgre River basin.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 18 to May 15)

1.0	200	3.5	3,500
1.4	410	4.0	5,100
2.0	960	5.0	9,000
3.0	2,460	6.0	13,500

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	308	236	700	b 500	650	*560	1,380	6,840	5,520	7,280	3,830	1,140
2	285	240	700	b 520	587	544	1,470	8,240	5,590	7,400	3,860	996
3	270	240	790	b 560	536	520	1,400	9,360	5,880	7,880	3,770	1,170
4	265	240	720	587	520	466	1,310	10,100	6,280	7,800	3,310	1,420
5	260	* 232	614	660	* 544	496	* 1,200	9,500	5,960	7,720	3,000	1,300
6	250	224	b 400	670	587	520	1,220	7,800	5,840	7,520	2,620	1,420
7	* 250	260	*b 360	680	614	512	1,200	6,440	* 7,120	7,520	2,280	1,920
8	250	280	362	710	614	520	1,170	6,200	8,560	7,520	2,040	1,560
9	260	290	417	690	587	536	1,480	5,280	9,180	7,600	1,830	1,500
10	265	302	544	650	560	536	1,690	4,820	8,920	6,880	1,580	1,400
11	260	326	614	587	552	552	1,520	* 4,470	9,680	6,600	* 1,500	1,280
12	275	362	614	* 605	520	560	1,350	4,310	10,500	8,000	1,400	1,210
13	280	362	b 600	614	b 460	578	1,450	5,200	10,400	8,280	1,240	1,170
14	285	374	b 550	578	b 460	587	1,620	5,480	10,900	* 7,120	1,280	1,090
15	290	410	b 600	587	b 500	578	1,750	4,920	10,800	6,160	1,370	1,030
16	245	760	b 620	596	b 520	578	1,960	4,720	11,300	5,450	1,310	1,510
17	270	830	b 640	578	b 520	578	2,160	5,880	11,400	5,730	1,280	894
18	265	820	b 640	544	b 500	578	2,570	7,240	11,400	5,480	1,330	1,060
19	250	780	632	536	b 500	544	3,170	8,320	11,800	5,660	1,780	1,380
20	250	670	632	544	b 500	512	3,890	9,540	12,100	5,450	1,750	1,810
21	240	596	690	569	b 520	520	5,200	10,600	* 12,500	5,240	1,440	1,990
22	240	632	670	578	544	587	* 6,320	11,900	12,000	4,890	1,290	1,700
23	236	650	650	b 540	536	623	6,520	12,500	11,300	4,680	1,240	1,450
24	220	670	760	b 520	528	670	6,760	* 10,600	10,900	4,580	1,090	1,470
25	208	710	830	b 500	496	623	6,080	8,560	11,000	4,680	949	1,600
26	208	790	770	*b 540	488	587	5,700	7,120	9,760	4,780	830	1,600
27	220	790	720	552	504	614	4,470	6,120	8,200	4,440	730	1,580
28	224	700	820	560	544	720	3,950	5,280	7,800	4,160	641	1,520
29	228	710	700	544	-	927	4,250	4,540	7,840	3,560	760	1,500
30	232	760	b 550	587	-----	1,070	5,170	4,470	8,080	3,240	* 1,210	1,580
31	236	-----	b 460	623	-----	1,210	-----	4,640	-----	3,330	1,370	-----
Total	7,825	15,246	19,369	18,109	14,991	19,006	89,380	220,990	277,510	186,630	53,910	42,250
Mean	252	508	625	584	535	613	2,979	7,129	9,250	6,020	1,739	1,408
Ac-ft	15,320	30,240	38,420	35,920	29,730	37,700	177,300	438,300	550,400	370,200	106,900	83,800

Calendar year 1964: Max 10,800 Min 208 Mean 1,209 Ac-ft 875,000  
Water year 1964-65: Max 12,500 Min 208 Mean 2,644 Ac-ft 1,914,000

\* Discharge measurement made on this day.  
b Stage-discharge relation affected by ice.

## GUNNISON RIVER BASIN

9-1378. George Creek near Grand Mesa, Colo.

Location.--Lat 38°57', long 108°02', in NW¼ sec.5, T.13 S., R.95 W., on left bank 200 ft upstream from falls on Cedar Park ditch, 3½ miles upstream from confluence with Sara Creek, 7½ miles northwest of Cedaredge, and 8 miles southwest of Grand Mesa.

Drainage area.--8.3 sq mi, approximately.

Records available.--October 1957 to September 1965.

Gage.--Water-stage recorder.

Average discharge.--8 years, 6.53 cfs (4,730 acre-ft per year).

Extremes.--Maximum discharge during year, 86 cfs May 1 (gage height, 2.08 ft), from rating curve extended above 33 cfs; minimum not determined.

1957-65: Maximum discharge, that of May 1, 1965; maximum gage height, 3.02 ft Aug. 4, 1964 (backwater from debris); minimum discharge not determined.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by storage reservoirs, diversions above station for municipal water supply of town of Delta, and three small diversions above station for irrigation below.

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.7	1.3	1.2	12
.8	2.4	1.4	23
.9	3.8	1.7	47
1.0	5.8		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.4	2.3					1.8	34	* 26	11	10	* 6.7
2	4.6	2.3					1.6	42	24	10	10	7.3
3	4.4	2.4					1.4	41	29	9.4	9.5	8.5
4	4.4	b 2.2					1.2	34	31	8.8	9	7.3
5	4.2	b 2.0					1.2	24	29	8.2	8.8	8.2
6	4.2	b 1.6					* 1.2	16	31	7.9	7.6	9.1
7	4.2	2.0					1.3	14	32	7.3	7.0	8.5
8	4.4	2.0					1.4	14	30	7.6	7.0	9.8
9	4.0	2.0					1.6	11	28	8.5	7.0	10
10	4.0	1.8					1.4	10	25	8.5	7.3	7.6
11	4.0	1.8				1.0	1.7	12	27	9.4	7.6	7.9
12	4.0	* 1.8					1.2	15	41	9.8	7.6	7.6
13	* 3.8	1.6					1.4	20	37	9.8	* 7.3	7.3
14	3.8	1.6					3.0	17	34	9.1	7.6	7.0
15	3.7	1.4					4.8	14	* 32	8.8	7.6	6.7
16	3.4	1.4	1.4	1.4	1.2		5.2	16	30	8.5	8.2	6.7
17	3.4	1.4					6.4	26	28	9.1	8.2	6.1
18	3.4	1.4					5.6	36	26	11	10	9.4
19	3.4	1.4					10	39	24	10	8.5	10
20	3.4	1.2					19	42	22	9.8	8.2	8.8
21	3.4	1.4					22	45	20	9.4	7.3	7.6
22	3.2	1.4					19	44	18	9.8	7.6	7.6
23	3.2	1.4					20	42	17	9.4	7.6	8.5
24	3.2	1.4					16	32	20	10	6.7	10
25	3.2	1.4					16	24	18	11	6.4	9.8
26	3.2	1.4					11	* 23	16	11	6.1	9.1
27	3.4	1.4					7.0	22	14	10	6.1	8.5
28	3.4	1.4					7.3	24	12	9.4	6.1	7.0
29	3.4	1.6					9.8	24	11	9.1	7.9	7.3
30	3.2	1.4					19	22	* 10	9.4	7.9	7.0
31	3.0							23		9.5	7.0	
Total	114.9	49.8	43.4	43.4	33.6	33.2	219.5	802	742	290.5	240.7	242.9
Mean	3.71	1.66	1.4	1.4	1.2	1.1	7.32	25.9	24.7	9.37	7.76	8.10
Ac-ft	228	99	86	86	67	66	435	1,590	1,470	576	477	482

Calendar year 1964: Max 20 Min - Mean 4.49 Ac-ft 3,260  
 Water year 1964-65: Max 45 Min - Mean 7.82 Ac-ft 5,660

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 11 to Apr. 6 (stage-discharge relation affected by ice during most of period), June 15-30, July 31 to Aug. 4.

9-1392. Ward Creek near Grand Mesa, Colo.

Location--Lat 38°59', long 107°58', on line between secs.25 and 26, T.12 S., R.95 W., on left bank 300 ft upstream from headgate of Lake Fork and Surface Creek Canal, 3½ miles upstream from William Creek, 4½ miles south of Grand Mesa, and 6 miles northwest of Cedaredge.

Drainage area--14 sq mi, approximately.

Records available--October 1957 to September 1965.

Gage--Water-stage recorder. Prior to June 4, 1958, at site half a mile upstream at different datum.

Average discharge--8 years, 11.6 cfs (8,400 acre-ft per year).

Extremes--Maximum discharge during year, 64 cfs May 22 (gage height, 3.51 ft), from rating curve extended above 42 cfs; minimum not determined.

1957-65: Maximum discharge, about 150 cfs May 25, 1958; minimum daily determined, 0.7 cfs Apr. 3-10, 1964.

Remarks--Records good except those for periods of ice effect, or no gage-height record, which are poor. Flow regulated by numerous small storage reservoirs. At times water is exported from Hotel Lake above station to Baron Lake in Kiser Creek basin.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Aug. 30

Aug. 31 to Sept. 30

1.5	1.8	2.9	15	2.6	4.8	3.0	18
1.7	2.6	3.0	18	2.7	7	3.2	30
1.9	3.5	3.2	30	2.8	10		
2.2	5.3	3.5	58				
2.6	9						

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.2	1.4						14	* 28	24	28	26
2	5.4	* 1.3						17	29	24	29	26
3	5.2	8.3						17	31	24	29	26
4	5.2	8.2						17	30	23	29	25
5	5.2	8.2						14	30	23	29	26
6	4.4	8.2						9.9	33	31	29	25
7	4.6	8.2						* 9.2	46	31	29	24
8	4.6	8.2	(*)			1.3	3.5	8.8	* 43	35	28	26
9	5.9	8.2						8.1	46	35	27	26
10	8.2	8.2						7.7	43	33	* 27	25
11	7.8	8						8.6	40	33	26	25
12	7.5	8				(*)		11	49	* 32	31	25
13	* 6.1	8						13	47	30	30	25
14	6.2	8						11	43	29	30	25
15	6.1	8						11	43	29	30	25
16	6.4	8	1.6	1.4	1.3			3.6	39	30	30	25
17	6.9	8						3.8	37	32	30	26
18	6.9	8						5	23	35	30	27
19	7.2	8						6	25	34	30	28
20	7.9	8						10	32	32	30	27
21	8.1	8						12	42	30	30	25
22	12	6						11	49	* 29	30	19
23	12	5						11	50	29	31	30
24	14	3.6				2.0		9	50	31	32	29
25	14	3.4						7	43	31	33	28
26	14	2.6						6.5	* 36	29	32	26
27	17	2.2						6.5	33	28	32	26
28	18	2.1						* 7	32	26	32	26
29	20	1.9						8.3	33	24	32	26
30	19	1.7						10	37	24	32	26
31	14							41		29	* 26	
Total	285.0	209.2	49.6	43.4	36.4	51.5	169.2	734.3	1,039	943	884	801.5
Mean	9.19	6.97	1.6	1.4	1.3	1.7	5.64	23.7	34.6	30.4	28.5	20.0
Ac-ft	565	415	98	86	72	102	336	1,460	2,060	1,870	1,750	1,190

Calendar year 1964: Max 40 Min - Mean 10.0 Ac-ft 7,280  
 Water year 1964-65: Max 50 Min - Mean 13.8 Ac-ft 10,000

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4, 11-26. No gage-height record Dec. 1 to Apr. 28 (stage-discharge relation affected by ice during most of period), Aug. 26-31.

## GUNNISON RIVER BASIN

9-1402. Kiser Creek near Grand Mesa, Colo.

Location.--Lat 39°00', long 107°56', in N½ sec.19, T.12 S., R.94 W., on left bank a quarter of a mile upstream from unnamed tributary, 3½ miles south of Grand Mesa, 5½ miles upstream from Cottonwood Creek, and 7 miles northwest of Cedaredge.

Drainage area.--5.3 sq mi, approximately.

Records available.--October 1957 to September 1965.

Gage.--Water-stage recorder.

Average discharge.--8 years, 7.85 cfs (5,680 acre-ft per year).

Extremes.--Maximum discharge during year, 43 cfs Aug. 31 (gage height, 3.04 ft); minimum daily determined, 0.1 cfs for many days in November, January.

1957-65: Maximum discharge, 83 cfs June 7, 1958 (gage height, 3.40 ft); from rating curve extended above 33 cfs; maximum gage height, 4.59 ft Mar. 11, 1964 (backwater from ice); minimum daily discharge determined, 0.1 cfs for many days in 1963-65.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station. Flow regulated by numerous small storage reservoirs. At times water is imported from Hotel Lake in Ward Creek basin to Baron Lake above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 25, 26, Nov. 3-16, Apr. 1-12)

2.2	0.2	2.7	6.8
2.3	.4	2.8	12
2.4	1.0	2.9	18
2.5	2.0	3.0	27
2.6	3.8	3.1	41

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.4	0.4					0.5	10	8.9	6.2	14	40
2	8.4	* .3					.5	13	9.4	6.2	14	25
3	7.8	.3					.4	12	9.9	6.2	14	25
4	7.3	.3					.4	11	10	5.6	14	17
5	6.8	.4					.4	9.9	10	5.6	14	17
6	6.5	.4					.4	6.8	9.9	8.4	14	17
7	6.5	.3					* .4	* 6.8	9.9	10	11	14
8	* 6.2	.3	(*)				.5	6.2	* 9.4	10	11	14
9	4.7	.3					.5	6.2	8.4	10	11	10
10	2.7	.3					.6	5.6	7.3	9.4	* 19	10
11	2.2	.3				0.3 (*)	.6	6.2	7.3	9.9	24	13
12	2.0	.3					.6	7.3	9.4	* 9.9	30	13
13	1.8	.2					.8	8.9	12	9.9	31	13
14	1.7	.2					1.1	7.3	12	9.4	33	15
15	1.7	.2					1.5	6.8	13	9.4	33	15
16	1.7	.2	0.2	0.1	0.2		1.7	7.3	13	9.4	30	15
17	1.7	.3					1.9	10	13	9.9	28	14
18	1.5	.3					2.4	11	12	10	28	16
19	1.4	.2					3.1	13	11	11	28	16
20	1.2	.1					4.4	13	11	17	28	15
21	1.1	.1					* 5.6	14	11	20	30	5.6
22	1.1	.1					5.9	16	* 10	23	30	5.3
23	1.1	.1					6.2	16	10	21	28	5.6
24	.9	.2					5.9	12	12	15	27	5.6
25	.4	.3					5.9	6.5	12	16	27	5.6
26	.5	.3				.5	5.3	* 6.8	11	16	26	5.6
27	1.2	.2					4.4	6.5	8.9	16	26	5.0
28	2.2	.2					4.4	6.5	7.8	15	31	5.0
29	1.8	.3					5.6	6.8	7.3	14	33	5.3
30	1.2	.2					7.3	7.8	6.5	14	35	5.3
31	.8							9.9		14	* 38	
Total	94.5	7.6	6.2	3.1	5.6	11.5	79.2	287.1	303.3	367.4	760	387.9
Mean	3.05	0.25	0.2	0.1	0.2	0.37	2.64	9.26	10.1	11.9	24.5	12.9
Ac-ft	187	15	12	6.1	11	23	157	569	602	729	1,510	769

Calendar year 1964: Max 31 Min - Mean 6.59 Ac-ft 4,780  
Water year 1964-65: Max 40 Min - Mean 6.34 Ac-ft 4,590

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 30 to Nov. 2. Stage-discharge relation affected by ice Nov. 4-7, Nov. 12 to Mar. 31 (no gage-height record Nov. 17 to Mar. 29).

9-1407. Cottonwood Creek near Grand Mesa, Colo.

Location.--Lat 38°58', long 107°57', in SW¼ sec.30, T.12 S., R.94 W., on left bank 300 ft upstream from culvert on county highway, 3½ miles upstream from mouth, 5 miles south of Grand Mesa, and 5½ miles northwest of Cedaredge.

Drainage area.--2.5 sq mi, approximately.

Records available.--October 1957 to September 1965.

Gage.--Water-stage recorder and timber weir.

Average discharge.--8 years, 1.38 cfs (999 acre-ft per year).

Extremes.--Maximum discharge during year, 29 cfs May 22 (gage height, 1.95 ft); no flow for many days.

1957-65: Maximum discharge, about 35 cfs May 26, 1958; no flow for many days in most years.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Flow regulated by numerous small storage reservoirs.

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.4	0	1.1	6.2
.5	.1	1.3	9.2
.6	.2	1.5	14
.7	1.2	1.8	24
.8	2.3		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0				0	1.2	14	13	1.2	2.8	0.1
2	0	* .1				0	1.2	14	13	1.0	2.8	.1
3	0	.1				0	.8	10	12	.8	2.8	.1
4	0	.1				0	.4	8.7	12	.6	2.8	.1
5	0	.1				0	.3	6.7	8.7	.4	2.6	.2
6	0	.1				0	.3	4.9	8.5	.2	2.6	.6
7	0	.1				0	* .3	* 4.5	13	.2	2.0	.3
8	* 0	.1	(*)			0	.3	4.0	* 10	5.2	2.0	.4
9	0	.1				0	.4	3.9	7.7	5.4	2.0	.6
10	0	.1				0	.3	3.5	6.3	.8	* 2.6	.2
11	0	.1				* 0	.3	4.0	5.7	.4	3.1	.1
12	0	.1				0	.3	4.8	6.2	* .6	3.7	.1
13	0	.1				0	.5	6.6	5.4	.4	4.4	.1
14	0	.1				0	1.3	5.6	4.6	.2	2.0	.1
15	0	.1				0	1.9	4.6	4.1	.1	1.6	.1
16	0	.1				0	2.1	5.4	3.7	.1	1.4	.1
17	0	.1				0	2.6	7.1	3.3	.1	1.4	.1
18	.1	.1				0	2.4	8.2	3.1	.2	1.9	.2
19	.1	.1				0	4.1	8.5	2.8	.2	2.2	.7
20	.1	0				0	7.7	8.7	2.7	1.9	2.2	.6
21	.1	.1				0	* 8.5	13	2.2	2.8	1.2	.5
22	.1	.1				0	7.0	22	* 2.1	2.8	1.1	.5
23	.1	.1				0	8.0	20	2.0	2.7	1.1	.6
24	.1	.1				0	6.5	14	2.4	2.7	1.1	.9
25	.1	.1				0	6.3	9.0	2.1	3.3	1.0	1.4
26	.1	.1				0	4.8	* 9.0	1.9	3.1	.2	1.5
27	.1	.1				0	3.2	9.9	1.6	3.0	.5	1.0
28	.1	.1				0	3.6	13	1.4	3.0	.5	.6
29	.1	0			-	.1	6.7	14	1.3	2.8	.7	.5
30	.1	0			-----	.3	10	15	1.1	2.8	.5	.4
31	.1	-----			-----	.6	-----	16	-----	2.8	* .2	-----
Total	1.4	2.6	0	0	0	1.0	93.3	292.6	163.9	51.8	57.0	12.8
Mean	0.05	0.87	0	0	0	0.03	3.11	9.44	5.46	1.67	1.84	0.43
Ac-ft	2.8	5.2	0	0	0	2.0	185	580	325	103	113	25

Calendar year 1964: Max 13 Min 0 Mean 1.00 Ac-ft 724  
 Water year 1964-65: Max 22 Min 0 Mean 1.85 Ac-ft 1,340

\* Discharge measurement or observation of no flow made on this day.

Note.--No gage-height record Nov. 17 to Apr. 7 (stage-discharge relation affected by ice part of period), July 31 to Aug. 10.

9-1412. Youngs Creek near Grand Mesa, Colo.

Location.--Lat 38°58', long 107°55', in S½ sec.32, T.12 S., R.94 W., on left bank 200 ft upstream from bridge, a quarter of a mile downstream from Horse Creek, 4½ miles north of Cedaredge, and 6 miles southeast of Grand Mesa.

Drainage area.--10 sq mi, approximately.

Records available.--October 1957 to September 1965.

Gage.--Water-stage recorder.

Average discharge.--8 years, 6.85 cfs (4,960 acre-ft per year).

Extremes.--Maximum discharge during year, 68 cfs May 24 (gage height, 2.55 ft); minimum not determined.  
1957-65: Maximum discharge, 86 cfs June 6, 1958 (gage height, 2.77 ft); minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Flow regulated by numerous small storage reservoirs. At times water is diverted from Eureka Reservoirs No. 1 and 2 above station to Milk Creek in Surface Creek basin. Three small diversions above station for irrigation below.

Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

0.8	0.7	1.6	11
1.0	1.5	2.0	30
1.2	3.0	2.4	58
1.4	5.6		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.3	1.8					2.6	28	36	13	7.0	5.0
2	4.8	* 1.2					2.6	35	31	13	10	4.6
3	4.8	1.0					2.4	33	31	13	9.8	9.5
4	4.8	.8					2.2	31	29	13	13	8.9
5	5.1	.9					1.8	25	30	13	10	11
6	5.3	.8					1.6	18	35	11	9.5	11
7	5.3	.8	(*)				* 1.4	* 16	38	10	9.2	8.6
8	* 5.3	.8				(*) 0.8	1.4	17	* 39	9.5	8.6	9.2
9	3.8	.8			(*)		1.6	13	36	10	7.3	7.8
10	3.6	.8					2.0	11	34	10	* 6.6	5.4
11	3.6	.7					2.0	12	32	11	8.3	4.6
12	2.2	b .7					1.8	17	39	* 16	7.8	5.1
13	1.9	b .7					2.0	25	38	16	7.5	3.4
14	1.7	b .7					2.9	33	38	13	8.0	3.1
15	1.4	b .7					4.6	24	39	12	7.8	5.0
16	1.4	.7	0.7	0.6	0.8		6.3	26	38	9.8	9.8	6.6
17	1.4	.7					7.5	36	36	9.5	10	5.3
18	1.4	.6					7.8	42	32	8.9	10	8.6
19	1.4	.5					14	43	30	12	9.2	8.3
20	1.4	.4					24	49	28	11	6.8	9.5
21	1.4	.4					* 28	48	24	15	6.6	9.8
22	1.4	.5					23	53	* 20	12	6.6	6.3
23	2.8	.6				1.2	22	48	19	13	7.3	7.0
24	3.6	.7					20	48	22	14	7.0	8.6
25	3.6	.7					19	* 34	25	16	6.3	10
26	5.1	.7					14	29	22	14	5.8	10
27	5.4	.6					9.5	25	20	13	7.3	11
28	4.3	.6					8.9	20	17	9.8	7.8	6.6
29	4.2	.7					14	22	13	9.2	9.2	4.8
30	2.5	.7					20	28	13	6.3	7.5	4.8
31	1.9	-----					-----	35	-----	6.6	* 7.0	-----
Total	101.1	22.3	21.7	18.6	22.4	31.2	270.9	924	884	363.6	254.6	219.4
Mean	3.26	0.74	0.7	0.6	0.8	1.0	9.03	29.8	29.5	11.7	8.21	7.31
Ac-ft	201	44	43	37	44	62	537	1,830	1,750	721	505	435

Calendar year 1964: Max 39 Min - Mean 5.25 Ac-ft 3,820  
Water year 1964-65: Max 53 Min - Mean 8.59 Ac-ft 6,210

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 16 to Apr. 13 (stage-discharge relation affected by ice during part of period).



9-1430. Surface Creek near Cedaredge, Colo.

Location.--Lat 38°59', long 107°51', in NW¼NW¼ sec.25, T.12 S., R.94 W., on left bank 5 ft downstream from private bridge, 1½ miles downstream from Caesar Creek, and 7 miles northeast of Cedaredge.

Drainage area.--26.7 sq mi.

Records available.--June 1939 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 8,180 ft (by barometer).

Average discharge.--26 years, 41.5 cfs (30,040 acre-ft per year).

Extremes.--Maximum discharge during year, 332 cfs May 20 (gage height, 2.63 ft); minimum daily, 2.0 cfs Nov. 11.

1939-65: Maximum discharge, 578 cfs May 12, 1941 (gage height, 3.62 ft), from rating curve extended above 300 cfs; maximum gage height, 5.10 ft Apr. 13, 1958 (ice jam); minimum daily discharge determined, 1.8 cfs Dec. 8, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Flow regulated by many small reservoirs. Some water imported from Leon Lake in Plateau Creek drainage.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 18-31)

0.6	1.0	1.4	32
.7	2.5	1.7	61
.9	7.0	2.1	125
1.1	14	2.5	245

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	32	16	2.8	3.0	3.0	3.0	8	114	132	103	58	77
2	31	* 17	2.8	2.8	2.6	3.0	7.6	140	128	103	60	64
3	20	6.0	2.8	3.0	2.6	2.8	6.2	125	148	99	60	65
4	18	4.5	2.6	3.4	2.8	2.8	5.5	128	150	98	50	51
5	16	4.4	2.4	3.4	3.0	2.8	5.5	98	145	94	49	53
6	14	4.4	2.4	3.4	3.0	3.0	5.5	64	148	101	46	57
7	14	4.6	* 2.4	3.2	3.0	3.0	5.2	* 65	150	99	62	46
8	* 16	4.6	2.4	3.2	3.0	3.2	5.0	59	* 153	119	64	47
9	17	4.0	2.4	3.0	2.8	3.4	5.2	48	140	117	61	41
10	12	3.0	2.6	3.0	2.6	* 3.6	5.8	50	128	103	* 84	38
11	11	2.0	2.8	3.0	2.4	3.8	5.8	68	159	112	82	43
12	11	3.0	3.0	3.0	2.4	3.8	5.5	104	220	* 114	96	43
13	14	3.6	3.0	2.8	2.6	3.8	5.8	135	220	98	92	42
14	13	3.6	2.8	2.6	2.8	3.6	6.2	98	234	88	89	50
15	11	3.6	2.6	2.4	2.8	3.4	7.9	92	245	78	86	50
16	11	3.6	2.6	2.4	2.6	3.2	8.5	138	224	74	83	49
17	13	3.4	2.8	2.4	2.6	3.2	9.1	198	201	73	78	50
18	13	3.2	2.8	2.4	2.8	3.2	9.4	201	189	77	84	43
19	13	3.0	2.8	2.6	3.0	3.4	11	217	180	80	69	44
20	13	3.0	3.0	2.6	3.2	3.8	20	234	168	96	66	38
21	13	3.4	3.2	2.6	3.2	4.0	32	234	159	96	51	22
22	12	3.6	3.6	2.6	3.2	4.5	38	231	* 148	104	49	19
23	13	3.6	3.4	2.8	3.0	4.5	38	174	138	101	48	21
24	15	3.6	3.2	2.8	2.8	4.5	42	112	162	86	42	25
25	17	3.4	3.0	2.8	2.8	4.5	43	* 94	159	104	42	27
26	17	3.2	2.8	2.6	2.8	4.8	38	83	130	92	53	28
27	28	3.0	2.6	2.4	3.0	4.5	27	78	112	78	56	27
28	28	2.8	2.6	2.4	3.2	4.5	28	74	101	73	70	34
29	28	2.8	2.8	2.6	-	4.8	47	80	94	64	76	31
30	27	2.8	3.0	2.8	-----	5.5	77	101	92	66	74	28
31	17	-----	3.2	3.0	-----	7.3	-----	128	-----	59	* 82	-----
Total	528	132.7	87.2	87.0	79.6	119.2	558.7	3,765	4,757	2,849	2,062	1,253
Mean	17.0	4.42	2.81	2.81	2.84	3.85	18.6	121	159	91.9	66.5	41.8
Ac-ft	1,050	263	173	173	158	236	1,110	7,470	9,440	5,650	4,090	2,490

Calendar year 1964: Max 189 Min - Mean 30.1 Ac-ft 21,820  
Water year 1964-65: Max 245 Min 2.0 Mean 44.6 Ac-ft 32,300

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 5 to Feb. 11, Apr. 1, 12, 16, 19-21. No gage-height record Feb. 12 to Mar. 21 (Stage-discharge relation affected by ice during part of period).

9-1435. Surface Creek at Cedaredge, Colo.

Location.--Lat 38°54', long 107°55', in sec.20, T.13 S., R.94 W., on left bank at Cedaredge, 500 ft east of State Highway 65 and 8½ miles upstream from mouth.

Drainage area.--39.5 sq mi.

Records available.--October 1916 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 6,500 ft (by barometer). Prior to June 8, 1917, staff gage at same site at datum 0.5 ft higher.

Average discharge.--49 years, 27.2 cfs (19,690 acre-ft per year).

Extremes.--Maximum discharge during year, 209 cfs May 2 (gage height, 1.77 ft); minimum daily, 0.6 cfs Nov. 12.

1916-65: Maximum discharge, 1,190 cfs May 13, 1941 (gage height, 2.50 ft), from rating curve extended above 640 cfs; no flow Sept. 25, 1939, and practically no flow at times in some winters.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by diversions to and from nearby streams, many small storage reservoirs, diversions for irrigation, and return flow from irrigated areas.

Cooperation.--Two discharge measurements furnished by Bureau of Reclamation.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.2	0.3	0.6	8.0
.3	.8	.7	14
.4	1.7	1.0	47
.5	3.7	1.5	137

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.3	11	3.2	3.7	3.0	3.4	11	118	88	69	39	39
2	9.3	13	3.2	3.7	2.6	3.2	10	135	74	69	39	34
3	10	8.0	3.2	4.4	2.6	3.2	8.0	122	81	62	47	34
4	8.0	2.2	3.0	3.7	2.8	3.2	6.5	112	77	60	35	27
5	6.0	2.2	2.8	* 3.7	3.2	3.4	5.5	86	76	58	32	32
6	5.5	* 1.9	2.6	3.5	3.2	3.6	* 5.5	69	74	59	27	37
7	6.5	2.0	* 2.4	3.5	3.2	3.8	5.1	79	79	60	24	28
8	* 7.5	2.0	2.6	3.5	3.2	* 4.0	4.8	77	* 79	65	22	31
9	8.0	1.6	2.8	3.2	* 3.0	3.2	5.1	62	67	62	22	30
10	8.6	2.7	3.0	3.2	3.0	2.7	4.4	62	76	56	* 30	26
11	8.0	2.0	3.0	3.0	2.8	2.7	4.4	77	81	62	31	27
12	7.5	.6	3.2	* 3.0	2.4	2.5	2.7	97	112	* 62	34	28
13	11	3.7	3.0	3.0	2.6	2.7	3.7	110	114	53	33	27
14	10	3.7	2.8	3.0	2.8	2.7	4.4	77	129	48	35	26
15	10	4.1	3.0	2.7	3.0	3.0	7.5	69	137	43	35	25
16	11	3.7	3.0	2.6	2.8	3.0	13	99	116	40	33	23
17	11	3.7	3.0	2.8	2.8	3.0	13	126	106	44	35	23
18	10	3.2	3.0	3.0	3.0	3.0	13	126	97	52	47	30
19	8.6	3.0	3.0	2.7	3.2	3.2	14	129	86	59	44	31
20	12	3.0	3.0	2.6	3.4	3.4	30	133	74	58	47	28
21	13	3.5	4.0	2.7	3.4	3.4	* 48	129	62	58	38	20
22	12	3.5	4.4	2.8	3.4	3.5	58	126	* 67	53	35	19
23	12	4.1	3.8	2.8	* 3.2	3.5	56	92	76	47	34	20
24	9.3	5.1	3.4	3.0	3.0	3.5	59	90	90	39	30	27
25	8.6	4.4	3.2	3.0	3.0	3.2	59	* 83	81	58	28	31
26	11	3.2	3.0	2.8	3.0	3.0	46	74	76	46	33	31
27	11	3.7	3.0	2.6	3.2	3.2	33	69	70	47	33	30
28	9.3	3.4	2.5	2.7	3.6	3.2	39	62	72	44	35	34
29	14	3.2	3.0	2.7	-	3.5	72	58	64	40	35	32
30	14	3.2	3.4	2.7	-----	5.1	97	67	62	43	37	28
31	12	-----	3.7	3.0	-----	7.5	-----	90	-----	42	* 40	-----
Total	304.0	114.6	96.2	95.3	84.4	105.5	738.6	2,905	2,543	1,658	1,069	858
Mean	9.81	3.82	3.10	3.07	3.01	3.40	24.6	93.7	84.8	53.5	34.5	28.6
Ac-ft	603	227	191	189	167	209	1,460	5,760	5,040	3,290	2,120	1,700

Calendar year 1964: Max 126 Min 0.6 Mean 19.9 Ac-ft 14,460  
 Water year 1964-65: Max 137 Min 0.6 Mean 29.0 Ac-ft 20,960

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 19, 20, 28, 30, Dec. 1, 3-11, 13-24, 30, Jan. 16-18, 20, 22, 23, 26, 27, Feb. 1-5, Feb. 10 to Mar. 9 (no gage-height record Feb. 19 to Mar. 8), Mar. 18-21, 25.

9-1442. Tongue Creek at Cory, Colo.

Location.--Lat 38°47'15", long 107°59'40", in SE¼ sec.34, T.14 S., R.95 W., on left bank at downstream side of bridge, 500 ft upstream from North Delta Canal headgate, half a mile west of Cory, and 1 mile upstream from mouth.

Drainage area.--200 sq mi, approximately.

Records available.--October 1957 to September 1965.

Gage.--Water-stage recorder (digital). Altitude of gage is 5,030 ft (from topographic map).

Average discharge.--8 years, 27.9 cfs (20,200 acre-ft per year).

Extremes.--Maximum discharge during year, 724 cfs July 29 (gage height, 5.40 ft); minimum daily, 4.8 cfs Oct. 5, 6.

1957-65: Maximum discharge, 748 cfs June 7, 1958; maximum gage height, that of July 29, 1965; minimum daily discharge, 0.5 cfs July 15, 16, 21, 1964.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Natural flow of stream affected by diversions to and from nearby streams, many small storage reservoirs, diversions for irrigation, and return flow from irrigated areas.

## DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1964 TO SEPTEMBER 1965

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	8.0	16	26	21	19	* 19	31	213	136	22	28	* 22
2	5.3	17	27	20	19	18	* 28	326	87	23	37	21
3	5.0	17	25	18	19	20	22	285	87	19	63	27
4	5.6	17	23	20	19	22	21	178	104	17	33	21
5	4.8	16	23	21	* 19	22	20	111	90	15	31	33
6	4.8	* 15	22	21	21	20	19	* 50	83	13	33	52
7	5.6	15	22	24	24	20	19	41	93	10	33	45
8	* 6.0	15	* 24	* 26	21	20	18	58	* 80	7.7	32	64
9	5.2	16	23	21	21	* 20	18	40	64	13	35	65
10	6.6	17	23	20	20	19	19	30	49	14	* 32	* 52
11	6.7	18	22	20	19	19	18	21	63	16	25	47
12	6.8	19	20	19	18	20	16	39	168	* 18	18	43
13	7.1	22	19	19	16	20	16	71	166	16	18	40
14	8.5	23	18	19	17	19	16	43	181	13	16	43
15	12	24	19	18	18	19	21	29	235	10	19	44
16	13	26	20	18	19	19	31	39	205	9.1	17	48
17	13	25	21	18	20	18	34	86	180	10	18	49
18	13	26	24	18	20	17	32	109	145	13	36	152
19	13	24	22	18	20	17	29	98	100	38	25	120
20	14	23	22	17	21	18	95	105	71	21	24	150
21	15	23	22	18	21	18	* 152	122	60	16	22	97
22	15	23	22	18	20	18	174	127	45	15	20	90
23	16	24	23	17	20	19	101	126	* 35	14	20	80
24	16	24	26	17	18	20	108	70	40	13	19	78
25	17	25	30	17	19	20	93	* 76	45	39	18	85
26	17	26	26	17	20	20	82	104	38	26	18	83
27	17	26	24	20	20	20	38	103	34	22	19	78
28	17	24	27	19	21	20	30	105	34	19	20	70
29	17	25	26	19	-----	20	62	107	23	20	22	68
30	17	25	23	19	-----	22	112	99	21	24	22	67
31	16	-----	23	18	-----	26	-----	122	-----	26	22	-----
TOTAL	344.0	636	717	595	549	609	1,475	3,133	2,762	621.8	795	1,934
MEAN	11.1	21.2	23.1	19.2	19.6	19.6	49.2	101	92.1	20.1	25.6	64.5
AC-FT	682	1,260	1,420	1,180	1,090	1,210	2,930	6,210	5,480	1,230	1,580	3,840
CALENDAR YEAR 1964												
WATER YEAR 1964-65												
MAX			150	MIN		0.5	MEAN		11.5	AC-FT		8,380
MAX			326	MIN		4.8	MEAN		38.8	AC-FT		28,112

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 11-16, Jan. 1-4, Feb. 12-17. No gage-height record July 10-16, Aug. 21 to Sept. 1.

## GUNNISON RIVER BASIN

9-1462. Uncompahgre River near Ridgway, Colo.

Location.--Lat 38°11'05", long 107°44'40", in NE¼ sec.4, T.45 N., R.8 W., on right bank 15 ft upstream from bridge, 0.7 mile upstream from Dallas Creek, and 2 miles north of Ridgway.

Drainage area.--150 sq mi, approximately.

Records available.--October 1958 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 6,877.58 ft above mean sea level (levels by Bureau of Reclamation).

Average discharge.--7 years, 157 cfs (113,700 acre-ft per year).

Extremes.--Maximum discharge during year, 1,500 cfs July 12 (gage height, 4.89 ft); minimum daily, 32 cfs Feb. 13.  
1958-65: Maximum discharge, that of July 12, 1965; minimum daily, 26 cfs Jan. 13, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation above station. Water is imported above station by Red Mountain ditch from Mineral Creek in San Juan River basin.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used July 12-25)

1.5	28	3.0	324
1.9	72	4.0	750
2.3	144	5.0	1,510

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a 90	51	* 54	45	* 51	46	112	418	350	700	454	144
2	a 85	55	54	b 36	b 42	44	93	479	340	846	587	159
3	a 80	57	52	b 40	b 42	b 36	80	458	370	816	479	157
4	a 75	56	50	45	b 44	* b 38	74	387	* 418	735	390	146
5	a 70	* 55	b 42	45	56	b 40	65	315	390	735	* 340	153
6	a 70	51	b 40	* 46	56	42	69	272	387	768	303	200
7	* 66	48	b 38	47	51	44	* 69	224	479	730	269	178
8	65	48	b 42	47	49	44	64	202	623	720	248	171
9	65	47	43	44	b 44	47	69	180	600	* 705	224	* 166
10	65	46	43	45	b 42	48	64	* 189	533	641	222	153
11	64	47	b 42	45	b 42	47	55	173	592	660	227	144
12	66	46	b 42	45	b 36	48	56	173	533	1,020	212	138
13	68	47	b 36	b 40	b 32	48	59	197	528	810	204	128
14	66	47	b 40	b 40	b 36	51	59	217	680	695	204	120
15	66	49	42	b 42	40	49	68	222	852	646	192	110
16	66	50	b 40	b 42	b 38	50	101	219	846	574	185	93
17	68	50	b 42	b 42	b 36	46	142	256	* 725	551	204	98
18	69	54	b 40	b 42	b 36	45	173	318	884	560	253	227
19	65	51	42	b 44	b 38	42	157	370	1,040	587	217	245
20	64	b 42	41	b 42	b 42	40	207	479	1,160	600	192	237
21	62	b 46	40	b 42	b 42	43	256	564	* 1,060	* 628	183	209
22	61	b 48	41	44	50	46	312	650	884	560	188	192
23	61	b 46	52	b 40	49	51	356	596	786	510	162	192
24	58	b 46	92	43	b 42	52	334	* 390	810	524	151	192
25	56	51	61	43	b 42	47	258	337	705	578	142	190
26	56	52	54	b 40	44	43	240	286	582	628	134	188
27	56	52	51	b 36	47	51	192	272	546	470	122	188
28	56	b 48	52	b 40	47	69	166	248	636	418	112	185
29	56	51	47	42	-	80	195	243	720	390	136	180
30	55	b 48	b 42	45	-----	80	297	263	730	373	197	178
31	54	-----	45	51	-----	101	-----	294	-----	402	162	-----
Total	2,024	1,485	1,432	1,330	1,215	1,558	4,442	9,890	19,789	19,580	7,295	5,061
Mean	65.3	49.5	46.2	42.9	43.4	50.3	148	319	660	632	235	169
Ac-ft	4,010	2,950	2,840	2,640	2,410	3,090	8,810	19,620	39,250	38,840	14,470	10,040

Calendar year 1964: Max 1,020 Min 32 Mean 156 Ac-ft 113,200  
Water year 1964-65: Max 1,160 Min 32 Mean 206 Ac-ft 149,000

## Peak discharge (base, 1,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-16	0045	4.66	1,170	7-12	0030	4.89	1,500
6-19	2330	4.96	1,420	7-25	2400	4.38	1,070
7-2	2300	4.49	1,100				

\* Discharge measurement made on this day.  
a No gage-height record.  
b Stage-discharge relation affected by ice.

9-1464. West Fork Dallas Creek near Ridgway, Colo.

Location.--Lat 38°04'30", long 107°51'10", in SE¼ sec.9, T.44 N., R.9 W., on right bank 100 ft downstream from unnamed tributary, 5 miles upstream from confluence with East Fork Dallas Creek, and 7½ miles southwest of Ridgway.

Drainage area.--13.2 sq mi.

Records available.--October 1955 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 8,400 ft (from topographic map).

Average discharge.--10 years, 12.9 cfs (9,340 acre-ft per year).

Extremes.--Maximum discharge during year, about 200 cfs July 19 (gage height, 2.98 ft); maximum gage height, 4.07 ft Apr. 11 (backwater from ice); minimum daily discharge, 2.8 cfs Feb. 13.

1955-65: Maximum discharge, that of July 19, 1965; maximum gage height, that of Apr. 11, 1965; minimum daily discharge, 2.4 cfs Jan. 14, 1961, Mar. 14, 1964.

Remarks.--Records fair except those for periods of ice effect or indefinite stage-discharge relation, which are poor. One diversion above station for irrigation below.

Rating tables, except periods of ice effect or indefinite stage-discharge relation,  
(gage-height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used June 16-30, July 3-18)

Oct. 1 to July 20

July 21 to Sept. 30

1.9	2.2	2.4	24	1.7	10	2.1	53
2.0	4.4	2.6	44	1.8	16	2.3	86
2.1	7.2	2.8	72	1.9	26		
2.2	11						

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8.3	6.4	6.9	b 4.6	3.5	3.3	4.7	31	e 32	e 55	50	20
2	8.0	6.6	6.9	4.2	3.5	3.3	4.2	38	e 32	e 65	58	20
3	8.0	6.9	6.9	4.2	b 3.4	b 3.2	4.0	41	e 34	63	46	18
4	8.0	* 8	b 6.5	4.2	b 3.4	3.3	4.0	* 36	e 34	60	40	17
5	8.0	b 7.5	b 6.5	4.2	b 3.4	3.5	4.0	31	e 36	63	* 35	17
6	* 8.0	b 7.5	b 6	4.2	3.5	3.7	4.0	29	e 36	64	27	21
7	8.0	b 7.5	b 5.5	4.2	3.5	3.3	4.0	27	e 38	64	25	19
8	7.6	8.0	b 6	4.2	b 3.4	3.3	4.0	24	e 38	* 66	23	19
9	7.2	8.0	6.4	4.0	b 3.4	3.1	4.0	22	e 40	60	23	* 18
10	7.2	8.0	6.1	4.0	b 3.4	3.1	4.0	19	e 42	63	22	15
11	7.2	7.6	6.1	4.0	b 3.2	3.1	b 3.8	18	e 44	63	31	14
12	7.2	b 7.5	b 6	4.0	b 3.0	3.1	b 4.0	19	e 42	68	30	14
13	7.2	8.0	b 5.5	b 4.0	b 2.8	3.1	4.2	21	e 42	68	25	14
14	7.2	b 8	5.8	4.0	b 3.2	3.1	5.0	20	e 44	66	25	14
15	7.2	b 8	5.8	4.0	3.3	3.1	6.1	20	e 48	64	24	14
16	7.6	b 8	5.8	4.0	3.3	3.1	7.2	23	* 57	63	24	14
17	7.6	b 8	5.8	4.0	3.3	* 3.1	9.1	28	49	62	24	16
18	7.6	8.0	5.8	4.0	3.3	2.9	11	30	47	62	24	19
19	7.2	b 7	5.8	4.0	3.3	3.3	13	29	49	e 90	24	19
20	7.2	b 6.5	5.8	3.7	3.3	b 3.2	18	37	62	e 80	24	15
21	7.2	b 7	5.8	3.7	3.3	3.3	23	44	* 62	* 76	24	15
22	7.2	b 7	5.8	3.7	3.3	3.1	28	53	52	74	24	15
23	6.9	7.2	6.1	b 3.6	3.3	3.3	28	52	57	72	21	15
24	6.1	7.2	6.1	4.0	b 3.2	3.5	28	34	68	74	22	15
25	6.6	7.6	6.1	3.7	b 3.4	b 3.2	27	* 30	50	64	21	15
26	6.1	7.2	5.8	3.7	3.5	3.3	26	29	40	47	21	15
27	6.1	b 7	5.8	b 3.4	3.3	3.3	24	29	36	52	19	16
28	6.1	b 7	b 5.5	3.7	3.3	3.7	23	28	43	55	18	14
29	6.1	6.9	b 5	3.5	-	3.7	25	28	52	52	21	12
30	6.1	6.9	b 4.0	3.5	-----	4.0	26	e 28	52	50	24	12
31	6.1	-----	b 4.4	3.5	-----	4.4	-----	e 30	-----	49	22	-----
Total	222.1	222.0	182.3	121.7	93.0	103.0	380.3	928	1358	1974	841	481
Mean	7.16	7.40	5.88	3.93	3.32	3.32	12.7	29.9	45.3	63.7	27.1	16.0
Ac-ft	441	440	362	241	184	204	754	1,840	2,690	3,920	1,670	954

Calendar year 1964: Max 40 Min 2.4 Mean 12.4 Ac-ft 9,030

Water year 1964-65: Max 90 Min 2.8 Mean 18.9 Ac-ft 13,700

Peak discharge (base, 30 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-23	1645	2.49	34	7-11	2215	2.58	85
5-2	1630	2.66	56	7-19	1700	2.98	†200
5-22	2000	2.78	64	8-2	0800	2.16	66
6-24	0630	2.66	83	8-11	0500	1.94	34

\* Discharge measurement made on this day.  
b Stage-discharge relation affected by ice.  
e Stage-discharge relation indefinite.

† About.

## GUNNISON RIVER BASIN

9-1465. East Fork Dallas Creek near Ridgway, Colo.

Location.--Lat 38°05'40", long 107°48'40", in SE 1/4 sec. 2, T.44 N., R.9 W., on right bank 300 ft below private bridge, 2 miles upstream from Beaver Creek, and 5 miles southwest of Ridgway.

Drainage area.--16.8 sq mi.

Records available.--October 1947 to September 1953, October 1960 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,980 ft (from topographic map). Prior to Oct. 1, 1960, water-stage recorder at two sites three-quarters of a mile downstream at different datums. Datum raised 3.00 ft Oct. 1, 1949.

Average discharge.--11 years, 24.5 cfs (17,740 acre-ft per year).

Extremes.--Maximum discharge during year, 224 cfs July 12; maximum gage height, 3.70 ft July 2; minimum daily discharge, 5 cfs Feb. 13. 1947-53, 1960-65: Maximum discharge, 297 cfs June 18, 1949 (gage height, 3.43 ft, site and datum then in use), from rating curve extended above 100 cfs; maximum gage height, 4.28 ft Dec. 13, 1961 (ice jam); minimum daily discharge determined, 3.6 cfs Mar. 11-13, 1962.

Remarks.--Records good except those for periods of ice effect, which are poor. One small diversion above station diverts water to Beaver Creek drainage for irrigation of about 50 acres of hay meadows.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 22 to July 3, July 7-15, 28-31, Aug. 1-6)

1.9	3.5	2.7	57
2.0	6.0	3.0	110
2.1	9.5	3.5	230
2.4	26		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	12	* 11	10	6.7	6.5	7.0	23	28	118	92	34
2	20	13	12	9	* 6	6.7	6.7	27	28	155	142	33
3	19	13	11	10	6	7	6.7	28	* 30	130	120	33
4	19	* 12	9.5	10	6.5	7.0	6.7	28	32	132	100	32
5	18	12	9	* 10	6.5	7.0	6	* 26	32	140	* 86	32
6	18	12	8.5	9.5	7.0	7.4	6	24	31	175	63	44
7	* 17	11	8	9.5	6.4	7.4	6.4	22	38	172	55	36
8	16	12	8.5	9.2	6.0	7.0	6	21	47	* 168	52	36
9	15	13	9.5	8.5	6	6.5	6.4	20	50	152	47	* 36
10	15	12	10	8.5	6	6.5	6	19	47	126	47	33
11	15	13	9.5	8.8	6	6	5.5	19	52	132	50	32
12	15	12	9	8.4	5.5	6.7	6	19	47	188	47	31
13	15	12	8	9	5	6	6	20	50	170	50	28
14	14	13	8.5	9	5.5	6	6	20	60	* 148	49	27
15	13	13	9	8.8	6	6	6.5	20	77	148	45	26
16	13	13	9	8	5.5	6.5	7	21	* 100	122	44	25
17	13	13	9	8.5	5.5	* 6.7	9.5	22	90	112	52	28
18	12	13	9	9	6	6.5	10	23	98	120	53	28
19	12	12	9	8	7	6.5	12	24	102	136	53	29
20	12	10	9.5	8	6.5	6	13	30	126	130	49	27
21	12	11	10	8	6.5	6.5	16	35	* 148	126	42	25
22	11	12	10	7	7.0	6.7	18	43	144	* 124	38	25
23	11	12	11	7.5	7.0	6.4	20	42	132	108	36	24
24	11	12	11	8.5	6.5	6.4	20	32	122	130	35	23
25	11	12	10	7.4	6.5	6.5	20	30	104	124	33	23
26	11	11	10	7	6.5	6.5	19	28	81	122	32	22
27	11	11	10	6.5	6.5	6.7	17	28	70	98	32	23
28	11	12	9.5	7.8	7.0	6.7	16	25	88	83	32	22
29	11	12	9.2	8.1	-	6.7	16	24	114	85	34	22
30	11	10	9.5	7.8	-----	6.5	18	24	120	81	41	22
31	12	-----	10	7.4	-----	7.0	-----	25	-----	85	37	-----
Total	434	361	296.7	262.7	175.1	204.5	325.4	792	2,288	4,040	1,688	861
Mean	14.0	12.0	9.57	8.47	6.25	6.60	10.8	25.5	76.3	130	54.4	28.7
Ac-ft	861	716	588	521	347	406	645	1,570	4,540	8,010	3,350	1,710

Calendar year 1964: Max 136 Min 4.2 Mean 26.0 Ac-ft 18,900  
Water year 1964-65: Max 188 Min 5 Mean 32.1 Ac-ft 23,260

Peak discharge (base, 120 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-22	0300	3.39	172	7-12	0700	3.36	224
7-2	2230	3.70	200	7-19	2400	3.16	155
7-6	2230	3.41	200	8-1	2315	3.07	150

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4-7, 12-26, 28, 30, Dec. 1, 4-20, 30, 31, Jan. 1, 2, 9, 10, 13, 14, 16-24, 26, 27, Feb. 2-5, 9-21, 24-27, Mar. 1, 3, 9-11, 13-16, 18-21, 25, 26, 30, Apr. 5, 6, 8, 10-16.

9-1465.5. Beaver Creek near Ridgway, Colo.

Location.--Lat 38°07'00", long 107°49'00", in SW¼SW¼ sec.25, T.45 N., R.9 W., on left bank 10 ft below private bridge, 300 ft upstream from mouth, and 4 miles southwest of Ridgway.

Drainage area.--12.0 sq mi.

Records available.--October 1960 to September 1965.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,680 ft (from topographic map).

Average discharge.--5 years, 4.22 cfs (3,060 acre-ft per year).

Extremes.--Maximum discharge during year, 70 cfs July 12 (gage height, 3.26 ft), from rating curve extended above 27 cfs by logarithmic plotting; maximum gage height recorded, 3.82 ft Feb. 24 (backwater from ice); minimum daily discharge, 1.4 cfs Feb. 13.

1960-65: Maximum discharge, 132 cfs Aug. 5, 1964 (gage height, 3.43 ft), from rating curve extended above 27 cfs by logarithmic plotting; maximum gage height recorded, 3.82 ft Feb. 24, 1965 (backwater from ice); minimum daily discharge, 0.4 cfs Oct. 7, 1963.

Revisions.--The maximum discharge for the water year 1964 has been revised to 132 cfs Aug. 5, 1964 (gage height, 3.43 ft), superseding figure previously published.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Two small diversions above station for irrigation of 130 acres of hay meadows. Water imported above station from East Fork Dallas Creek for irrigation of about 50 acres of hay meadows above station.

Revisions.--Revised figures of discharge, in cubic feet per second, for the water year 1964, superseding those previously published, are given herewith:

1964	1964-Con.
Aug. 5..... 25	Aug. 13..... 30
11..... 10	14..... 14
12..... 13	15..... 13

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
August 1964.....	286.8	30	4.0	9.25	569
Water year 1963-64.....	-	30	0.4	4.38	3,170

Revised peak discharge.--1964: Aug. 3 (1630) 19 cfs (2.71 ft); Aug. 4 (1600) 35 cfs (2.88 ft); Aug. 5 (1630) 132 cfs (3.43 ft); Aug. 11 (2200) 26 cfs (2.76 ft); Aug. 13 (0630) 70 cfs (3.11 ft).

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.1	2.5	2.8		* 3.0	1.7	3.6	9.8	7.6	15	13	3.6
2	3.1	2.6	(*)		b 2.4	b 1.8	3.3	11	11	19	14	5.6
3	3.1	2.3			b 2.4	* 2.2	3.1	13	* 11	17	13	6.4
4	3.0	* 2.3			b 2.6	b 1.8	3.1	14	9.4	15	14	6.4
5	3.0	2.3		(*)	b 2.8	b 2.0	3.0	13	6.4	12	* 14	6.4
6	3.0	2.5			3.0	b 2.2	3.1	12	6.7	11	11	6.4
7	* 3.1	2.3			3.0	b 2.4	* 3.0	11	5.4	12	9.8	6.1
8	3.0	2.3			2.8	2.6	3.1	11	7.6	* 13	9.1	6.1
9	2.8	2.3			b 2.4	2.5	3.1	11	11	12	8.5	* 5.8
10	2.6	2.3			2.3	2.5	3.0	* 12	12	12	7.9	6.1
11	2.6	2.5			2.2	2.5	b 2.8	11	18	13	7.9	6.4
12	2.6	2.2			1.8	2.5	b 2.8	11	16	29	7.6	6.1
13	2.6	2.3			1.4	2.5	2.8	11	15	22	7.6	5.8
14	2.6	2.5			1.6	2.5	3.3	12	15	* 16	7.0	5.6
15	2.6	2.5			1.8	2.5	3.8	11	16	15	6.7	5.6
16	2.6	2.5			2.0	2.5	4.5	11	* 18	13	6.7	5.4
17	2.6	2.5			2.2	2.5	5.4	11	* 19	13	7.0	6.1
18	2.6	2.5			2.3	2.5	5.8	11	19	13	7.9	8.2
19	2.5	b 2.4			2.3	b 2.4	6.4	11	19	13	7.9	8.8
20	2.3	b 2.0			2.2	b 2.2	6.1	12	21	13	7.3	7.9
21	2.5	b 2.2			1.8	b 2.4	6.7	13	* 26	* 16	7.3	6.7
22	2.5	b 2.2			2.0	2.5	7.0	14	26	15	7.0	6.1
23	2.5	b 2.0			2.0	2.5	7.3	14	26	15	6.1	5.6
24	2.3	b 1.8			b 2.0	2.5	7.3	13	26	14	5.4	5.4
25	2.3	1.5			b 2.0	2.5	7.6	12	23	17	4.3	5.4
26	2.3	2.2			2.0	2.6	7.6	11	18	18	4.0	5.1
27	2.5	2.6			1.8	2.6	7.9	12	14	15	3.8	5.1
28	2.5	2.8			1.8	2.8	8.5	11	15	14	3.4	4.9
29	2.6	2.8			-	3.1	8.2	9.8	15	13	3.4	4.7
30	2.5	2.8			-----	3.3	8.8	7.6	15	13	3.4	4.7
31	2.5	-----			-----	3.4	-----	7.0	-----	14	3.3	-----
Total	82.4	70.5	80.8	74.4	61.9	76.5	152.0	354.2	468.1	462	239.3	178.5
Mean	2.66	2.35	2.61	2.4	2.21	2.47	5.07	11.4	15.6	14.9	7.72	5.95
Ac-ft	163	140	160	148	123	152	301	703	928	916	475	354

Calendar year 1964: Max 30 Min 1.5 Mean 4.46 Ac-ft 3,240  
 Water year 1964-65: Max 29 Min 1.4 Mean 6.30 Ac-ft 4,560

Peak discharge (base, 25 cfs, revised)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-11	1100	2.83	29	7-21	1515	2.87	33
6-24	0700	2.85	31	7-25	2315	2.89	36
7-12	2100	3.26	70				

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 2 to Feb. 1, Feb. 11-17, Mar. 3.

## GUNNISON RIVER BASIN

9-1466. Pleasant Valley Creek near Noel, Colo.

Location.--Lat 38°08'50", long 107°55'00", in SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.13, T.4S N., R.10 W., on right bank 3 miles north of Noel and 7 miles upstream from mouth.

Drainage area.--7.88 sq mi.

Records available.--October 1955 to September 1965.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 8,680 ft (from topographic map).

Average discharge.--10 years, 2.52 cfs (1,820 acre-ft per year).

Extremes.--Maximum discharge during year, 322 cfs Apr. 23 (gage height, 3.68 ft), from rating curve extended above 170 cfs by logarithmic plotting; maximum gage height recorded, 4.19 ft Apr. 20 (backwater from ice); minimum daily discharge determined, 0.1 cfs on many days.

1955-65: Maximum discharge, about 500 cfs July 29, 1957 (gage height, 4.60 ft), from rating curve extended above 140 cfs; no flow at times in 1958-59, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Small diversions above station for irrigation.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 21-23)

1.5	0	1.9	3.3	2.6	35
1.6	.1	2.1	7.5	2.8	68
1.7	.7	2.3	13	3.1	140
1.8	1.8	2.5	25		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	0.1					0.2	27	1.6	0.3	0.5	0.1
2	.1	.1					.2	53	1.4	.2	.4	.1
3	.1	.1					.2	33	* 1.2	.2	.4	.1
4	.1	* .1					.1	* 21	1.2	.2	* .2	.1
5	.1	.1					.1	14	1.1	.2	.1	.1
6	* .1	.1					.1	10	1.0	.2	.1	.1
7	.1	.1					.1	9.5	.9	* .2	.1	.1
8	.1	.1					.1	7.5	.8	.2	.1	.1
9	.1	.1					.2	6.8	.8	.2	.1	* .1
10	.1	.1					b .2	6.8	.9	.2	.1	.1
11	.1	.1				0.1	b .2	6.6	1.8	.4	.1	.1
12	.1	.1					.2	6.8	3.0	1.1	.1	.1
13	.1	.1					.3	9.0	1.8	1.1	.1	.1
14	.1	.1					.3	12	1.0	.4	.1	.1
15	.1	.1					.6	8.5	.7	.2	.1	.1
16	.1	.1	0.1	0.1	0.1		1.4	7.5	.7	.3	.1	.1
17	.1	.1					1.8	7.1	.7	.3	.1	.1
18	.1	.1				(*)	3.9	5.7	.6	.7	.1	.1
19	.1	.1					.1	5.3	.5	1.6	.1	.1
20	.1	.1				b .1	b 50	4.5	.5	1.0	.1	.2
21	.1	.1					.1	* 120	4.1	.5	.1	.3
22	.1	.1					.1	99	3.5	.5	.1	.3
23	.1	.1					.1	103	2.8	.4	.1	.1
24	.1	.1					.1	63	2.6	.5	.1	.1
25	.1	.1					.1	63	2.8	.4	.1	.1
26	.1	.1					.1	32	3.3	.3	.1	.1
27	.1	.1					.1	20	3.0	.3	.1	.1
28	.1	.1					.1	33	2.4	.3	.1	.1
29	.1	.1					.1	77	2.0	.3	.1	.1
30	.1	.1					.1	80	1.8	.2	.1	.1
31	.1						.1		1.6	.9	.1	
Total	3.1	3.0	3.1	3.1	2.8	3.1	763.2	351.5	25.7	12.9	4.2	3.5
Mean	0.10	0.10	0.1	0.1	0.1	0.10	25.4	11.3	0.86	0.42	0.14	0.12
Ac-ft	6.1	6.0	6.1	6.1	5.6	6.1	1,510	697	51	26	8.3	6.9

Calendar year 1964: Max 104

Min -

Mean 2.76

Ac-ft 2,010

Water year 1964-65: Max 120

Min -

Mean 3.23

Ac-ft 2,340

Peak discharge (base, 50 cfs).--Apr. 23 (1630) 322 cfs (3.68 ft); May 1 (1400) 232 cfs (3.32 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 11 to Mar. 18 (stage-discharge relation affected by ice during most of period).



9-1470. Dallas Creek near Ridgway, Colo.

Location.--Lat 38°10'30", long 107°45'40", in SE¼ sec.5, T.4S N., R.8 W., on right bank 20 ft downstream from highway bridge, 1½ miles upstream from mouth, and 1¼ miles northwest of Ridgway.

Drainage area.--96.2 sq mi.

Records available.--March 1922 to October 1927, October 1955 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 6,980 ft (from topographic map). Mar. 1, 1922, to Oct. 31, 1927, staff gage at different datum.

Average discharge.--15 years, 39.9 cfs (28,890 acre-ft per year).

Extremes.--Maximum discharge during year, 556 cfs Apr. 23 (gage height, 4.56 ft); minimum daily, 2.8 cfs June 3. 1922-27, 1955-65; Maximum discharge observed, 1,120 cfs Aug. 15, 1923 (gage height, 4.40 ft, datum then in use), from rating curve extended above 160 cfs; maximum gage height, 5.14 ft Jan. 31, 1963 (backwater from ice); minimum daily discharge, 0.8 cfs Oct. 14, 1955, May 10-13, 18, 1956.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions above station for irrigation of about 4,500 acres above and 700 acres below station. One small diversion from Leopard Creek (Dolores River basin).

Note.--Records for August and September 1960 are in error. Revised records for this period are on file in District Office and will be published in a later water supply paper.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 21)

Oct. 1 to Apr. 21

Apr. 22 to Sept. 30

2.3	5.2	3.0	60	2.0	1.4	2.9	60
2.5	13	3.3	105	2.2	5.2	3.3	145
2.7	26	3.6	164	2.4	12	3.8	280
				2.7	32		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	32	8.4	* 26	22	* 24	20	54	215	3.6	20	188	33
2	33	9.6	26	18	22	18	45	223	3.2	116	208	32
3	31	13	25	19	20	* 15	32	200	2.8	142	188	36
4	27	13	24	20	22	16	31	165	* 3.4	140	165	33
5	26	* 15	22	22	24	17	25	132	5.5	135	* 145	37
6	26	18	20	* 24	26	17	26	108	3.6	145	122	47
7	* 26	20	19	24	22	18	* 32	92	3.2	158	118	43
8	27	24	22	23	19	18	27	90	5.5	* 172	108	37
9	27	24	22	22	20	19	32	78	8.5	178	90	* 37
10	26	22	22	22	22	20	24	* 70	13	160	84	40
11	25	21	22	22	20	19	21	60	74	170	82	39
12	24	19	22	20	19	20	23	55	78	244	78	37
13	24	21	20	20	17	18	27	68	39	244	80	32
14	23	20	22	20	19	17	29	82	62	212	78	31
15	22	21	22	20	20	17	43	66	82	198	68	33
16	22	27	20	20	19	20	59	62	110	180	58	40
17	20	26	22	22	20	20	68	64	* 92	165	66	49
18	11	26	20	22	22	18	83	60	102	170	76	76
19	10	24	22	22	24	17	92	42	100	188	74	100
20	11	20	20	20	22	17	144	43	125	205	66	108
21	10	20	22	20	22	18	* 231	66	* 155	210	58	86
22	10	22	24	20	22	20	* 229	76	160	* 205	54	78
23	10	22	32	20	19	21	223	78	120	212	50	70
24	10	20	45	22	24	20	253	50	116	223	50	68
25	11	24	30	20	26	20	192	* 38	88	210	47	60
26	10	27	23	19	24	17	158	32	68	238	42	57
27	9.2	26	23	18	21	17	118	27	50	192	37	55
28	8.4	24	24	19	18	18	* 130	21	64	178	36	57
29	8.1	26	24	20	-	28	158	16	88	178	38	60
30	7.4	24	22	22	-----	41	172	11	110	180	43	50
31	8.4	-----	24	24	-----	42	-----	6.0	-----	188	38	-----
Total	575.5	627.0	734	648	599	623	2,781	2,396.0	1,935.3	5,626	2,635	1,561
Mean	18.6	20.9	23.7	20.9	21.4	20.1	92.7	77.3	64.5	181	85.0	52.0
Ac-ft	1,140	1,240	1,460	1,290	1,190	1,240	5,520	4,750	3,840	11,160	5,230	3,100

Calendar year 1964: Max 180 Min 7.4 Mean 34.4 Ac-ft 24,980  
Water year 1964-65: Max 253 Min 2.8 Mean 56.8 Ac-ft 41,160

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 19-25, 28, 30, Dec. 1, 5-22, 29-31, Jan. 1-5, 9-11, 13-30, Feb. 2-5, 8-21, 24-26, Mar. 1, 6-9, 17, 20-22 (no gage-height record Mar. 2-5).

## GUNNISON RIVER BASIN

9-1471. Cow Creek near Ridgway, Colo.

Location.--Lat 38°08'20", long 107°38'20", in N½ sec.21, T.45 N., R.7 W., on left bank 400 ft upstream from Cobbs Gulch and 6½ miles southeast of Ridgway.

Drainage area.--41.1 sq mi.

Records available.--October 1955 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,750 ft, revised (from topographic map).

Average discharge.--10 years, 63.5 cfs (45,970 acre-ft per year).

Extremes.--Maximum discharge during year, 903 cfs June 19 (gage height, 4.53 ft); minimum not determined.

1955-65: Maximum discharge, 1,360 cfs June 28, 1957 (gage height, 7.70 ft); minimum daily, 2.0 cfs Jan. 9, 1957.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. No diversion above station.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 13-22, May 22 to June 16)

Oct. 1 to June 9		June 10 to Sept. 30	
2.1	9.0	2.0	24
2.3	16	2.4	63
2.5	30	2.7	108
2.7	48	3.0	178
3.0	87	3.5	340
4.0	300	4.1	650

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	8	(*)		(*)	8	10	157	151	390	112	43
2	18	8.4				8	10	173	155	445	130	46
3	17	8.5				7	9.5	167	173	380	118	42
4	17	8				* 7	9	* 155	183	332	110	40
5	16	* 8				7.5	8.5	125	163	332	* 96	43
6	16	8.5		(*)		7.5	9	107	161	348	96	44
7	* 15	8.5				8	9.5	89	207	328	90	41
8	15	9				8	9	80	272	* 356	75	40
9	15	9				8.5	9	68	282	293	71	39
10	15	8				8.5	9	70	* 265	262	70	* 39
11	15	8				8.5	8.5	65	276	279	66	37
12	13	7.5				8	10	71	272	332	61	36
13	13	8				8	12	80	276	332	58	34
14	13	7.5				8	14	81	344	282	62	32
15	13	7				8	15	84	495	244	58	30
16	12	7	8	7.5	7.5	8	41	100	* 520	241	56	30
17	14	8				7.5	56	125	500	253	58	36
18	13	7.5				* 8	66	141	608	241	62	63
19	11	8				7.5	46	157	650	223	61	56
20	11	8.5				7.5	72	195	638	211	55	47
21	11	8.5				8	98	207	* 626	214	52	44
22	10	9				8.5	121	242	520	* 183	55	40
23	10	8.5				9	131	211	505	154	48	42
24	9.6	8.5				8.5	113	* 159	505	167	44	42
25	8	9				8	78	137	425	159	40	42
26	9	9				8.5	74	115	352	151	38	41
27	11	8.5				8.5	55	101	348	133	36	43
28	9.9	9.5				8.5	48	94	400	124	35	43
29	10	9				8.5	67	98	415	116	69	41
30	9.9	9				9	111	105	376	118	85	42
31	9.3	---				9.5	---	131	---	114	56	---
Total	399.7	249.4	248	232.5	210.0	251.5	1329.0	3880	11063	7737	2103	1238
Mean	12.9	8.31	8	7.5	7.5	8.11	44.3	125	369	250	67.8	41.3
Ac-ft	793	495	492	461	417	499	2,640	7,700	21,940	15,350	4,170	2,460

Calendar year 1964: Max 395 Min - Mean 59.3 Ac-ft 43,040

Water year 1964-65: Max 650 Min - Mean 79.3 Ac-ft 57,420

Peak discharge (base, 500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6-19	2015	4.53	903	7-2	1930	4.03	608
6-28	1930	3.95	560	7-11	2130	3.98	578

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 25, 26, Nov. 1, 3-23, Mar. 6-21. No gage-height record Nov. 24 to Mar. 5, Mar. 22 to Apr. 12 (stage-discharge relation affected by ice during most of periods).

## 9-1475. Uncompahgre River at Colona, Colo.

Location.--Lat 38°19'50", long 107°46'40", in NW¼ sec.17, T.47 N., R.8 W., on right bank 15 ft downstream from county highway bridge, a quarter of a mile north of Colona, and 1 mile upstream from Beaton Creek.

Drainage area.--437 sq mi.

Records available.--April 1903 to November 1905, April to June 1906 (gage heights and discharge measurements only), October 1912 to September 1965. Monthly discharge only for some periods, published in WSP 1313. Published as "near Colona" 1904-6, 1922-34.

Gage.--Water-stage recorder. Datum of gage is 6,318.80 ft above mean sea level, datum of 1929. Supplementary water-stage recorder on left bank at same datum. Prior to June 24, 1921, staff or chain gages and June 24, 1921, to Oct. 28, 1938, water-stage recorder, at several sites within 5 miles of present site at various datums. Oct. 29, 1938, to Aug. 2, 1949, water-stage recorder at present site at datum 3.00 ft higher and Aug. 3 to Sept. 30, 1949, at datum 1.00 ft higher.

Average discharge.--55 years (1903-5, 1912-65), 271 cfs (196,200 acre-ft per year).

Extremes.--Maximum discharge during year, about 1,850 cfs June 20; maximum gage height, 492 ft June 16; minimum daily discharge, 55 cfs Feb. 13.

1903-5, 1912-65: Maximum daily discharge, 4,080 cfs June 13, 14, 1921; minimum daily, 12 cfs Sept. 19, 1956.

Remarks.--Records fair except those for periods of ice effect, no gage-height record, or indefinite stage-discharge relation, which are poor. Natural flow of stream affected by water diverted from West Fork Cimarron Creek, Mineral Creek (San Juan River basin), and Leopard Creek (Dolores River basin), diversions for irrigation of about 19,000 acres (part of which is below station) and return flow from irrigated areas.

Rating tables, except periods of ice effect or indefinite stage-discharge relation  
(gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to June 24

June 25 to Sept. 30

3.1	45	3.8	265	2.3	115	3.5	750
3.2	58	4.0	425	2.6	205	4.0	1,230
3.4	96	4.5	970	3.0	430	4.5	1,850
3.6	160						

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	116	74	105	102	85	* 74	211	730	425	1,000	670	a 190
2	108	76	105	81	69	72	174	850	398	1,070	890	a 200
3	108	83	102	81	69	61	142	802	444	1,080	798	*a 190
4	105	* 81	* 99	99	72	71	136	708	530	1,030	686	177
5	102	85	76	89	* 99	72	110	610	492	1,000	* 598	174
6	* 102	89	76	85	99	71	110	540	482	1,030	520	241
7	99	92	76	* 87	87	74	128	* 444	570	1,030	466	205
8	96	94	76	89	81	74	110	398	708	1,020	424	202
9	94	94	96	81	74	81	136	307	778	1,010	370	218
10	92	92	92	81	74	83	116	300	730	970	334	191
11	92	89	89	81	69	81	92	259	* 838	980	352	188
12	92	85	89	78	58	78	92	259	e 890	1,310	310	180
13	96	92	71	71	b 55	78	113	286	e 860	* 1,250	* 304	164
14	99	92	b 70	81	b 60	81	108	321	e 980	1,050	292	152
15	102	94	b 75	76	b 60	85	128	328	e 1,100	990	274	146
16	102	105	b 80	72	b 65	89	182	328	e 1,150	900	a 260	130
17	99	108	b 85	74	b 65	76	235	380	e 1,000	890	a 260	130
18	94	110	85	72	b 70	71	321	492	e 1,150	860	304	304
19	89	110	b 90	81	71	66	293	492	e 1,300	860	322	424
20	87	a 95	b 90	72	76	57	454	675	e 1,450	880	*a 280	442
21	87	a 90	85	81	81	72	610	* 802	e 1,350	940	a 250	376
22	85	a 85	83	72	89	81	754	886	e 1,300	870	a 250	328
23	85	a 80	89	61	85	85	* 838	886	e 1,250	822	a 230	316
24	85	*a 80	b 130	76	64	92	697	620	e 1,200	840	a 210	316
25	81	116	125	71	69	76	540	510	* 1,120	880	a 190	310
26	81	116	96	63	74	74	501	425	960	950	a 180	298
27	81	110	89	64	81	85	380	353	860	814	a 160	298
28	81	105	92	89	83	110	328	314	960	* 718	a 150	280
29	78	105	83	74	-	* 150	389	307	1,040	664	a 200	286
30	76	105	64	72	-----	156	510	314	1,060	634	* 268	298
31	76	-----	94	83	-----	187	-----	321	-----	664	a 230	-----
Total	2,870	2,832	2,757	2,439	2,074	2,663	8,938	15,247	27,375	29,006	11,032	7,354
Mean	92.6	94.4	88.9	78.7	74.1	85.9	298	492	912	936	356	245
Ac-ft	5,690	5,620	5,470	4,840	4,110	5,280	17,730	30,240	54,300	57,530	21,880	14,590

Calendar year 1964: Max 1,440 Min 48 Mean 241 Ac-ft 174,800  
Water year 1964-65: Max 1,450 Min 55 Mean 314 Ac-ft 227,300

\* Discharge measurement made on this day.

a No gage-height record.

b Stage-discharge relation affected by ice.

e Stage-discharge relation indefinite.

## GUNNISON RIVER BASIN

9-1495. Uncompahgre River at Delta, Colo.

Location.--Lat 38°44'30", long 108°04'50", in SW¼ sec.13, T.15 S., R.96 W., on right bank 525 ft downstream from State Highway 92 bridge at west edge of Delta and 1.1 miles upstream from mouth. Prior to May 12, 1965, at site 1,050 ft upstream.

Drainage area.--1,110 sq mi, approximately.

Records available.--April 1903 to October 1931 (no winter records in most years), September 1938 to September 1965. Monthly discharge only for some periods, published in WSP 1313. Published as "near Delta" 1907-24.

Gage.--Water-stage recorder (digital). Datum of gage is 4,926.49 ft above mean sea level, datum of 1929. Prior to Oct. 31, 1923, staff gage at several sites a half to 2½ miles upstream at various datums. Apr. 26, 1924, to Nov. 2, 1931, water-stage recorder at site 800 ft upstream at different datum. Sept. 1, 1938, to May 5, 1941, water-stage recorder at site 420 ft upstream at datum 3.43 ft higher. May 9, 1941, to Apr. 25, 1946, chain gage at site 500 ft upstream at datum 3.43 ft higher. Apr. 26, 1946, to Feb. 17, 1960, water-stage recorder at site 600 ft upstream at datum 3.43 ft higher. Feb. 18, 1960, to Mar. 26, 1963, water-stage recorder at site 750 ft upstream at datum 3.43 ft higher. Mar. 27, 1963, to May 12, 1965, at site 1,050 ft upstream at datum 6.08 ft higher.

Average discharge.--29 years (1907-8, 1920-21, 1938-65), 276 cfs (199,800 acre-ft per year).

Extremes.--Maximum discharge during year, 1,860 cfs May 3 (gage height, 7.73 ft); minimum daily, 66 cfs Mar. 21.

1903-31, 1938-65: Maximum discharge recorded, 3,730 cfs May 5, 1941 (gage height, 5.90 ft, site and datum then in use), from rating curve extended above 1,900 cfs; no flow at times in 1908; minimum daily determined since beginning of diversion through Gunnison tunnel, 7 cfs July 10-15, 17, 21, 24-28, 1910.

Remarks.--Records fair except those for period of no gage-height record, which are poor. Natural flow of stream affected by water diverted from Gunnison River (see record of diversion for Gunnison River below Gunnison tunnel elsewhere in this report) and other adjacent basins, diversions for irrigation of about 90,000 acres above station, and return flow from irrigated areas.

Discharge, in cubic feet per second, water year October 1964 to September 1965

DAY	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.
1	329	282	207	198	225	* 103	150	1,070	633	549	507	339
2	297	291	207	159	157	84	* 188	1,500	633	897	689	325
3	289	342	203	156	142	78	150	* 1,550	598	795	745	521
4	282	469	197	172	147	80	112	1,150	598	703	605	479
5	274	435	190	160	* 152	89	96	760	577	677	479	591
6	* 180	* 418	167	175	170	100	80	* 494	479	646	381	661
7	207	335	* 155	200	175	110	79	* 421	493	658	437	400
8	228	315	149	* 226	155	116	188	449	584	614	325	350
9	226	330	173	181	142	105	383	403	* 650	686	284	400
10	231	319	180	167	145	109	446	320	680	596	218	450
11	233	312	180	165	113	108	370	261	710	642	* 224	420
12	240	374	191	160	105	99	320	* 230	1,070	1,080	170	400
13	278	337	136	143	103	94	236	337	1,090	1,300	194	400
14	361	357	133	143	110	92	300	395	735	* 1,120	155	380
15	355	406	170	145	126	92	272	473	727	977	135	380
16	334	391	200	144	111	94	384	425	972	1,220	130	360
17	273	216	182	144	119	93	431	487	870	731	108	360
18	265	213	163	141	121	80	550	619	870	738	155	500
19	286	237	178	149	132	76	177	704	967	773	266	800
20	332	199	196	145	141	68	130	849	1,060	864	230	900
21	327	183	198	143	151	66	269	* 951	1,080	885	194	800
22	285	207	205	145	160	70	514	861	868	969	304	760
23	231	225	204	116	161	78	* 786	797	* 679	640	230	720
24	235	224	273	132	104	92	928	658	693	479	170	700
25	246	237	375	155	96	94	594	563	686	619	140	700
26	234	228	294	115	109	81	544	* 611	464	773	125	700
27	219	262	243	103	112	77	527	652	333	668	116	700
28	204	218	316	121	114	93	* 428	618	469	542	120	680
29	281	230	232	138	-----	136	518	565	511	402	150	660
30	288	220	144	150	-----	151	672	552	559	437	* 381	640
31	297	-----	162	203	-----	132	-----	577	-----	479	374	-----
TOTAL	8,347	8,762	6,203	4,794	3,798	2,940	10,822	20,302	21,338	23,159	8,741	16,476
MEAN	269	292	200	155	136	94.8	361	655	711	747	282	549
AC-FT	16,560	17,380	12,300	9,510	7,530	5,830	21,470	40,270	42,320	45,940	17,340	32,680

CALENDAR YEAR 1964	MAX	1,090	MIN	85	MEAN	286	AC-FT	207,900
WATER YEAR 1964-65	MAX	1,550	MIN	66	MEAN	372	AC-FT	269,130

\* Discharge measurement made on this day.

Note.--No gage-height record Sept. 7-30.

9-1520. Kannah Creek near Whitewater, Colo.

**Location.**--Lat 38°59', long 108°14', in sec.34, T.12 S., R.97 W., on right bank at downstream side of private bridge, a quarter of a mile downstream from intake of pipeline for Grand Junction water supply and 12 miles east of Whitewater.

**Drainage area.**--61.9 sq mi.

**Records available.**--October 1917 to September 1921, September 1922 to September 1965. Monthly discharge only for some periods, published in WSP 1313. Prior to October 1962, published as Kannah Cree. near Whitewater.

**Gage.**--Water-stage recorder and concrete control. Prior to Sept. 30, 1932, staff gage and Sept. 30, 1932, to Oct. 14, 1935, water-stage recorder, at site 300 ft upstream at different datum.

**Average discharge (combined flow).**--47 years, 39.5 cfs (28,600 acre-ft per year).

**Extremes (combined flow).**--Maximum discharge during year, about 700 cfs May 21; minimum daily, 6.3 cfs Mar. 3. 1917-21, 1922-65: Maximum discharge observed, 1,640 cfs June 6, 1921 (gage height, 4.5 ft, site and datum then in use), from rating curve extended above 700 cfs; minimum daily, 4.3 cfs Dec. 19, 1939.

**Remarks.**--Records good except those for periods of ice effect, no gage-height record, or indefinite stage-discharge relation, which are poor. Diversions above station for municipal supply of Grand Junction and by Raber ditch for irrigation of about 60 acres below station. Records of these diversions furnished by State engineer and monthly figures are adjusted to show total flow of stream. Regulation by a few small reservoirs above station.

Rating tables, except periods of ice effect or indefinite stage-discharge relation  
(gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Aug. 25

Aug. 26 to Sept. 30

0.3	0.5	0.7	9.5	1.7	180	0.7	7.0	1.0	28
.4	1.0	.9	24	2.0	285	.8	11	1.1	40
.5	2.5	1.1	45	2.5	500	.9	17		
.6	5.5	1.4	100						

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.8	0.7	0.8	0.5	0.8	1.0	* 7.5	33	236	46	24	16
2	4.8	.9	1.0	.8	1.6	2.0	5.7	44	* 254	44	31	18
3	4.5	1.1	.8	.3	.4	2.4	3.9	* 45	282	38	* 35	18
4	4.5	1.0	b .6	.5	.4	1.0	3.9	40	264	36	30	16
5	4.5	1.0	b 3.0	.5	.4	* .8	1.5	36	264	37	41	16
6	4.5	.7	b 2.0	.5	.4	1.0	.9	31	305	35	40	13
7	4.5	.7	* 1.0	.5	.4	.8	.8	31	282	33	38	* 12
8	2.7	.7	.8	.4	.6	1.0	.7	31	278	32	31	12
9	2.7	.8	.6	.5	* .8	1.2	.8	28	236	31	25	12
10	2.7	.9	.6	.5	1.0	1.2	.7	27	* 201	28	* 22	* 12
11	2.7	.9	.6	.5	1.2	* 1.4	.6	29	187	32	22	11
12	2.5	1.1	.6	* .5	1.4	2.7	.7	34	301	32	21	10
13	* 1.8	1.1	.4	.5	1.0	3.0	.6	51	268	32	20	14
14	1.6	1.0	.4	.5	1.0	3.0	.7	53	285	28	24	14
15	1.6	1.1	.4	.5	1.0	3.0	* 1.1	50	271	* 25	24	15
16	1.5	b 1.0	.4	.5	1.0	3.3	2.0	51	240	24	* 36	19
17	1.5	b 1.0	.4	.5	1.0	3.3	1.8	67	212	23	38	20
18	1.5	1.1	.6	.5	1.0	3.3	1.6	98	194	23	42	25
19	1.3	b 1.6	.5	.5	1.0	3.9	3.3	* 153	180	31	32	26
20	1.3	b 1.6	.5	.5	1.0	9.5	18	e 270	159	33	* 27	25
21	1.3	b 1.6	.5	.5	1.2	3.9	20	*e 450	138	31	27	22
22	1.3	b 1.2	.6	.5	1.0	3.3	* 24	e 230	120	26	22	22
23	1.2	b 1.0	.6	.5	1.0	3.6	22	184	100	24	19	22
24	1.2	b 1.0	.6	.5	1.2	3.6	22	204	* 105	26	* 17	25
25	1.2	1.0	.6	.5	1.0	3.3	23	165	105	27	e 15	30
26	1.0	1.0	.8	.5	1.0	3.3	22	* 118	78	24	* 13	34
27	.8	1.0	.8	.6	1.0	3.9	17	98	64	22	13	25
28	* .7	b 1.0	.6	.5	1.0	4.5	14	96	57	20	14	21
29	.7	.9	1.4	.5	-	5.1	19	108	51	25	15	17
30	.8	.8	3.4	.5	-----	5.4	24	135	49	25	18	13
31	.8	-----	.6	.4	-----	7.5	-----	180	-----	24	16	-----
Total	68.5	30.7	26.5	15.5	25.8	96.2	263.8	3,170	5,766	917	792	555
Mean	2.21	1.02	0.85	0.50	0.92	3.10	8.79	102	192	29.6	25.5	18.5
Ac-ft	136	61	53	31	51	191	523	6,290	11,440	1,820	1,570	1,100

Adjusted for diversions

Mean	9.97	8.64	8.07	7.59	6.82	7.33	16.5	113	205	41.6	36.7	31.7
Ac-ft	613	515	497	467	379	451	981	6,960	12,220	2,560	2,260	1,890

Observed

Calendar year 1964:	Max	389	Min	0.2	Mean	18.8	Ac-ft	13,660
Water year 1964-65:	Max	450	Min	0.3	Mean	32.1	Ac-ft	23,270

Adjusted

Calendar year 1964:	Mean	26.9	Ac-ft	19,560
Water year 1964-65:	Mean	41.1	Ac-ft	29,790

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

e Stage-discharge relation indefinite.

Note.--No gage-height record Oct. 24-27, Dec. 7 to Mar. 11 (stage-discharge relation affected by ice during most of period).

## GUNNISON RIVER BASIN

9-1525. Gunnison River near Grand Junction, Colo.

Location.--Lat 38°59', long 108°27', near center of sec.14, T.2 S., R.1 E., Ute meridian, on right bank 180 ft upstream from bridge on State Highway 141, 0.4 mile downstream from Whitewater Creek, 0.5 mile south of Whitewater, and 8 miles southeast of Grand Junction.

Drainage area.--7,870 sq mi, approximately.

Records available.--October 1894 to December 1895 (gage heights only), October 1896 to September 1899, October 1901 to October 1906, October 1916 to September 1965. Monthly discharge only for some periods, published in WSP 1313. Published as "at Whitewater" 1901-6.

Gage.--Water-stage recorder. Datum of gage is 4,628.12 ft above mean sea level, datum of 1929. Prior to Apr. 11, 1895, staff gage 13 miles downstream near mouth at different datum. Apr. 11, 1895, to July 6, 1901, and Apr. 10, 1902, to October 1906 staff or chain gage at present site at datum 1.04 ft lower. Apr. 1, 1917, to June 24, 1934, staff gage and June 25, 1934, to Sept. 30, 1959, water-stage recorder, at site 11½ miles downstream at datum 72.98 ft lower.

Average discharge.--57 years (1896-99, 1901-6, 1916-65), 2,611 cfs (1,890,000 acre-ft per year).

Extremes.--Maximum discharge during year, 15,800 cfs May 23 (gage height, 9.89 ft); minimum daily, 650 cfs Feb. 13. 1896-99, 1901-6, 1916-65: Maximum discharge observed, 35,700 cfs May 23, 1920 (gage height, 14.95 ft, site and datum then in use), from rating curve extended above 22,000 cfs; minimum daily, 106 cfs July 20, 1934.

Remarks.--Records good except those for periods of ice effect, which are poor. Records show flow that enters Colorado River from Gunnison River basin except for about 60 cfs diverted below gage during irrigation season. Natural flow of river affected by diversions for irrigation of about 233,000 acres above station, storage reservoirs, and return flow from irrigated lands. Records of chemical analyses, water temperatures, and suspended sediment loads for the water year 1965 are published in Part 2 of this report.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

2.7	610	6.0	6,000
3.0	840	8.0	10,800
3.5	1,400	9.7	15,300
4.0	2,180		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	930	903	1,120	858	1,000	784	1,670	7,720	7,400	9,100	5,180	2,130
2	885	930	1,080	b 820	950	776	1,880	10,700	8,000	8,920	5,600	1,900
3	832	960	1,120	b 800	849	736	2,040	*12,600	8,020	9,460	*5,840	2,040
4	808	1,020	1,130	b 850	816	752	1,780	13,100	*8,380	9,330	5,240	2,580
5	784	1,010	1,030	b 900	816	* 776	1,660	12,400	8,300	9,180	4,600	2,580
6	* 760	* 1,000	903	b 950	840	752	* 1,500	10,500	7,750	8,890	4,040	2,790
7	720	950	* 776	1,000	903	768	1,460	8,760	8,420	8,810	3,540	* 3,210
8	760	940	688	1,110	912	768	1,580	7,820	10,200	8,760	3,080	2,990
9	768	950	712	1,080	* 876	768	1,780	7,060	11,400	9,070	2,790	2,830
10	784	970	800	1,010	849	768	2,450	6,360	11,400	8,500	2,430	2,760
11	784	970	903	980	792	792	2,490	6,000	10,900	8,150	2,100	2,520
12	808	1,000	940	* 930	b 700	808	2,160	5,820	12,400	9,280	2,030	2,400
13	849	1,050	867	940	b 650	824	1,930	6,560	13,800	11,100	1,790	2,310
14	912	1,050	b 750	921	b 700	849	2,100	7,450	13,500	9,880	1,670	2,080
15	970	1,120	b 750	885	b 700	824	* 2,340	7,240	*13,600	* 8,500	1,790	1,930
16	980	1,260	b 780	903	b 750	816	2,520	6,950	14,000	7,400	1,820	1,980
17	930	1,440	912	894	b 800	832	2,950	* 7,800	14,300	7,120	1,780	1,980
18	930	1,390	832	867	b 850	816	3,320	9,540	13,900	7,310	1,950	2,110
19	921	1,330	950	858	b 800	808	4,120	10,700	14,200	7,100	2,150	3,220
20	930	1,240	970	849	784	760	4,540	12,100	14,600	7,170	2,490	4,210
21	940	1,040	980	858	792	736	5,880	13,500	14,800	6,940	2,100	4,600
22	950	1,010	1,010	894	816	752	7,140	14,400	14,400	6,830	1,930	3,680
23	912	1,050	990	858	824	832	* 7,850	15,300	13,600	6,580	1,870	3,150
24	876	1,100	1,040	849	784	885	8,710	14,100	*13,000	5,780	1,700	2,860
25	894	1,100	1,240	876	752	930	7,750	11,900	13,000	6,060	1,460	2,940
26	885	1,180	1,250	832	744	858	7,450	10,100	12,200	6,260	1,270	2,830
27	876	1,260	1,110	b 780	752	832	6,620	8,970	10,300	6,260	1,150	2,700
28	858	1,210	1,180	b 760	768	867	5,660	7,880	9,200	5,620	1,060	2,580
29	885	1,100	1,200	832	-	990	5,640	6,850	9,120	5,220	1,060	* 2,560
30	921	1,140	921	849	-----	1,290	6,220	6,520	9,360	4,700	1,600	2,680
31	903	-----	b 800	930	-----	1,480	-----	6,580	-----	4,680	2,360	-----
Total	26,945	32,673	29,734	27,723	22,569	26,229	115,190	293,280	343,450	237,960	79,470	81,130
Mean	869	1,089	959	894	806	846	3,840	9,461	11,450	7,676	2,564	2,704
Ac-ft	53,440	64,810	58,980	54,990	44,760	52,020	228,500	581,700	681,200	472,000	157,600	160,900

Calendar year 1964: Max 13,000 Min 500 Mean 1,867 Ac-ft 1,355,000  
 Water year 1964-65: Max 15,300 Min 650 Mean 3,606 Ac-ft 2,611,000

\* Discharge measurement made on this day.  
 b Stage-discharge relation affected by ice.

## 9-1635. Colorado River near Colorado-Utah State line

Location.--Lat 39°09', long 108°57', in sec.25, T.10 S., R.104 W., on right bank 4.8 miles downstream from Salt Creek, 6½ miles southwest of Mack, Colo., and 7½ miles upstream from Colorado-Utah State line.

Drainage area.--17,900 sq mi, approximately.

Records available.--May 1951 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 4,370 ft (from river-profile map).

Average discharge.--14 years, 5,815 cfs (4,210,000 acre-ft per year).

Extremes.--Maximum discharge during year, 36,400 cfs June 20 (gage height, 12.61 ft); minimum daily, 1,870 cfs Dec. 9.  
1951-65: Maximum discharge, 56,800 cfs June 9, 1957 (gage height, 16.40 ft); minimum daily, 960 cfs Sept. 7, 1956.

Remarks.--Records good. Natural flow of stream affected by transmountain diversions, storage reservoirs, power developments, and diversions for irrigation. (Records include all return flow from irrigated areas.) Records of chemical analyses and water temperatures for the water year 1965 are published in Part 2 of this report as "below Colorado-Utah State line."

Rating table (gage height, in feet, and discharge,  
in cubic feet per second)  
(Shifting-control method used July 8 to Sept. 30)

2.5	1,010	7.0	11,000
3.0	1,570	9.0	18,600
4.0	3,060	11.0	28,300
5.0	5,140	12.5	35,800

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,610	2,360	3,040	2,230	3,080	2,350	3,570	11,700	15,200	21,600	12,200	4,690
2	2,540	2,620	3,020	2,290	2,950	2,280	4,090	15,900	17,300	19,800	13,800	* 4,280
3	2,480	2,970	3,020	2,350	2,510	2,170	4,300	19,700	16,900	20,800	12,900	4,220
4	2,400	2,760	3,060	2,290	2,400	2,030	4,220	20,800	18,000	21,100	*12,000	4,600
5	*2,340	2,830	2,900	2,520	2,120	2,050	4,070	20,400	18,800	20,300	11,000	5,190
6	2,340	2,730	2,730	2,710	2,300	2,160	3,890	*18,500	17,500	19,700	10,000	5,400
7	2,320	2,680	2,360	2,880	2,360	2,220	3,570	15,500	17,500	19,100	8,650	6,120
8	2,260	2,610	* 1,910	3,080	* 2,610	2,280	3,510	13,500	20,100	18,900	7,720	6,170
9	2,280	2,620	1,870	3,170	2,510	2,280	3,770	12,800	22,900	*18,900	6,790	5,620
10	2,320	* 2,620	2,080	3,010	2,610	2,350	4,280	11,200	24,600	18,400	6,170	5,620
11	2,300	2,690	2,380	* 2,830	2,460	* 2,300	4,880	10,200	24,900	17,700	5,500	5,280
12	2,300	2,680	2,830	2,780	2,300	2,410	4,540	9,400	27,300	18,500	5,070	5,000
13	2,300	2,810	2,800	2,800	2,050	2,380	4,390	9,880	30,000	21,400	4,920	4,760
14	2,400	2,850	2,350	2,740	1,980	2,440	4,340	11,900	29,800	20,400	4,900	4,580
15	2,480	2,880	1,980	2,660	2,030	2,460	4,720	12,800	31,400	18,500	4,630	4,320
16	2,570	3,150	2,020	2,640	2,170	2,410	4,880	11,900	* 32,800	16,900	4,690	4,110
17	2,620	3,410	2,230	2,640	2,280	2,510	5,380	12,100	34,000	15,400	4,540	4,470
18	2,460	3,390	2,490	2,570	2,380	2,360	5,840	14,500	34,600	15,000	4,760	4,950
19	2,510	3,300	2,380	2,490	2,350	2,260	6,520	17,800	35,600	17,200	5,020	7,450
20	2,570	3,240	2,480	2,400	2,490	2,240	6,640	20,200	35,800	17,000	6,120	6,850
21	2,620	3,020	2,740	2,440	2,430	2,130	7,630	23,300	35,200	16,100	6,240	8,170
22	2,560	2,740	2,920	2,480	2,400	2,130	10,000	26,000	34,200	15,500	6,220	7,420
23	2,510	2,760	2,990	2,510	2,410	2,430	* 11,900	28,400	31,800	14,500	5,770	6,790
24	2,340	2,830	3,190	2,400	2,400	2,690	13,100	28,800	30,100	14,300	5,090	6,300
25	2,350	2,860	3,970	2,410	2,280	2,780	13,100	25,800	29,500	14,900	4,950	6,240
26	2,460	2,880	3,930	2,540	2,170	2,610	12,100	22,200	29,600	14,700	4,650	6,270
27	2,380	3,150	3,510	2,300	2,240	2,400	12,300	* 19,600	25,100	14,900	4,110	6,220
28	2,400	3,240	3,470	2,230	2,280	2,520	10,300	16,900	21,800	13,300	3,870	6,070
29	2,320	3,040	3,300	2,460	-	2,690	8,830	14,600	21,300	12,400	3,690	6,120
30	2,340	2,930	2,900	2,520	-----	2,990	9,660	13,500	21,600	11,500	4,260	6,270
31	2,280	-----	2,380	2,640	-----	3,280	-----	13,700	-----	11,100	5,210	-----
Total	74,960	86,650	85,230	80,010	66,550	74,590	200,320	523,480	784,200	529,800	205,440	169,550
Mean	2,418	2,888	2,749	2,581	2,377	2,406	6,677	16,886	26,140	17,090	6,627	5,652
Ac-ft	148,700	171,900	169,100	158,700	132,000	147,900	397,300	1,038,000	1,555,000	1,051,000	407,500	336,300

Calendar year 1964: Max 26,600 Min 1,470 Mean 4,363 Ac-ft 3,167,000  
Water year 1964-65: Max 35,800 Min 1,870 Mean 7,893 Ac-ft 5,713,000

\* Discharge measurement made on this day.

## DOLORES RIVER BASIN

9-1650, Dolores River below Rico, Colo.

Location.--Lat 37°38'20", long 108°03'35", in SW¼ sec.15, T.39 N., R.11 W., on left bank at upstream side of bridge on State Highway 145, at Dolores-Montezuma County line, half a mile upstream from Ryman Creek, and 4 miles southwest of Rico.

Drainage area.--105 sq mi.

Records available.--October 1951 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 8,422.23 ft above mean sea level, datum of 1929.

Average discharge.--14 years, 132 cfs (95,560 acre-ft per year).

Extremes.--Maximum discharge during year, 1,330 cfs May 21 (gage height, 5.17 ft); minimum daily, 14 cfs Dec. 28, 1951-65; Maximum discharge, 2,120 cfs June 10, 1952 (gage height, 6.15 ft); minimum daily, 7.0 cfs Nov. 16, 17, 1956, Feb. 6, 7, 1961.  
Maximum flood known occurred Oct. 5, 1911.

Remarks.--Records good except those for periods of ice effect, which are poor. No diversion above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used July 1 to Aug. 29, Sept. 18-30)

2.0	14	3.0	136
2.2	26	3.5	250
2.4	44	4.0	490
2.7	83	5.2	1,310

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40	20	22	20	17	20	40	568	526	790	490	97
2	37	19	22	19	17	* 19	38	694	526	853	550	97
3	35	* 20	* 20	20	* 17	19	32	730	* 604	860	* 435	96
4	33	17	17	* 22	18	19	30	664	670	784	300	90
5	* 32	17	16	22	19	19	* 26	470	634	760	241	102
6	30	17	17	20	20	19	27	385	700	* 718	210	132
7	29	16	18	20	19	18	29	305	839	712	189	* 105
8	28	17	20	20	18	18	27	278	979	622	175	121
9	27	17	20	20	19	18	27	241	* 951	526	161	128
10	29	18	19	20	18	18	26	218	754	475	155	105
11	27	19	19	20	18	17	24	* 212	700	514	147	95
12	25	18	20	19	17	18	22	229	694	730	140	93
13	25	19	16	17	15	17	22	254	867	538	136	85
14	25	19	18	18	16	15	26	235	1050	440	151	77
15	25	19	19	18	17	15	36	218	* 1110	395	144	70
16	25	20	18	18	17	17	60	250	1030	375	130	65
17	25	22	17	18	16	17	105	395	965	325	179	78
18	24	26	17	18	* 17	16	142	622	1030	315	171	144
19	23	26	17	19	18	15	173	832	1090	* 335	146	173
20	23	24	17	20	18	17	262	* 986	1160	286	128	157
21	23	24	16	19	20	18	415	1090	1140	254	119	136
22	22	24	16	18	20	16	562	1110	* 1080	229	123	136
23	22	24	15	20	20	18	610	1000	944	220	105	140
24	19	22	16	18	18	19	634	736	1010	290	97	147
25	18	24	17	18	20	19	532	544	895	470	88	149
26	20	22	18	17	20	18	365	420	760	420	82	149
27	22	22	18	16	20	17	235	350	688	315	77	147
28	21	22	14	18	21	18	200	315	724	286	74	147
29	22	22	17	18	-	18	208	350	797	375	102	146
30	22	20	19	17	-----	21	330	395	760	380	134	128
31	20	-----	22	17	-----	20	-----	440	-----	385	125	-----
Total	798	615	557	584	510	563	5265	15,536	25,677	14,977	5,504	3,525
Mean	25.7	20.5	18.0	18.8	18.2	18.2	176	501	856	483	178	118
Ac-ft	1,580	1,220	1,100	1,160	1,010	1,120	10,440	30,820	50,930	29,710	10,920	6,990

Calendar year 1964: Max 1,040 Min - Mean 97.2 Ac-ft 70,560  
Water year 1964-65: Max 1,160 Min 14 Mean 203 Ac-ft 147,000

Peak discharge (basa, 800 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5- 2	1830	4.61	909	6-20	2100	5.14	1,300
5-21	1915	5.17	1,330	7- 2	2200	4.77	1,050
6- 7	2230	4.91	1,080	7-12	0100	4.73	1,060

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4 to Mar. 11, Mar. 14-22, 25-27, Apr. 10-16 (no gage-height record Dec. 14-18, 20-23, Jan. 3, 4).



9-1665. Dolores River at Dolores, Colo.

**Location.**--Lat 37°28', long 108°30', in sec.16, T.37 N., R.15 W., on left bank 70 ft downstream from bridge on State Highway 184 in Dolores and a quarter of a mile upstream from Lost Canyon Creek.

**Drainage area.**--356 sq mi.

**Records available.**--June 1895 to October 1903, August 1910 to November 1912, October 1921 to September 1963. Monthly discharge only for some periods, published in WSP 1313.

**Gage.**--Water-stage recorder. Datum of gage is 6,918.74 ft above mean sea level, datum of 1929. June 23, 1895, to Oct. 31, 1903, staff gage at site a quarter of a mile upstream at different datum. Aug. 27, 1910, to Nov. 30, 1912, and Apr. 11, 1922, to Mar. 26, 1934, chain gage, staff gage, or water-stage recorder on downstream side of bridge 70 ft upstream at different datums. Mar. 27, 1934, to Oct. 7, 1952, water-stage recorder at site 340 ft upstream at datum 6.17 ft higher.

**Average discharge.**--54 years, 435 cfs (314,900 acre-ft per year).

**Extremes.**--Maximum discharge during year, 3,900 cfs May 22 (gage height, 9.26 ft); minimum daily, 28 cfs Nov. 20. 1895-1903, 1910-12, 1921-63: Maximum discharge, 10,000 cfs Oct. 5, 1911 (gage height, 10.2 ft, site and datum then in use), from rating curve extended above 2,800 cfs; minimum daily, 8 cfs Aug. 16, 1896.

**Remarks.**--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 2,000 acres above station. Flow partly regulated by Ground Hog Reservoir (capacity, 21,710 acre-ft).

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used June 16-29)

3.1	31	5.0	494
3.3	48	6.0	1,050
3.5	69	7.0	1,720
3.7	96	8.0	2,430
4.0	145	9.0	3,490
4.5	286		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	90	38	50	50	55	60	171	2,370	* 1,410	1,500	972	290
2	86	41	55	46	50	* 50	196	2,920	1,400	1,650	1,120	275
3	78	* 41	* 46	40	* 44	48	160	2,870	1,490	1,620	* 1,040	261
4	61	36	42	* 48	42	46	151	2,490	1,680	1,480	792	254
5	* 67	32	38	50	44	50	* 134	1,990	1,570	1,430	660	240
6	65	37	42	48	50	50	124	1,740	1,680	* 1,370	580	356
7	59	37	42	48	50	55	141	1,400	1,880	1,300	508	* 316
8	56	37	46	50	48	55	136	1,310	2,300	1,220	448	305
9	55	38	46	50	48	55	164	1,070	2,320	1,130	409	340
10	56	41	48	48	46	55	136	972	1,930	1,030	380	286
11	55	49	48	48	46	55	123	* 206	1,780	1,060	372	250
12	53	38	44	46	42	55	120	1,020	1,920	1,260	348	240
13	51	50	40	44	36	55	132	1,370	2,180	1,060	320	231
14	50	46	44	44	38	55	153	1,290	2,470	930	356	204
15	50	45	46	46	40	50	207	1,190	* 2,660	852	397	188
16	49	61	46	46	44	55	360	1,180	2,520	852	401	183
17	50	64	46	46	40	50	555	1,460	2,090	750	471	183
18	52	60	44	48	44	50	708	1,980	2,260	774	595	313
19	51	49	44	48	44	50	864	2,460	2,480	* 738	435	372
20	46	28	46	46	48	46	1,290	* 2,900	2,500	655	372	327
21	45	40	46	48	50	50	1,760	3,130	2,480	645	328	328
22	44	46	44	50	55	55	2,190	3,150	2,340	570	332	309
23	41	50	46	46	60	55	* 2,500	2,790	* 2,010	540	290	313
24	42	50	48	48	48	55	2,700	1,950	2,130	640	275	316
25	37	55	50	46	50	48	2,410	1,570	2,110	930	282	320
26	35	60	50	44	55	48	1,820	1,290	1,750	870	286	316
27	39	60	50	42	60	55	1,310	1,140	1,490	738	272	309
28	42	50	50	44	65	72	1,090	1,070	1,500	768	275	309
29	42	55	48	46	-	77	1,180	1,070	1,570	798	290	309
30	43	50	46	50	---	83	1,660	1,150	1,610	804	389	282
31	42	---	48	55	---	102	---	1,140	---	834	360	---
Total	1,632	1,384	1,429	1,459	1,342	1,752	24,645	54,338	59,510	30,798	14,355	8,595
Mean	52.6	46.1	47.1	47.9	47.9	56.3	822	1,733	1,984	993	463	286
Ac-ft	3,240	2,730	2,830	2,890	2,660	3,480	48,880	107,800	118,000	61,090	28,470	17,030

Calendar year 1964: Max 2,600 Min 28 Mean 268 Ac-ft 194,800  
Water year 1964-65: Max 3,150 Min 28 Mean 331 Ac-ft 399,100

Peak discharge (base, 1,800 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-23	2300	8.84	3,270	6-15	0500	8.43	2,890
5-3	0045	9.08	3,610	7-3	0300	7.12	1,850
5-22	0145	9.26	3,900				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 20 to Mar. 24, Mar. 26, 27.

## DOLORES RIVER BASIN

9-1681. Disappointment Creek near Dove Creek, Colo.

Location.--Lat 37°52', long 108°35', in SE¼ sec.25, T.42 N., R.16 W., a quarter of a mile downstream from ford, 6½ miles southeast of Cedar, and 19 miles northeast of town of Dove Creek.

Drainage area.--145 sq mi.

Records available.--August 1957 to September 1965.

Gage.--Water-stage recorder.

Average discharge.--8 years, 15.9 cfs (11,510 acre-ft per year).

Extremes.--Maximum discharge during year, 4,360 cfs July 13 (gage height, 13.54 ft), from rating curve extended above 250 cfs as explained below; no flow Oct. 10-21.

1957-65: Maximum discharge, that of July 13, 1965, from rating curve extended above 250 cfs on basis of slope-area measurements at gage heights 7.18, 9.86, 10.95, and 13.54 ft; no flow for several days in 1959-64.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Several small reservoirs and ponds above station. Small diversions for irrigation above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Feb. 5-10, Mar. 9-26, Apr. 3-14, Aug. 1-5, 10-28, Sept. 30)

0.9	0	2.0	21
1.1	1.0	2.5	50
1.3	2.8	3.0	89
1.4	4.0	4.0	230
1.7	10	4.5	305

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	0.2			b 2.4	2.4	72	158	* 80	22	39	8
2	.1	.2			*b 2.4	1.6	42	176	76	21	20	7
3	.1	.4			b 2.6	* .4	18	164	72	19	15	6
4	.1	* .4			b 2.8	1.2	16	132	71	18	* 9.8	5
5	.1	.4		(*)	3.5	b 2.2	11	* 97	61	16	7.8	6
6	* .1	.4			3.9	b 2.6	* 11	86	66	14	7.0	8
7	.1	.3			3.3	b 2.8	15	83	70	* 11	5.8	4
8	.1	.4			2.2	b 3.4	13	65	78	10	5.0	* 3.0
9	.1	.4			1.8	4.6	27	54	76	9.2	4.4	3.6
10	0	.2			1.6	4.8	15	51	79	8.8	20	2.9
11	0	.8			1.4	4.0	16	48	81	8.6	19	2.9
12	0	.6			1.2	3.8	13	53	84	8.8	8.4	2.8
13	0	.2		0.8	1.4	3.4	22	137	81	* 238	8.0	2.5
14	0	.2			1.8	3.4	30	101	81	8.8	10.9	2.6
15	0	.2	0.5		2.2	3.5	43	95	81	15	12	2.4
16	0	.2			2.1	4.2	75	79	74	14	18	1.9
17	0	.4			2.0	3.4	111	75	60	32	22	1.9
18	0				2.2	3.2	138	87	61	20	12	3.3
19	0				2.4	2.9	160	91	62	17	8.8	6.5
20	0				3.4	2.7	* 176	119	60	12	7.8	12.7
21	0				4.2	2.8	184	128	58	* 13	8.6	7.1
22	.1				4.6	3.4	168	138	* 54	32	9.0	1.8
23	.1				3.0	3.6	174	132	49	30	8.2	1.1
24	.2				2.0	4.4	168	90	54	15	7.6	9.2
25	.2	.4			2.2	4.0	144	79	51	12	6.8	8.6
26	.2				2.4	4.0	124	70	41	10	5	8.4
27	.2				2.6	11	110	60	32	8	4	8.2
28	.2			1.5	19	79	49	29	7	2.5	7.6	7.2
29	.2				2.8	26	84	45	26	8	7.9	7.2
30	.1				32	117	51	24	7	19	7.2	7.2
31	.2				46		55		59	9		
Total	2.6	11.1	15.5	29.0	70.4	216.7	2,376	2,848	1,872	724.2	446.4	451.9
Mean	0.08	0.37	0.5	0.94	2.51	6.99	79.2	91.9	62.4	23.4	14.4	15.1
Ac-ft	5.2	22	31	58	140	430	4,710	5,650	3,710	1,440	885	896

Calendar year 1964: Max 201 Min 0 Mean 12.4 Ac-ft 9,000  
Water year 1964-65: Max 238 Min 0 Mean 24.8 Ac-ft 17,980

Peak discharge (base, 560 cfs)--July 13 (1630) 4,360 cfs (13.54 ft); Aug. 14 (1845), 1,010 cfs (8.00 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 1-5, Nov. 18 to Jan. 31 (stage-discharge relation affected by ice during most of period), Feb. 11 to Mar. 4, July 23-30, Aug. 3, 26-28, 31, Sept. 1-7.

9-1712. San Miguel River near Telluride, Colo.

Location.--Lat 37°56'55", long 107°52'35", in NW¼ sec.33, T.43 N., R.9 W., on left bank 0.1 mile upstream from Remine Creek, 0.3 mile downstream from bridge on State Highway 145, 0.5 mile downstream from Prospect Creek, 1.6 miles upstream from South Fork, and 3.5 miles west of Telluride.

Drainage area.--42.8 sq mi.

Records available.--October 1959 to September 1965 (discontinued).

Gage.--Water-stage recorder. Datum of gage is 8,622.81 ft above mean sea level (levels by Bureau of Reclamation).

Average discharge.--6 years, 63.3 cfs (45,830 acre-ft per year).

Extremes.--Maximum discharge during year, 616 cfs July 12 (gage height, 5.00 ft); minimum not determined.

1959-65: Maximum discharge, that of July 12, 1965; minimum daily determined, 12 cfs Mar. 8, 1961, Mar. 9, 11, 1964.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Several small diversions for irrigation of hay meadows above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 22 to Apr. 8)

1.9	15	3.0	110
2.1	20	3.5	190
2.2	25	4.0	310
2.5	48	5.0	605

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	42	20				b 14	16	112	100	348	178	66
2	40	20				*b 14	16	148	103	406	228	76
3	39	* 20	(*)		(*)	b 13	16	160	* 116	400	* 202	78
4	37	19		(*)		b 14	16	144	137	365	161	70
5	* 35	19				b 15	* 15	125	132	375	140	73
6	33	19				b 15	15	110	126	* 382	124	95
7	31	19				b 14	16	93	149	362	113	* 83
8	30	20				b 14	16	84	192	362	103	79
9	29	20				15	16	76	* 206	350	96	73
10	29	20				15	16	72	190	322	93	65
11	28	20			15	15	16	* 66	204	340	93	59
12	27	19				15	16	61	176	484	87	55
13	26	20				15	16	66	170	365	86	50
14	26	20				15	17	70	222	335	83	45
15	26	20				b 14	19	65	* 290	312	81	44
16	26	20	16	15		15	22	66	310	252	81	41
17	26	20				15	29	81	275	232	130	44
18	25	20			(*)	15	35	97	345	262	134	55
19	24	19			b 15	b 14	39	118	394	* 268	109	65
20	24	b 17			b 15	b 14	61	144	442	255	98	59
21	24	b 18			b 15	b 14	79	167	457	238	78	52
22	24	b 18			b 14	15	92	200	* 415	238	73	51
23	23	19			b 14	15	104	196	360	208	65	50
24	22	19			b 15	b 14	106	150	352	240	60	54
25	22	19			b 15	b 14	96	126	298	280	56	56
26	22	18			b 15	b 14	90	107	232	238	51	60
27	22	18			b 15	15	77	92	222	182	48	65
28	22	18			15	15	65	83	298	162	46	64
29	22	19			-	15	64	83	352	154	52	60
30	21	18				15	78	86	365	161	71	56
31	20	-----			-----	15	-----	87	-----	174	76	-----
Total	847	575	496	465	418	451	1,279	3,335	7,630	9,052	3,086	1,843
Mean	27.3	19.2	16	15	14.9	14.5	42.6	108	254	292	99.5	61.4
Ac-ft	1,680	1,140	984	922	829	895	2,540	6,610	15,130	17,950	6,120	3,660

Calendar year 1964: Max 400 Min - Mean 56.6 Ac-ft 41,080  
Water year 1964-65: Max 484 Min - Mean 80.8 Ac-ft 58,460

Peak discharge (base, 500 cfs).--June 20 (2330) 517 cfs (4.77 ft); July 12 (0045) 616 cfs (5.00 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 28 to Feb. 18 (stage-discharge relation affected by ice during most of period).

## DOLORES RIVER BASIN

9-1725. San Miguel River near Placerville, Colo.

Location.--Lat 38°02'05", long 108°07'15", in NW¼ sec.30, T.44 N., R.11 W., on right bank 0.7 mile downstream from Specie Creek and 4 miles northwest of Placerville.

Drainage area.--308 sq mi.

Records available.--January to December 1909, September 1910 to December 1912, April 1930 to September 1934, April 1942 to September 1965. Monthly discharge only for some periods, published in WSP 1313. Published as "at Placerville" 1910-12.

Gage.--Water-stage recorder. Datum of gage is 7,055.80 ft above mean sea level (Bureau of Reclamation bench mark). Jan. 1 to Dec. 31, 1909, staff gage at site 3.3 miles downstream at different datum. Aug. 27, 1910, to Nov. 30, 1912, staff gage and Apr. 25, 1930, to Sept. 30, 1934, water-stage recorder, at site 3.2 miles upstream at different datums. Apr. 1, 1942, to Oct. 21, 1958, at site 0.7 mile upstream at datum 40.64 ft higher.

Average discharge.--29 years (1910-12, 1930-34, 1942-65), 231 cfs (167,200 acra-ft per year).

Extremes.--Maximum discharge during year, 2,400 cfs Apr. 23 (gage height, 6.03 ft); minimum not determined. 1909-12, 1930-34, 1942-65: Maximum discharge, 10,000 cfs Sept. 5, 1909 (result of failure of Trout and Middle Reservoir Dams); minimum daily, 26 cfs Jan. 5, 1960.

Remarks.--Records good except those for periods of ice affect or no gage-height record, which are poor. Diversions for irrigation of about 1,700 acres above station. One diversion from Fall Creek for irrigation of about 2,000 acres in Beaver and Saltado Creek basins. One small ditch diverts water from Leopard Creek to Uncompahgre River basin. Slight regulation by Lake Hope and Trout Lake of Western Colorado Power Co. (combined capacity, 5,040 acre-ft).

Rating table, except periods of ice affect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Feb. 24 to Mar. 4, July 29 to Aug. 13)

2.4	49	4.0	415
2.8	95	4.5	720
3.3	190	5.5	1,720
3.7	295		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	117	62	69			50	83	898	430	970	792	225
2	112	64	* 74		(*)	* 49	81	1010	425	1090	848	240
3	107	* 76	67			50	77	979	* 465	1210	* 728	240
4	106	69	61	(*)		52	76	848	504	1110	622	230
5	* 102	70				54	* 71	728	487	1170	562	230
6	101	68				50	70	629	487	1200	487	316
7	96	66				50	74	532	568	* 1090	440	* 271
8	95	64				62	78	470	720	1090	410	277
9	90	60				51	82	384	* 752	1020	379	283
10	90	61			60	50	78	* 374	678	943	370	248
11	88	63				53	75	358	744	979	370	238
12	86	62				53	71	358	692	1340	342	222
13	87	66				51	75	420	699	1070	330	205
14	87	64				51	81	430	872	925	330	192
15	86	64				51	92	384	1060	880	316	181
16	82	71		65		55	120	366	* 1080	864	302	169
17	83	69	60		(*)	58	154	415	934	752	392	198
18	86	69			b 55	53	210	504	1110	776	435	238
19	83	b 60			b 60	50	240	587	1280	* 864	374	252
20	78	b 55			b 65	53	430	720	1350	848	334	262
21	76	b 55			b 60	57	816	816	1360	800	295	250
22	75	b 55			b 55	56	1010	907	* 1260	800	262	225
23	75	b 60			b 55	57	1200	880	1060	706	238	208
24	71	b 60			51	62	988	706	1060	824	248	202
25	67	b 65			53	74	816	587	934	997	238	208
26	71	68			50	75	664	514	792	889	222	210
27	72	64			54	59	526	470	706	692	215	218
28	68	64			51	60	487	420	848	636	192	225
29	72	63			-	64	544	392	952	580	210	228
30	70	64			-	70	706	397	1010	580	262	212
31	63	-			-	74	-	366	-	713	252	-
Total	2,642	1,921	1,891	2,015	1,629	1,754	10,075	17,849	25,319	28,408	11,797	6,903
Mean	85.2	64.0	61.0	65	58.2	56.6	336	576	844	916	381	230
Ac-ft	5,240	3,810	3,750	4,000	3,230	3,480	19,980	35,400	50,220	56,350	23,400	13,690

Calendar year 1964: Max 1,210 Min - Mean 188 Ac-ft 136,800  
Water year 1964-65: Max 1,360 Min - Mean 307 Ac-ft 222,600

Peak discharge (base, 900 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-23	1830	6.03	2,400	7-12	0515	5.30	1,540
5-1	1815	5.27	1,490	7-19	1630	5.21	1,460
5-22	0230	4.85	1,040	7-25	0315	5.07	1,320
6-21	0215	5.43	1,560	7-31	2200	4.77	1,030

\* Discharge measurement made on this day.  
b Stage-discharge relation affected by ice.  
Note.--No gage-height record Dec. 5 to Feb. 17 (stage-discharge relation affected by ice during most of period).

## 9-1730. Beaver Creek near Norwood, Colo.

Location.--Lat 37°58'10", long 108°11'40", in sec.28, T.43 N., R.12 W., on left bank 20 ft downstream from county highway bridge, 805 ft upstream from Goat Creek and 13 miles southeast of Norwood.

Drainage area.--35.2 sq mi.

Records available.--October 1941 to September 1961, October 1962 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder and concrete control. Datum of gage is 8,016.81 ft above mean sea level (Bureau of Reclamation bench mark). Prior to Oct. 1, 1948, at site 335 ft downstream at datum 6.00 ft lower. Oct. 1, 1948, to July 16, 1952, at site 335 ft downstream at datum 8.00 ft lower. July 17, 1952, to Sept. 30, 1961, at site 285 ft downstream at datum 8.00 ft lower.

Average discharge.--23 years, 17.0 cfs (12,310 acre-ft per year).

Extremes.--Maximum discharge during year, 300 cfs May 22 (gage height, 4.40 ft), from rating curve extended above 170 cfs; minimum daily, 0.2 cfs Oct. 1, 2.

1941-61, 1962-65: Maximum discharge, 750 cfs June 9 or 10, 1952 (gage height, 5.67 ft, from floodmarks, site and datum then in use), from rating curve extended above 370 cfs; no flow at times in 1946, 1950-51, 1954, 1956, 1959, 1963-64.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Gurley ditch diverts water above station to Gurley Reservoir (capacity, 8,800 acre-ft, 3,200 acre-ft prior to September 1948) for irrigation of about 12,000 acres in Naturita Creek drainage.

Rating table, except periods of ice effect (gage height, in feet, and discharge in cubic feet per second)

2.2	0.2	3.1	18
2.4	.7	3.3	33
2.6	1.7	3.5	53
2.7	3.0	4.0	170
2.8	5.0	4.2	230
2.9	7.0		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.2	0.5					5	110	* 24	6.0	6.2	0.9
2	.2	.5	(*)				5	142	36	6.4	6.4	1.0
3	.3	* .7					5	132	50	6.0	6.0	.9
4	.4	.5					4.4	86	48	5.4	* 4.2	.8
5	* .4	.5					4.2	* 69	38	5.2	3.0	1.2
6	.4	.5					4.6	51	28	4.8	2.4	2.0
7	.3	.5					4.8	45	50	* 4.6	1.7	* 1.3
8	.3	.4				1.4	4.8	39	120	4.6	1.5	1.0
9	.3	.5					4.8	35	* 110	4.2	1.2	.9
10	.3	.6					4.6	32	50	3.4	1.1	.6
11	.4	.6					4.6	* 29	32	3.2	1.3	.6
12	.4	.5					4.6	31	95	4.8	1.4	.6
13	.4	.6					4.6	36	110	5.2	1.1	.6
14	.4	.6					4.8	34	160	3.6	.9	3.0
15	.4	.5					5.5	31	* 188	2.9	.9	3.4
16	.4	.7	1.2	1.0	1.2	1.8	10	28	106	3.2	2.7	8.0
17	.4	1.0				1.6	14	32	35	4.0	2.2	10
18	.4	1.2				2.0	19	45	22	3.6	3.0	23
19	.4	1.4				* 2.2	* 20	63	22	3.4	2.0	27
20	.4	1.2				2.2	32	95	22	2.5	1.4	24
21	.5	1.0				2.6	42	137	* 20	* 2.4	1.1	19
22	.5	1.0				2.6	86	209	17	2.4	1.0	18
23	.4	1.0				2.4	122	99	14	8.7	.9	17
24	.5	1.0				2.6	124	50	16	6.8	.6	16
25	.4	1.0				2.4	91	36	14	6.8	.5	15
26	.4	1.2				2.8	61	26	9.5	5.6	.4	16
27	.5	1.2				3.0	48	20	6.8	4.0	.4	16
28	.6	1.2				3.0	43	16	6.4	3.4	.3	17
29	.6	1.2				3.4	51	12	* 6.2	2.6	.4	17
30	.5	1.2				3.6	73	12	6.4	3.6	1.4	16
31	.5					4.0		15		5.8	1.2	
Total	12.5	24.5	37.2	31.0	33.6	63.2	907.3	1797	1462.3	139.1	58.8	277.8
Mean	0.40	0.82	1.2	1.0	1.2	2.04	30.2	58.0	48.7	4.49	1.90	9.26
Ac-ft	25	49	74	61	67	125	1,800	3,560	2,900	276	117	551

Calendar year 1964: Max 179 Min 0 Mean 6.32 Ac-ft 4,580

Water year 1964-65: Max 209 Min 0.2 Mean 13.3 Ac-ft 9,600

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-4, May 24 to June 14, Sept. 22-30. Stage-discharge relation affected by ice Nov. 4 to Apr. 17 (no gage-height record Nov. 19 to Mar. 19), Apr. 19-21.

## 9-1755. San Miguel River at Naturita, Colo.

Location.--Lat 38°13'10", long 108°34'00", in SE $\frac{1}{4}$ SW $\frac{1}{4}$  sec.19, T.46 N., R.15 W., on left bank 20 ft downstream from bridge on State Highway 97 in Naturita and 1.2 miles downstream from Naturita Creek.

Drainage area.--1,080 sq mi, approximately.

Records available.--October 1917 to September 1929, May 1940 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 5,392.85 ft above mean sea level, datum of 1929. Apr. 26, 1918, to Sept. 2, 1926, chain gage and Sept. 3, 1926, to Sept. 30, 1929, water-stage recorder, at same site at different datums. Oct. 1, 1940, to Dec. 9, 1941, staff gage at same site and datum.

Average discharge.--37 years, 352 cfs (254,800 acre-ft per year).

Extremes.--Maximum discharge during year, 6,650 cfs Apr. 20 (gage height, 8.44 ft); minimum daily, 36 cfs Dec. 29. 1917-29, 1940-65: Maximum discharge, 7,100 cfs Apr. 15, 1942 (gage height, 9.80 ft), from rating curve extended above 3,800 cfs; minimum daily, 5.8 cfs Sept. 25-28, 30, 1956.

Remarks.--Records good. Natural flow of stream affected by storage reservoirs, diversions for irrigation of about 22,000 acres above station and 4,000 acres below, and return flow from irrigated areas.

Rating table (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 19				Apr. 20 to Sept. 30			
0.9	35	3.0	535	1.5	107	4.0	1,140
1.5	107	4.0	1,100	2.0	205	5.0	1,880
2.0	205	5.0	1,950	2.5	375	6.0	2,960
2.5	345			3.0	600	7.0	4,400

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	96	69	81	88	89	80	99	1,980	600	922	888	175
2	123	68	* 97	70	* 80	64	212	2,160	* 635	1,000	830	167
3	120	76	96	48	70	* 47	181	1,960	675	1,060	805	191
4	113	* 78	85	76	79	62	163	1,640	740	960	* 645	181
5	110	73	78	* 92	83	73	137	1,330	730	932	550	163
6	* 109	74	60	97	92	84	125	1,160	680	* 984	456	248
7	107	72	50	130	96	81	* 125	954	745	1,030	402	239
8	101	69	47	123	83	81	134	883	1,010	972	367	* 230
9	101	66	74	99	76	96	141	740	1,030	927	331	257
10	103	66	78	88	69	88	149	680	944	888	303	215
11	93	70	79	83	69	84	134	* 625	916	894	292	193
12	94	69	92	90	58	85	118	605	996	1,180	278	177
13	93	73	62	93	54	83	123	785	949	1,120	245	159
14	93	79	53	81	57	81	130	820	1,050	938	248	147
15	94	78	61	84	68	74	173	894	1,360	850	230	134
16	93	84	75	79	73	73	372	715	1,420	765	294	125
17	93	73	61	75	56	74	758	775	1,100	715	465	120
18	90	43	37	70	75	56	1,340	883	1,100	715	492	230
19	90	46	100	74	86	68	1,690	966	1,180	948	478	319
20	89	76	96	83	93	69	* 2,720	1,130	1,250	* 872	388	605
21	84	79	89	89	93	80	* 3,720	1,240	1,290	785	355	416
22	83	79	89	89	101	81	2,960	1,500	* 1,250	775	311	339
23	81	74	104	70	104	83	3,400	1,530	1,090	735	245	239
24	83	75	118	62	74	96	2,860	1,210	1,100	815	236	212
25	78	78	127	88	67	100	2,140	978	1,060	1,010	218	205
26	73	89	99	61	79	103	1,740	905	878	927	186	210
27	79	86	94	66	85	99	1,360	835	770	725	149	200
28	78	79	69	70	97	90	1,380	740	825	680	130	203
29	75	93	36	90	-	96	1,440	635	938	600	121	212
30	78	79	42	92	-----	93	1,610	586	1,030	615	205	220
31	78	-----	66	94	-----	78	-----	532	-----	625	220	-----
Total	2,875	2,213	2,395	2,594	2,206	2,502	31,634	32,376	29,341	26,964	11,363	6,731
Mean	92.7	73.8	77.3	83.7	78.8	80.7	1,054	1,044	978	870	367	224
Ac-ft	5,700	4,390	4,750	5,150	4,380	4,960	62,750	64,220	58,200	53,480	22,540	13,350

Calendar year 1964: Max 1,580 Min 14 Mean 225 Ac-ft 163,600  
 Water year 1964-65: Max 3,720 Min 36 Mean 420 Ac-ft 303,900

Peak discharge (base, 1,800 cfs)

\* Discharge measurement made on this day.

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-20	2300	8.44	6,650	7-19	0200	4.93	1,840
5-2	0015	6.24	3,250				

9-1775. Taylor Creek near Gateway, Colo.

Location.--Lat 38°31', long 109°07', in sec.24, T.26 S., R.25 E., in Utah, on left bank at downstream side of bridge, a quarter of a mile downstream from South Taylor Creek and 12 miles southwest of Gateway.

Drainage area.--12 sq mi, approximately.

Records available.--October 1944 to September 1965.

Gage.--Water-stage recorder and plank control. Altitude of gage is 8,120 ft (by barometer). Prior to Aug. 31, 1949, at site 770 ft downstream at datum 6.00 ft lower.

Average discharge.--21 years, 3.29 cfs (2,380 acre-ft per year), unadjusted.

Extremes.--Maximum discharge during year, 129 cfs Apr. 22 (gage height, 3.66 ft); minimum daily, 0.1 cfs Oct. 1-26, Nov. 9, 10. 1944-65: Maximum discharge, 555 cfs Apr. 18, 1948, from rating curve extended above 220 cfs; maximum gage height, 5.72 ft Aug. 6, 1945, site and datum then in use; no flow at times June to August 1946, Sept. 29, 1949, May 17, 18, 1964.

Remarks.--Records good. Diversions by Hubbard ditch (see table below) above station to John Brown Creek basin began in spring of 1956.

Monthly diversion, in acre-feet, water year October 1964 to September 1965

Month	Diversion	Month	Diversion
October.....	0	April.....	236
November.....	0	May.....	577
December.....	0	June.....	639
	- - - - -	July.....	0
Calendar year 1964.....	664	August.....	0
	- - - - -	September.....	0
January.....	0		
February.....	0	Water year 1964-65.....	1,450
March.....	0		

Revisions.--Revised figures of discharge, in cubic feet per second, for the water year 1964, superseding figures previously published, are given herewith:

1964	1964-Con.	1964-Con.	1964-Con.
June 24..... 0.4	July 15..... 0.9	Aug. 10..... 0.1	Aug. 26..... 0.3
25..... .4	19..... .1	11..... 8.8	27..... .3
26..... .3	23..... .1	12..... .8	Sept. 6..... .3
28..... .2	25..... .1	13..... 3.8	7..... .3
30..... .3	27..... .1	20..... .4	8..... .3
July 1..... .2	28..... .1	21..... .4	12..... .3
2..... .1	Aug. 4..... 9.8	22..... .4	14..... .7
3..... .1	5..... .6	23..... .3	15..... .4
4..... .1	7..... 1.5	24..... .3	17..... .3
8..... .1	9..... .1	25..... .3	18..... .3

Month	Cfs-days	Maximum	Minimum	Mean	Runoff in acre-feet
June 1964.....	10.6	0.7	0.2	0.35	21
July.....	6.4	.9	.1	.21	13
August.....	32.4	9.8	.1	1.05	64
September.....	5.9	.7	.1	.20	12
Water year 1963-64.....	-	60	0	2.00	1,460

Revised peak discharge.--1964: Aug. 4 (1130) 159 cfs (3.86 ft); Aug. 11 (1500) 120 cfs (3.60 ft).

## DOLORES RIVER BASIN

9-1775. Taylor Creek near Gateway, Colo.--Continued

Rating table (gage height, in feet, and discharge,  
in cubic feet per second)

1.9	0.1	2.6	18
2.0	.9	2.8	29
2.1	2.6	3.0	44
2.2	4.7	3.1	53
2.4	10		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.1	0.3	0.4	0.3	0.4	0.4	1.4	2.4	2.8	3.6	0.9	0.6
2	.1	.3	.4	.3	.4	.5	1.6	1.8	3.0	3.2	.8	.7
3	.1	.3	.4	.3	.4	.5	1.1	1.0	2.8	2.8	.8	.7
4	.1	.3	.4	.3	.4	.5	.9	6.7	2.8	2.6	.7	.7
5	.1	.2	.4	.3	.4	.4	.8	4.7	3.0	2.1	.5	.6
6	.1	.3	.4	.3	.4	.4	.8	3.2	3.2	* 1.8	.3	.7
7	.1	.2	.5	.4	.5	.3	.8	3.0	2.1	1.8	.3	.6
8	.1	.2	.5	.4	.5	.3	.8	3.4	* 1.8	1.8	.3	.4
9	.1	.1	.4	.4	.6	.3	.7	3.2	1.6	1.2	.3	.3
10	.1	*.1	.4	.4	.6	.3	.7	2.8	3.9	1.1	.3	.3
11	.1	.2	.4	.4	.6	.3	.8	2.3	4.3	.9	*.3	.3
12	*.1	.2	.4	.4	.6	.3	.7	2.6	4.1	1.4	.3	.4
13	.1	.3	.5	.4	.6	.3	.7	8.7	2.8	3.0	.3	.4
14	.1	.3	.5	.4	.6	.3	1.1	* 5.5	2.3	2.1	.3	.5
15	.1	.3	.6	.3	.6	.3	1.6	3.9	1.9	1.1	.4	.5
16	.1	.3	.6	.3	.6	*.3	2.6	3.2	2.6	.7	.5	.6
17	.1	.3	.6	.3	.5	.4	4.1	3.0	3.0	1.8	1.2	.7
18	.1	.3	.5	.3	.5	.6	5.0	3.4	2.1	1.1	1.2	1.2
19	.1	.2	.6	.3	.4	.6	9.3	3.2	1.6	1.1	.9	2.8
20	.1	.2	.6	.3	.4	.6	23	9.0	1.4	.9	1.2	1.9
21	.1	.2	.7	.3	.5	.6	41	13	1.2	.8	.7	.9
22	.1	.2	.7	.3	.5	.5	48	10	1.2	.7	.7	.7
23	.1	.2	.7	.3	.5	.4	40	7.2	1.1	.7	.7	*.7
24	.1	.2	.5	.3	.4	.5	30	7.2	1.1	.7	.7	.7
25	.1	.2	.5	.3	.3	.6	16	7.2	1.1	.7	.6	.7
26	.1	.3	.5	.3	.3	.6	10	9.0	.9	1.2	.4	.7
27	.3	.3	.4	.3	.4	.6	7.2	7.8	.8	.7	.4	.6
28	.3	.3	.4	.3	.4	.7	15	4.5	.8	.5	.4	.5
29	.3	.3	.4	.3	-	.7	* 15	3.6	.8	.6	.7	.5
30	.3	.4	.4	.3	---	.8	16	3.0	1.2	.7	.7	.5
31	.3	---	.3	.4	---	.8	---	2.8	---	.8	.6	---
Total	4.1	7.5	15.0	10.2	13.3	14.7	296.7	199.1	63.3	44.2	18.4	21.4
Mean	0.13	0.25	0.48	0.33	0.48	0.47	9.89	6.42	2.11	1.43	0.59	0.71
Ac-ft	8.1	15	30	20	26	29	588	395	126	88	36	42

Calendar year 1964: Max 60 Min 0 Mean 2.03 Ac-ft 1,480  
 Water year 1964-65: Max 48 Min 0.1 Mean 1.94 Ac-ft 1,400

Peak discharge (base, 40 cfs)

\* Discharge measurement made on this day.

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-22	1600	3.66	129	5-1	1800	3.31	78
4-28	1600	3.34	83				



9-2360. Yampa River near Toponas, Colo.

Location.--Lat 40°03', long 107°04', in NW¼ sec.20, T.1 N., R.86 W., on left bank at Stillwater campground, three-quarters of a mile downstream from Mandall Creek, three-quarters of a mile upstream from Dome Creek, and 14 miles west of Toponas.

Drainage area.--23 sq mi, approximately.

Records available.--October 1952 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 9,710 ft (from river-profile map).

Average discharge.--13 years, 40.3 cfs (29,180 acre-ft per year).

Extremes.--Maximum discharge during year, 203 cfs June 24 (gage height, 4.63 ft); minimum not determined.  
1952-65: Maximum discharge, 436 cfs July 2, 1957 (gage height, 6.39 ft); minimum not determined.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Flow regulated by Stillwater Reservoir (capacity, 6,200 acre-ft). No diversion above station.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 5-23, Nov. 3-20, Aug. 5-10)

Oct. 1 to Apr. 5

Apr. 6 to Sept. 30

2.9	15	2.5	16	3.4	66
3.2	26	2.7	21	4.0	132
3.5	45	3.0	34	4.6	199

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	45	16					17	26	75	182	104	
2	44	16					17	28	80	179	109	
3	40	*16					17	29	80	167	*86	
4	40	16					17	30	80	165	80	
5	39	16					17	30	80	164	72	
6	35	16					*17	26	80	164	73	
7	*34	16					17	24	85	162	70	
8	28	16					17	24	*90	164	69	
9	26	16					17	23	99	145	67	
10	26	16					17	21	107	143	68	
11	25	15					17	21	112	131	*68	
12	24	16					17	23	108	125	65	
13	21	17					17	29	136	*123	65	
14	20	17					17	30	131	141	60	
15	21	17					17	26	131	140	60	
16	21	17	16	15	15	16	17	27	131	142	60	45
17	18	16					17	36	135	130	65	
18	18	16					17	41	151	109	70	
19	17	17					17	46	163	107	65	
20	18	17					19	57	180	108	60	
21	18	16					21	60	185	103	55	
22	17	16					22	70	*187	102	50	
23	17	16					22	80	185	113	44	
24	16	16					21	75	188	116	42	
25	16	16					17	70	199	116	40	
26	16	16					19	65	197	108	44	
27	16	16					19	60	188	106	44	
28	*16	16					18	55	185	102	46	
29	16	16					18	50	185	99	46	
30	16	16					21	60	185	100	46	
31	16	-----					-----	70	-----	108	*46	-----
Total	740	485	496	465	420	496	540	1,312	4,118	4,064	1,939	1,350
Mean	23.9	16.2	16	15	15	16	18.0	42.3	137	131	62.5	45
Ac-ft	1,470	962	984	922	833	984	1,070	2,600	8,170	8,060	3,850	2,680

Calendar year 1964: Max 162 Min - Mean 39.4 Ac-ft 28,580  
Water year 1964-65: Max 199 Min - Mean 45.0 Ac-ft 32,580

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 28 to Nov. 3, Nov. 21 to Apr. 6 (stage-discharge relation affected by ice during most of period), May 21 to June 8, Aug. 11 to Sept. 30.

## GREEN RIVER BASIN

9-2375. Yampa River near Oak Creek, Colo.

Location.--Lat 40°17', long 106°50', in SE¼ sec.29, T.4 N., R.84 W., on left bank just upstream from Upper Yampa damsite, 1 mile upstream from Morrison Creek, and 6½ miles east of town of Oak Creek.

Drainage area.--227 sq mi.

Records available.--September 1939 to September 1944, October 1956 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 7,100 ft (from river-profile map). Prior to Nov. 16, 1939, staff gage at same site and datum.

Average discharge.--14 years, 83.2 cfs (60,230 acre-ft per year).

Extremes.--Maximum discharge during year, 550 cfs July 25 (gage height, 5.32 ft); minimum daily, 34 cfs Dec. 8.

1939-44, 1956-65: Maximum discharge, 1,400 cfs Apr. 16, 1962 (gage height, 7.56 ft), from rating curve extended above 540 cfs; minimum daily, 8.9 cfs May 22, 1963

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 12,000 acres above station. Natural flow of stream affected by 2 diversions for irrigation to Egeria Creek in Colorado River basin and by storage in Stillwater Reservoir (capacity, 6,200 acre-ft).

Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 12 to June 7, June 11-25)

2.9	35	5.0	430
3.3	82	5.3	520
4.0	205		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	39	46	* 50	50	44	* 42	60	197	129	144	273	99
2	38	46	50	46	* 42	40	70	221	119	146	221	99
3	42	* 48	50	46	46	38	70	221	119	136	* 217	99
4	40	47	48	* 50	46	40	65	205	119	136	215	97
5	39	47	46	50	46	42	65	201	124	131	167	97
6	41	47	42	50	48	42	60	* 179	115	116	159	105
7	* 45	46	38	50	46	44	65	161	123	116	146	91
8	49	48	34	48	44	44	70	171	* 136	134	141	91
9	46	50	40	48	44	42	80	163	131	127	136	96
10	47	50	46	50	44	44	90	152	179	127	136	82
11	49	50	50	48	42	42	100	144	213	118	136	84
12	49	50	48	46	40	42	113	138	239	131	129	85
13	54	50	40	46	40	44	116	150	338	* 119	127	79
14	53	50	36	48	44	44	121	191	323	107	124	67
15	53	50	42	46	48	44	138	183	263	102	134	66
16	54	55	50	44	44	44	150	156	241	97	124	68
17	50	55	44	46	48	44	170	179	237	94	131	55
18	49	50	36	46	50	42	190	219	231	110	152	61
19	47	48	44	48	48	40	* 220	203	221	121	179	84
20	52	48	50	50	50	40	313	* 237	227	132	181	82
21	49	48	55	50	46	46	328	271	243	154	148	88
22	47	48	50	46	46	48	311	287	* 221	138	141	99
23	47	50	55	46	44	48	281	295	189	227	121	113
24	48	48	60	46	42	46	249	253	181	370	123	99
25	48	55	55	46	44	42	191	213	191	475	116	96
26	46	50	50	44	44	40	183	201	205	253	108	92
27	47	50	50	42	46	40	154	181	185	211	103	91
28	46	50	55	44	46	40	144	146	179	175	100	94
29	45	55	50	44	-	* 42	159	119	165	150	105	110
30	46	55	46	46	-----	46	175	124	152	159	113	121
31	48	-----	42	46	-----	50	-----	139	-----	328	* 108	-----
Total	1,453	1,490	1,452	1,456	1,262	1,332	4,501	5,900	5,738	5,084	4,514	2,690
Mean	46.9	49.7	46.8	47.0	45.1	43.0	150	190	191	164	146	89.7
Ac-ft	2,880	2,960	2,880	2,890	2,500	2,640	8,930	11,700	11,380	10,080	8,950	5,340

Calendar year 1964: Max 245 Min 32 Mean 66.5 Ac-ft 48,270  
Water year 1964-65: Max 475 Min 34 Mean 101 Ac-ft 73,130

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 7 to Apr. 11 (no gage-height record Feb. 24 to Mar. 1). No gage-height record Apr. 16-19.

9-2395, Yampa River at Steamboat Springs, Colo.

Location.--Lat 40°29', long 106°50', in sec.17, T.6 N., R.84 W., on right bank 30 ft downstream from First Street Bridge in Steamboat Springs and a quarter of a mile upstream from Soda Creek.

Drainage area.--604 sq mi.

Records available.--May 1904 to October 1906, October 1909 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 6,695.47 ft above mean sea level, datum of 1929. Prior to May 8, 1905, staff gage at bridge a quarter of a mile upstream at datum 4.16 ft higher. May 8, 1905, to Oct. 31, 1906, chain gage on bridge 30 ft upstream at datum 0.44 ft higher. Mar. 8, 1910, to Sept. 11, 1934, water-stage recorder at present site at datum 0.44 ft higher.

Average discharge.--58 years, 468 cfs (338,800 acre-ft per year).

Extremes.--Maximum discharge during year, 4,720 cfs June 13 (gage height, 6.16 ft); minimum daily, 62 cfs Oct. 2.

1904-6, 1909-65: Maximum discharge, 6,820 cfs June 14, 1921 (gage height, 7.08 ft, present datum), from rating curve extended above 4,800 cfs; minimum daily, 4 cfs Sept. 8, 1934, Sept. 10-13, 1944.

Remarks.--Records good except those for periods of ice effect, which are poor. Natural flow of stream affected by 2 diversions for irrigation to Egeria Creek in Colorado River basin, 1 diversion for irrigation from Trout Creek drainage to Oak Creek drainage, irrigation of about 19,700 acres above station, and storage in Stillwater Reservoir (capacity, 6,200 acre-ft).

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 8-24)

0.8	52	3.0	1,030
.9	63	4.0	1,910
1.2	113	5.0	3,040
1.5	195	6.0	4,500
2.0	400		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	66	88	91	100	95	84	111	1,290	2,060	1,150	566	168
2	62	86	111	90	* 90	* 90	131	1,510	2,000	1,250	385	162
3	64	* 90	107	85	84	80	150	1,540	2,190	1,090	* 405	165
4	64	79	105	90	90	75	165	1,460	2,230	990	420	171
5	64	76	90	* 90	90	80	162	1,390	2,080	922	301	177
6	63	79	88	95	93	85	159	* 1,180	2,070	817	265	281
7	* 66	79	85	100	91	80	183	998	2,490	704	240	206
8	70	84	80	100	91	80	209	974	* 2,780	716	223	171
9	72	79	85	95	91	80	237	908	2,960	710	209	177
10	70	86	95	95	84	75	262	824	3,250	644	209	159
11	71	88	95	95	80	81	269	894	3,440	584	198	141
12	72	83	95	103	70	79	248	866	3,390	596	209	153
13	76	97	85	105	70	76	258	1,020	4,300	* 584	206	141
14	79	93	75	103	75	78	285	1,330	4,080	475	192	122
15	79	88	80	101	75	79	370	1,250	* 3,630	395	230	111
16	79	90	90	101	70	75	465	1,060	3,450	355	220	113
17	75	95	80	100	75	78	572	1,260	3,370	318	198	111
18	75	95	75	90	75	70	524	1,520	3,200	318	269	120
19	73	85	90	80	80	65	602	1,660	2,830	390	425	192
20	75	80	100	85	86	70	* 958	* 1,980	2,590	380	420	244
21	76	75	95	90	88	70	1,310	2,240	2,560	435	301	223
22	76	75	95	90	83	72	1,460	2,590	* 2,390	336	305	234
23	75	80	100	85	84	75	1,660	2,880	2,070	420	254	262
24	81	85	120	86	85	76	1,540	2,540	1,920	662	244	265
25	79	91	120	83	* 80	76	1,190	2,110	1,830	974	216	336
26	76	97	110	83	80	76	1,080	1,790	1,620	662	183	375
27	78	91	100	* 86	83	72	894	1,530	1,390	465	168	332
28	* 78	81	* 95	83	83	72	908	1,270	1,360	385	159	310
29	76	97	90	75	-	76	990	1,210	1,340	328	162	360
30	83	* 101	80	72	-----	* 83	1,120	1,440	1,180	305	216	* 355
31	88	-----	80	90	-----	93	-----	1,800	-----	530	* 202	-----
Total	2,281	2,593	2,887	2,826	2,321	2,401	18,472	46,314	76,050	18,890	8,200	6,337
Mean	73.6	86.4	93.1	91.2	82.9	77.5	616	1,494	2,535	609	265	211
Ac-ft	4,520	5,140	5,730	5,610	4,600	4,760	36,640	91,860	150,800	37,470	16,260	12,570

Calendar year 1964: Max 2,640 Min 48 Mean 357 Ac-ft 259,200

Water year 1964-65: Max 4,300 Min 62 Mean 519 Ac-ft 376,000

Peak discharge (base, 3,000 cfs).--June 13 (2100) 4,720 cfs cfs (6.16 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 16-24, Dec. 7-31, Jan. 1-11, 17-23, 31, Feb. 1, 2, 5, 11-13, 15-19, 24-26, Mar. 2-9, 16, 18-20.

## 9-2410. Elk River at Clark, Colo.

Location.--Lat 40°43'03", long 106°54'55", in NW¼ sec. 27, T.9 N., R.85 W., on left bank 30 ft downstream from bridge on State Highway 129, 0.8 mile north of Clark, and 2 miles upstream from Cottonwood Gulch.

Drainage area.--206 sq mi.

Records available.--May 1910 to September 1922 (published as "near Clark"), April 1930 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 7,267.75 ft above mean sea level (State Highway Department bench mark). May 1910 to September 1922, chain gage at site 30 ft upstream at datum 0.15 ft lower. Apr. 23, 1930, to Sept. 27, 1934, water-stage recorder at present site at datum 0.15 ft lower.

Average discharge.--47 years, 340 cfs (246,100 acre-ft per year).

Extremes.--Maximum discharge during year, 3,240 cfs June 13 (gage height, 5.20 ft); minimum daily determined, 30 cfs Nov. 4, 5, 21-23. 1910-22, 1930-65: Maximum daily discharge, 4,470 cfs June 6, 9, 1912; minimum daily determined, 22 cfs Dec. 12, 1963, but a lesser discharge may have occurred during periods of no gage-height record prior to 1939.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions above station for irrigation of about 230 acres above and about 460 acres below station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 3-19, Sept. 27-30)

0.6	25	2.0	340
.7	32	2.5	590
.9	53	3.0	930
1.2	100	4.0	1,900
1.5	168	5.0	3,080

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40	40	*44				60	890	1,400	1,300	324	106
2	37	45	44		(*)	(*)	65	1,170	1,310	1,410	296	102
3	38	43	44				65	1,280	1,450	1,380	*365	102
4	37	30	42				60	1,260	1,510	1,360	328	100
5	37	30	40	(*)			60	*1,100	1,370	1,260	276	104
6	38	32	36				55	759	1,340	1,220	246	114
7	39	32	34				55	662	1,700	1,150	229	104
8	*38	32	34			42	55	662	1,870	1,150	217	108
9	37	32	38				55	530	*2,000	1,080	202	118
10	39	34	40				55	490	2,400	994	193	98
11	45	34	40				55	596	2,530	1,050	193	91
12	41	34	36				50	738	2,300	1,060	188	112
13	40	36	36				58	850	2,930	890	179	100
14	37	36	40				55	801	2,770	*794	193	89
15	36	36	40	42	42		58	780	2,570	724	211	89
16	36	34	40			*44	60	890	2,550	668	185	129
17	36	34	36			44	63	1,240	2,570	644	182	135
18	34	36	34			42	62	1,460	2,420	656	211	152
19	31	34	34			40	66	*1,570	2,240	773	243	163
20	34	32	34			38	*93	1,810	2,140	644	240	150
21	35	30	38			42	140	1,900	2,080	596	188	131
22	34	30	44			44	188	1,920	2,010	545	199	133
23	37	30	46			46	229	1,880	*1,960	644	188	155
24	39	32	46			46	276	1,660	1,830	560	176	158
25	35	34	46			40	296	1,390	1,740	590	150	174
26	34	38	44			40	300	1,100	1,530	545	138	190
27	36	38	42			42	304	914	1,240	465	129	211
28	36	36	40			44	365	801	1,200	415	122	236
29	*36	36	38			46	465	874	1,330	375	122	243
30	45	42	36			*48	632	1,140	1,280	340	124	190
31	51	-----	38		-----	55	-----	1,420	-----	380	*116	-----
Total	1,168	1,042	1,224	1,302	1,176	1,331	4,400	34,537	57,570	25,662	6,353	4,087
Mean	37.7	34.7	39.5	42	42	42.9	147	1,114	1,919	828	205	136
Ac-ft	2,320	2,070	2,430	2,580	2,330	2,640	8,730	68,500	114,200	50,900	12,600	8,110

Calendar year 1964: Max 2,160 Min - Mean 277 Ac-ft 201,500  
Water year 1964-65: Max 2,930 Min - Mean 383 Ac-ft 277,400

Peak discharge (base, 1,900 cfs)--May 21 (2245) 2,160 cfs (4.16 ft); June 13 (1930) 3,240 cfs (5.20 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4 to Apr. 12 (no gage-height record Dec. 12-25, Dec. 31 to Mar. 16), Apr. 14, 16.

9-2441. Fish Creek near Milner, Colo.

Location.--Lat 40°20'10", long 107°08'20", in NW¼ sec.11, T.4 N., R.87 W., on left bank 200 ft downstream from highway bridge, a quarter of a mile upstream from Coyote Creek, and 12 miles southwest of Milner.

Drainage area.--34.5 sq mi.

Records available.--October 1955 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 6,930 ft (from topographic map). Prior to Apr. 8, 1958, at site 200 ft upstream at different datum. Apr. 8 to Aug. 14, 1958, at site 200 ft upstream at datum 3.14 ft higher.

Average discharge.--10 years, 12.6 cfs (9,120 acre-ft per year).

Extremes.--Maximum discharge during year, 206 cfs June 14 (gage height, 4.98 ft), from rating curve extended above 140 cfs; minimum daily, 0.6 cfs Oct. 1-3, 7,8.

1955-65: Maximum discharge, 255 cfs Mar. 27, 1960 (gage height, 5.63 ft), from rating curve extended above 110 cfs; maximum gage height, 6.13 ft Feb. 1, 1963 (ice jam); minimum daily discharge, 0.4 cfs Sept. 22, 1964.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions above station for irrigation.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 18-23)

2.7	0.2	3.4	18
2.8	.8	3.6	28
2.9	2.0	4.0	56
3.1	6.2	4.5	116

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	<u>0.6</u>	3.6	4.4	4.0	4.0	4.0	8	42	33	4.7	<u>11</u>	3.6
2	.6	3.8	* 4.6	3.8	* 3.6	* 3.6	10	57	29	4.2	8.2	* 3.4
3	.6	3.8	4.4	3.8	4.2	<u>3.4</u>	10	54	24	4.0	8.8	4.2
4	.8	3.4	4.2	4.4	4.0	<u>3.6</u>	9	56	20	3.6	6.9	4.0
5	.8	3.4	4.0	<u>4.8</u>	4.0	3.6	8	* 57	19	3.0	* 6.0	4.4
6	.8	* 3.6	3.8	* 4.6	<u>4.4</u>	3.8	<u>6.5</u>	49	20	<u>2.8</u>	5.3	5.1
7	.6	3.6	3.6	4.6	4.0	3.8	7	37	23	3.2	5.1	4.0
8	.6	3.4	<u>3.4</u>	4.6	3.8	4.0	7.5	40	25	4.2	4.7	3.6
9	.8	3.4	3.6	4.4	3.8	3.8	8.2	33	* 24	5.8	4.4	3.2
10	.7	<u>3.0</u>	3.8	4.6	3.8	4.0	8	<u>29</u>	33	6.9	4.2	3.2
11	1.0	3.4	4.6	4.6	3.6	3.8	7	31	38	5.8	4.2	3.2
12	1.4	3.2	4.4	4.4	3.6	3.8	7	36	33	7.5	4.4	3.4
13	* 1.4	3.2	3.6	4.2	<u>3.4</u>	3.8	8.2	49	<u>63</u>	6.0	4.7	3.0
14	1.2	3.2	3.4	4.4	4.0	3.8	9	56	50	5.8	4.4	<u>2.4</u>
15	.7	3.4	3.6	4.0	4.0	3.8	10	47	34	* 5.3	5.3	<u>2.6</u>
16	.9	3.6	3.8	4.0	3.6	4.0	12	52	* 30	4.4	4.7	3.0
17	1.5	3.8	3.8	3.8	4.2	3.8	16	82	25	4.9	4.9	3.6
18	1.8	4.0	3.8	<u>3.6</u>	4.2	3.8	14	95	19	5.3	5.3	4.9
19	1.8	4.2	3.8	3.8	4.2	3.4	20	* 102	16	4.9	7.5	6.5
20	1.8	4.0	3.8	4.0	4.2	3.6	40	103	13	5.8	7.5	7.2
21	1.6	3.8	3.8	4.2	4.2	4.0	* 51	108	12	5.8	6.0	6.2
22	2.2	3.6	4.0	4.0	4.0	4.4	48	<u>110</u>	9.5	5.8	6.9	7.5
23	3.4	4.0	4.4	4.0	3.8	4.4	44	<u>110</u>	9.2	7.5	5.5	7.5
24	3.6	4.2	<u>5</u>	4.0	3.6	4.0	34	77	8.2	12	5.1	6.0
25	3.2	4.4	4.8	4.0	3.8	3.8	25	48	* 7.5	13	4.2	6.2
26	3.2	<u>4.6</u>	4.6	4.0	3.8	3.8	22	42	8.8	8.2	<u>3.4</u>	6.0
27	3.4	4.4	4.6	3.8	4.0	4.2	19	36	10	6.9	<u>3.4</u>	6.2
28	3.2	4.2	4.6	4.0	4.2	4.6	18	32	9.9	5.8	3.4	6.0
29	3.2	4.2	4.4	4.0	-	4.6	22	32	7.5	5.1	4.2	<u>11</u>
30	3.8	4.4	4.0	4.2	-----	* 5	30	36	<u>5.1</u>	6.5	4.2	<u>8.5</u>
31	<u>4.0</u>	-----	3.8	4.0	-----	<u>7</u>	-----	40	-----	<u>14</u>	3.8	-----
Total	55.2	11 2.8	126.4	128.6	110.0	125.0	538.4	1 778	658.7	188.7	167.6	149.6
Mean	1.78	3.76	4.08	4.15	3.93	4.02	17.9	57.4	22.0	6.09	5.41	4.99
Ac-ft	109	224	251	255	218	248	1,070	3,530	1,310	374	333	297

Calendar year 1964: Max 86 Min 0.4 Mean 8.68 Ac-ft 6,300  
Water year 1964-65: Max 110 Min 0.6 Mean 11.3 Ac-ft 8,220

Peak discharge (base, 180 cfs).--June 14 (0230) 206 cfs (4.98 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4-10, Nov. 12 to Dec. 17, Dec. 23 to Apr. 5, Apr. 7, 10-12, 14-16.

## GREEN RIVER BASIN

9-2443. Grassy Creek near Mount Harris, Colo.

Location.--Lat 40°26'45", long 107°08'38", in SE¼ sec.28, T.6 N., R.87 W., on right bank 60 ft downstream from bridge, 150 ft downstream from small tributary, 2½ miles south of Mount Harris, and 3 miles upstream from mouth.

Drainage area.--25.8 sq mi.

Records available.--October 1958 to September 1965.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 6,580 ft (from topographic map).

Average discharge.--7 years, 1.50 cfs (1,090 acre-ft per year).

Extremes.--Maximum discharge during year, 247 cfs Apr. 20 (gage height, 5.06 ft); no flow for many days.

1958-65: Maximum discharge, that of Apr. 20, 1965; no flow for many days each year.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. No diversion above station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	0.1	0.1	0	0.1	0.1	0.2	5.6	1.4	0.4	0.2	0
2	0	.1	*.1	0	*.1	*.1	b .6	4.2	1.3	.4	.2	** 0
3	0	0	.1	0	.1	.1	b 1.0	3.2	1.2	.3	.2	0
4	0	.1	.1	0	.1	.1	b 2.0	2.6	1.2	.3	.2	0
5	0	.1	.1	0	.1	.1	b 1.6	* 2.1	1.1	.3	*.1	0
6	0	*.1	0	* 0	.1	.1	b 2.0	3.7	1.0	.2	.1	0
7	0	.1	0	0	.1	.1	b 1.8	3.3	1.3	.2	.1	0
8	0	.1	0	0	.1	.1	b 1.5	5.3	1.0	.2	.1	0
9	0	.1	0	0	.1	.1	2.9	5.3	* 1.0	.3	.1	0
10	0	.1	0	0	.1	.1	b 2.8	3.7	1.3	.4	.1	0
11	0	.1	0	0	.1	.1	2.1	5.6	1.5	.4	.1	0
12	0	.1	0	0	.1	.1	b 1.5	3.5	1.5	.3	0	0
13	* 0	.1	0	0	.1	.1	1.8	3.2	2.5	.2	0	0
14	0	0	0	0	.1	.1	b 3.0	9.1	1.3	.2	.1	0
15	0	0	0	0	.1	.1	4.5	5.8	1.0	*.2	.1	0
16	0	0	0	0	.1	.1	7.1	3.3	.8	.2	0	0
17	0	0	0	0	.1	.1	4.1	2.6	.8	.2	0	.1
18	0	0	0	0	.1	.1	6.0	2.5	.8	.2	.1	.1
19	0	0	0	0	.1	.1	10.5	* 2.6	.6	.2	.1	.1
20	0	0	0	0	.1	.1	* 11.3	2.2	.5	.4	.1	.2
21	0	0	0	.1	.1	.2	* 6.5	1.8	.5	.3	.1	.3
22	0	0	0	.1	.1	.2	4.5	1.6	.5	.2	.2	.5
23	0	.1	0	.1	.1	.2	3.0	1.6	.4	.4	1.7	.3
24	.1	.1	0	.1	.1	.2	2.5	1.6	.8	.4	.2	.1
25	0	.1	0	.1	.1	.2	1.9	1.9	*.8	2.2	0	.1
26	0	.1	0	.1	.1	.2	1.4	2.8	.7	.8	0	.1
27	0	.1	0	.1	.1	.2	9.4	3.9	.5	.3	0	0
28	0	.1	0	.1	.1	.2	7.9	2.1	.4	.2	0	0
29	0	.1	0	.1	-	.2	7.3	1.6	.4	.2	0	.3
30	.1	.1	0	-	-	*.2	6.3	1.4	.4	.2	0	.2
31	0	-	0	.1	-	.2	1.4	1.4	-	.2	0	-
Total	0.2	2.0	0.5	1.1	2.8	4.2	829.1	101.1	28.5	10.9	4.2	2.4
Mean	0.006	0.07	0.02	0.04	0.10	0.14	27.6	3.26	0.95	0.35	.14	0.08
Ac-ft	0.4	4.0	1.0	2.2	5.6	8.3	1,640	201	57	22	8.3	4.8

Calendar year 1964: Max 37 Min 0 Mean 0.62 Ac-ft 450  
 Water year 1964-65: Max 113 Min 0 Mean 2.70 Ac-ft 1,950

Peak discharge (base, 8.0 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-9	1730	2.31	40	5-14	1100	1.70	13
4-20	1600	5.06	247	6-13	1530	1.62	9.1
5-8	2130	1.60	9.4	8-23	1545	1.76	12

\* Discharge measurement made on this day.

\*\* Field estimate made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 14 to Mar. 30 (stage-discharge relation affected by ice during most of period).

9-2445. Elkhead Creek near Clark, Colo.

Location.--Lat 40°44'00", long 107°10'20", in SE¼ sec.17, T.9 N., R.87 W., on left bank 0.5 mile downstream from South Fork, 13 miles west of Clark, and 17 miles north of Hayden.

Drainage area.--45.4 sq mi.

Records available.--October 1942 to March 1943 (monthly discharge only, published in WSP 1313), July 1943 to September 1944, October 1958 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,800 ft (from topographic map). Prior to October 1958, water-stage recorder at site 40 ft downstream at different datum.

Average discharge.--8 years (1943-44, 1958-65), 31.6 cfs (22,880 acre-ft per year).

Extremes.--Maximum discharge during year, 798 cfs May 17 (gage height, 5.36 ft), from rating curve extended above 240 cfs; maximum gage height, 7.05 ft May 5 (backwater from ice); minimum discharge not determined.  
1942-44, 1958-65: Maximum discharge, 977 cfs May 17, 1964 (gage height, 5.92 ft); maximum gage height, that of May 5, 1965; minimum daily discharge, 0.3 cfs Aug. 23, 28, 29, 1961.

Remarks.--Records good except those for periods of ice effect, which are poor. No diversion above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

1.4	1.5	2.2	57
1.5	2.4	2.5	102
1.7	10	3.5	312
1.9	24	5.0	696

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.9	3.8					5	210	216	34	8.2	3.8
2	1.8	3.8					5.5	250	196	32	6.9	* 3.8
3	2.0	3.8					6	260	194	28	10	4.2
4	1.9	* 3.1					6	260	184	27	12	4.6
5	1.8	2.8					5.5	250	166	24	* 7.4	4.6
6	1.9	2.8					5	212	164	21	6.4	4.9
7	1.9	2.6					** 5.5	194	202	20	6.0	4.9
8	1.9	2.4					5.5	190	198	20	5.3	4.6
9	1.9	2.4					5.5	130	188	* 20	4.9	4.9
10	1.9	2.4					5.5	120	198	18	4.6	3.8
11	2.0	2.6				2.2	5	152	216	18	4.2	3.5
12	2.0	2.6					5	262	208	18	4.6	4.6
13	* 2.0	2.8					5	341	220	15	4.6	3.5
14	2.0	2.8					5.5	286	184	14	4.9	2.8
15	2.0	3.0					5.5	317	* 164	13	6.9	2.8
16	2.0	2.8	2.2	2.2	2.2		5.5	434	148	13	6.4	4.9
17	2.0	2.6					6	518	134	11	6.4	6.0
18	2.0	2.6					7	466	116	12	9.6	8.2
19	2.0	2.4					8	478	100	13	17	9.6
20	2.0	2.4					18	485	88	13	9.6	7.8
21	2.0	2.4					26	458	80	13	6.9	7.4
22	2.0	2.4					36	425	72	11	7.4	9.6
23	2.3	2.6					60	374	64	12	7.8	11
24	3.1	2.6					90	307	61	10	7.4	10
25	2.4	2.6					85	268	58	16	5.3	10
26	2.4	2.8				3.0	80	220	54	13	4.9	9.2
27	2.4	2.6					85	190	48	9.6	4.2	8.7
28	2.3	2.4					100	164	43	8.7	4.2	8.2
29	2.3	2.6					130	170	38	7.8	4.6	14
30	4.6	2.6					160	208	34	6.9	5.3	10
31	5.3							233		8.7	4.2	
Total	70.0	82.1	68.2	68.2	61.6	77.0	977.5	8,832	4,036	500.7	208.1	195.9
Mean	2.26	2.74	2.2	2.2	2.2	2.5	32.6	285	135	16.2	6.71	6.53
Ac-ft	139	163	135	135	122	153	1,940	17,520	8,010	993	413	389

Calendar year 1964: Max 626 Min - Mean 32.4 Ac-ft 23,520  
Water year 1964-65: Max 518 Min - Mean 41.6 Ac-ft 30,110

Peak discharge (base, 300 cfs).--May 13 (1630) 442 cfs (4.04 ft); May 17 (1800) 798 cfs (5.36 ft).

\* Discharge measurement made on this day.

\*\* Field estimate made on this day.

Note.--Stage-discharge relation affected by ice Nov. 7, Nov. 9 to May 5 (no gage-height record Dec. 4 to Apr. 7), May 9, 10.

## 9-2450. Elkhead Creek near Elkhead, Colo.

Location.--Lat 40°40'15", long 107°17'10", in NW¼ sec.8, T.8 N., R.88 W., on right bank 0.2 mile upstream from North Fork Elkhead Creek, 4½ miles northwest of Elkhead, and 12 miles north of Hayden.

Drainage area.--64.2 sq mi.

Records available.--January to November 1910 and May to November 1920 (monthly discharge only, published in WSP 1313; published as "at Hayes Ranch"), April 1953 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 6,830 ft (from topographic map). Prior to Nov. 30, 1920, staff gage or water-stage recorder at site 675 ft upstream at different datum.

Average discharge.--12 years (1953-65), 47.2 cfs (34,170 acre-ft per year).

Extremes.--Maximum discharge during year, 966 cfs May 17 (gage height, 6.04 ft); minimum daily, 1.6 cfs Oct. 2. 1910, 1920, 1953-65: Maximum daily discharge, 1,660 cfs May 22, 1920; no flow Sept. 1, 1954, Sept. 12-19, 24, 1955, Aug. 27-29, 1961.

Remarks.--Records fair except those for periods of ice effect, which are poor. No diversion above station.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 2-21)

Oct. 1 to Mar. 23				Mar. 24 to Sept. 30			
2.2	0.6	2.4	3.3	3.1	55		
2.3	2.0	2.5	5.8	3.5	124		
2.4	4.0	2.6	9.5	4.0	245		
2.5	6.8	2.7	15	5.0	540		
		2.9	30	6.0	910		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.7	4.8	3.6	3.4	2.8	3.4	6.5	544	334	47	9.1	* 4.0
2	1.6	4.3	3.6	2.8	3.0	3.0	6.5	652	295	48	7.6	3.8
3	1.7	4.6	3.4	3.4	3.0	2.8	6	628	288	38	7.3	4.0
4	2.2	3.4	3.2	3.6	3.0	3.2	6	634	270	35	15	4.3
5	1.9	3.0	3.0	3.4	3.2	3.4	6	* 578	245	32	* 9.1	4.0
6	1.9	* 3.0	2.8	3.2	3.4	3.4	6	400	238	28	7.6	5.0
7	2.0	3.0	2.6	3.2	3.4	3.6	6	355	272	26	6.9	5.6
8	2.2	2.8	2.4	3.0	3.4	3.6	6	370	268	25	6.2	5.3
9	2.4	3.0	3.0	3.0	3.2	3.6	6	282	252	25	5.0	5.0
10	2.4	2.8	3.4	3.0	3.0	3.6	5.5	258	* 258	23	5.0	4.8
11	2.6	3.0	3.4	3.0	2.8	3.4	5.5	292	282	21	4.6	4.0
12	2.8	3.4	3.0	3.0	2.6	3.2	6	415	275	22	4.3	4.6
13	* 2.8	3.6	2.4	3.0	2.4	3.6	6.5	544	280	19	4.8	4.8
14	2.6	3.8	2.8	3.0	2.6	3.6	7	487	248	17	4.8	3.8
15	2.6	3.8	3.6	3.2	2.8	3.6	8	490	218	* 14	5.8	3.3
16	2.8	3.8	3.6	3.0	3.0	3.6	9	592	200	14	6.5	4.3
17	2.6	3.6	3.4	3.0	3.4	3.6	10	722	180	13	7.6	8.4
18	2.6	3.6	3.0	3.2	3.4	3.6	12	676	163	12	11	11
19	2.0	3.6	3.6	3.2	3.4	3.4	15	* 670	144	12	24	12
20	2.4	3.4	3.4	3.0	3.4	3.4	20	687	133	13	15	11
21	2.4	3.2	3.2	3.2	3.4	3.8	41	645	116	13	9.1	10
22	2.6	3.4	3.2	3.0	3.4	4.4	58	617	104	11	9.1	12
23	3.2	3.4	3.6	3.4	3.2	* 4.2	102	558	95	12	9.5	15
24	4.0	3.6	4.0	3.2	3.0	4.0	180	478	88	12	10	16
25	3.8	3.6	3.8	3.0	3.2	3.6	188	430	* 83	14	7.3	14
26	3.2	3.8	3.2	3.0	3.4	4.0	182	370	81	16	5.3	13
27	3.4	3.6	2.8	3.2	3.6	4.4	172	325	67	11	4.6	12
28	3.2	3.4	3.0	3.6	3.6	4.8	202	285	60	9.1	4.3	12
29	3.0	3.6	3.2	3.6	-	5.5	295	290	52	8.0	4.8	18
30	3.6	3.6	2.2	3.6	-----	6.5	415	334	50	7.6	5.3	17
31	6.0	-----	2.6	3.2	-----	7	-----	358	-----	8.8	4.8	-----
Total	84.2	105.5	98.0	98.6	88.0	120.8	1,994.5	14,966	5,639	6,065	241.3	252.0
Mean	2.72	3.52	3.16	3.18	3.14	3.90	66.5	483	188	19.6	7.78	8.40
Ac-ft	167	209	194	196	175	240	3,960	29,680	11,180	1,200	479	500

Calendar year 1964: Max 798 Min 1.3 Mean 43.8 Ac-ft 31,810

Water year 1964-65: Max 722 Min 1.6 Mean 66.6 Ac-ft 48,180

Peak discharge (base, 800 cfs)--May 17 (2000) 966 cfs (6.04 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4 to Apr. 17 (no gage-height record Mar. 13-23), Apr. 20.



9-2455. North Fork Elkhead Creek near Elkhead, Colo.

Location.--Lat 40°40'50", long 107°17'10", in NW¼ sec.5, T.8 N., R.88 W., on right bank 70 ft upstream from small tributary, 0.8 mile upstream from mouth, and 13 miles north of Hayden.

Drainage area.--21 sq mi, approximately.

Records available.--January to November 1910 and May to November 1920 (monthly discharge only, published in WSP 1313; published as "at Hayes Ranch"), October 1958 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 6,990 ft (from topographic map). January to November 1910 and May to September 1920, staff gage and October to November 1920, water-stage recorder, at site 0.6 mile downstream at different datum.

Average discharge.--7 years (1958-65), 15.1 cfs (10,930 acre-ft per year).

Extremes.--Maximum discharge during year, 438 cfs May 1 (gage height, 4.07 ft); minimum daily, 0.4 cfs Oct. 1-7. 1910, 1920, 1958-65: Maximum discharge, 575 cfs May 19, 1964; no flow at times in 1910, 1959-63.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for irrigation of about 100 acres of hay meadows.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used May 1-21)

1.9	0.3	2.4	16
2.0	1.2	2.7	43
2.1	2.7	3.0	80
2.2	5.4	3.5	175
2.3	9.4	4.0	350

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	1.4					3.4	234	102	12	2.1	* 0.5
2	.4	1.5					4.0	218	98	11	1.5	.5
3	.4	1.4					5	195	91	9.0	1.8	.8
4	.4	1.0					5.5	185	82	8.2	2.1	.8
5	.4	* 1.2					6	* 138	72	7.4	* 1.1	.8
6	.4	1.5					7.4	102	72	6.2	1.1	1.0
7	.4	1.1					5.8	91	93	5.4	1.0	1.8
8	.5	1.4					6.6	94	90	4.9	.8	1.5
9	.6	1.2					8.2	73	* 80	4.3	.7	1.2
10	.6	1.1					6.6	72	83	4.0	.7	.8
11	.7	1.2				0.8	5.5	83	91	3.8	.8	.8
12	.8	1.2					5	116	90	5.1	.8	1.0
13	* .8	1.4					4.5	175	98	3.8	.8	1.0
14	.8	1.4					6	140	76	2.7	.8	.7
15	.8	1.4					7	116	66	* 2.4	.8	.7
16	.8		1.2	1.2	1.0		10	150	59	2.6	.7	2.0
17	.8						12	212	54	2.4	.9	3.0
18	.8						14	209	48	2.2	2.4	4.0
19	.7						19	* 227	44	2.6	4.3	4.4
20	.8						51	230	40	2.4	2.0	3.6
21	.9					1.2	79	215	37	2.4	1.2	3.4
22	1.0					1.4	93	198	34	2.0	1.5	4.6
23	1.2	1.4				* 1.8	94	170	29	2.4	2.0	5
24	1.4					1.6	76	132	28	2.4	1.2	4.6
25	1.0					1.6	66	110	* 26	3.0	.9	4.6
26	1.0					1.6	60	88	22	3.8	.8	4.4
27	1.1					1.6	60	80	17	2.2	.7	4.2
28	1.1					1.6	93	73	14	2.0	.6	4.0
29	1.1					2.0	138	86	14	1.6	.7	6.5
30	1.4					2.4	180	104	12	1.6	.8	4.6
31	1.8					2.8		112		2.1	.7	
Total	25.3	40.4	37.2	37.2	28.0	35.6	1,131.5	4,428	1,762	127.9	38.3	76.8
Mean	0.82	1.35	1.2	1.2	1.0	1.15	37.7	143	58.7	4.13	1.24	2.56
Ac-ft	50	80	74	74	56	71	2,240	8,780	3,490	254	76	152

Calendar year 1964: Max 338 Min 0.1 Mean 17.1 Ac-ft 12,420  
Water year 1964-65: Max 234 Min 0.4 Mean 21.3 Ac-ft 15,400

Peak discharge (base, 200 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5- 1	1700	4.07	438	5-19	1730	4.00	400
5-13	1630	3.61	234				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 12 to Apr. 5 (no gage-height record Nov. 14 to Mar. 23), Apr. 11-17. No gage-height record Sept. 11-30.

## GREEN RIVER BASIN

9-2486. East Fork of Williams Fork above Willow Creek, Colo.

Location.--Lat 40°15'40", long 107°17'35", in NE¼ sec.5, T.3 N., R.88 W., on right bank 3½ miles south of Willow Creek store, 3.8 miles upstream from Willow Creek, and 16 miles south of Hayden.

Drainage area.--108 sq mi.

Records available.--October 1956 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,100 ft (from topographic map).

Average discharge.--9 years, 114 cfs (82,530 acre-ft per year).

Extremes.--Maximum discharge during year, about 1,100 cfs May 22 (gage height, 6.55 ft); minimum daily, 19 cfs Mar. 3.

1956-65: Maximum discharge, about 1,500 cfs June 25, 1957; maximum gage height, 6.85 ft May 12, 1962; minimum daily discharge determined, 15 cfs Dec. 11, 1963.

Remarks.--Records fair except those for periods of ice effect or indefinite stage-discharge relation, which are poor. Diversions for irrigation of about 800 acres above station.

Rating table, except periods of ice effect or indefinite stage-discharge relation  
(gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 30 to May 19, June 7, 15-17)

3.6	20	4.8	185
3.8	33	5.2	315
4.0	51	5.6	510
4.4	100	6.0	790

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	29	26	32	30	24	22	* 34	240	492	311	134	58
2	28	30	* 32	26	22	20	39	327	410	315	132	* 58
3	29	30	30	24	24	19	36	* 323	450	303	130	55
4	28	21	30	32	* 26	* 22	34	315	450	279	118	52
5	28	27	30	32	26	22	32	307	382	261	104	59
6	28	* 27	26	* 28	26	22	33	228	425	244	* 97	65
7	29	27	24	28	24	22	34	185	559	240	88	56
8	29	29	24	26	24	22	34	182	e 580	244	80	52
9	30	26	30	24	22	22	37	153	e 590	225	78	49
10	30	27	32	24	24	24	37	138	e 610	210	79	46
11	30	27	30	24	22	22	34	132	e 750	200	79	44
12	* 28	28	30	24	22	22	33	145	e 630	198	77	44
13	28	30	26	26	20	22	34	192	e 850	192	86	42
14	28	28	24	26	24	20	34	240	e 790	168	96	41
15	28	30	32	24	26	20	37	202	776	151	91	41
16	28	32	34	22	20	* 24	44	208	* 685	* 142	81	41
17	28	32	30	22	24	22	47	* 347	650	145	86	42
18	25	30	28	24	24	24	44	486	622	156	105	55
19	22	32	32	24	24	22	53	552	615	147	120	61
20	26	32	30	24	24	22	80	e 680	622	147	96	61
21	25	34	28	26	24	28	105	e 790	629	138	91	60
22	25	32	28	26	22	30	126	e 870	615	132	94	62
23	29	32	30	24	20	27	136	e 820	552	162	75	64
24	28	34	36	28	20	27	124	594	* 524	195	70	69
25	24	36	32	26	22	27	97	450	504	213	66	74
26	25	34	28	24	24	26	84	351	456	147	64	77
27	27	32	26	26	24	25	74	283	368	134	63	80
28	27	34	28	28	24	25	78	240	339	122	61	81
29	27	34	26	26	-	26	98	264	339	111	63	88
30	31	34	20	26	-----	28	153	355	327	122	65	77
31	32	-----	24	26	-----	30	-----	462	-----	178	61	-----
Total	859	907	892	800	652	736	1,865	11,061	16,591	5,932	2,730	1,754
Mean	27.7	30.2	28.8	25.8	23.3	23.7	62.2	357	553	191	88.1	58.5
Ac-ft	1,700	1,800	1,590	1,590	1,290	1,460	3,700	21,940	32,910	11,770	5,410	3,480

Calendar year 1964: Max 740 Min 16 Mean 97.4 Ac-ft 70,720  
Water year 1964-65: Max 870 Min 19 Mean 123 Ac-ft 88,820

Peak discharge (base, 450 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-22	2130	6.55	†1,100	6-13	0545	6.55	†950
5-31	2400	5.86	657				

\* Discharge measurement made on this day.

e Stage-discharge relation indefinite.

Note.--Stage-discharge relation affected by ice Nov. 12, 13, Nov. 15 to Mar. 21 (no gage-height record Jan. 1-6, Feb. 17 to Mar. 16), Mar. 29 to Apr. 1.

† About.

9-2490. East Fork of Williams Fork near Pagoda, Colo.

Location.--Lat 40°18'45", long 107°19'15", in SW¼ sec.18, T.4 N., R.88 W., on right bank 20 ft downstream from private road bridge, half a mile upstream from Dowden Gulch, 1½ miles downstream from Willow Creek, and 5½ miles southeast of Pagoda.

Drainage area.--150 sq mi, approximately.

Records available.--October 1953 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 6,830 ft (from topographic map).

Average discharge.--12 years, 113 cfs (81,810 acre-ft per year).

Extremes.--Maximum discharge during year, 1,170 cfs May 23 (gage height, 3.72 ft); minimum daily, 20 cfs Mar. 3.

1953-65: Maximum discharge, 1,620 cfs June 26, 1957; maximum gage height, 4.82 ft June 6, 1957; minimum daily discharge, 12 cfs Aug. 28, Sept. 22, 1954.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 900 acres above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1 to Nov. 1)

Oct. 1 to June 11

June 12 to Sept. 30

1.4	19	2.6	240	1.8	48	2.7	250
1.5	24	3.0	430	2.0	76	3.0	400
1.8	56	3.4	780	2.3	130	3.5	890
2.2	124	3.6	1,000				

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	28	34	32	26	24	* 36	291	532	305	132	60
2	26	34	* 34	28	24	22	40	376	451	310	124	* 58
3	25	33	32	26	26	20	38	* 388	500	290	126	57
4	25	22	32	34	* 28	* 24	38	360	493	274	116	56
5	25	30	32	34	28	24	36	350	412	254	103	58
6	26	* 31	28	* 30	28	24	40	278	444	242	* 99	72
7	27	27	26	30	26	24	46	220	572	227	92	60
8	27	30	26	28	26	24	45	223	607	235	84	57
9	27	26	32	26	24	24	49	190	607	220	79	56
10	28	29	34	26	26	24	50	166	625	203	79	52
11	28	29	32	26	24	26	45	160	769	194	84	52
12	* 26	32	32	26	22	24	43	171	650	188	81	52
13	26	34	28	28	24	24	44	223	868	188	89	51
14	26	32	26	28	26	22	45	316	802	160	94	48
15	27	34	34	26	28	22	50	259	780	147	90	48
16	27	34	36	24	22	26	62	251	* 725	* 140	84	49
17	27	34	32	24	26	26	66	* 382	650	140	86	52
18	24	30	30	26	26	26	64	540	650	149	103	62
19	22	34	34	26	26	24	78	580	640	144	122	70
20	25	34	32	26	26	24	120	714	630	140	101	72
21	24	36	30	28	26	28	157	813	620	135	92	70
22	24	34	30	28	24	32	196	912	580	128	103	73
23	29	34	32	26	22	30	209	912	552	154	82	74
24	27	36	38	30	22	30	193	607	* 552	191	76	78
25	24	38	34	28	24	30	146	486	525	212	72	89
26	26	36	30	26	26	28	126	400	464	144	67	90
27	30	34	28	28	26	26	111	340	370	130	64	96
28	28	36	30	30	26	26	115	286	340	122	62	97
29	28	36	28	28	-	28	139	299	330	110	64	112
30	32	36	22	28	-----	30	200	394	325	120	68	94
31	33	-----	26	28	-----	32	-----	500	-----	174	64	-----
Total	826	973	954	862	708	798	2,627	12,387	17,065	5,770	2,782	2,015
Mean	26.6	32.4	30.8	27.8	25.3	25.7	87.6	400	569	186	89.7	67.2
Ac-ft	1,640	1,930	1,890	1,710	1,400	1,580	5,210	24,570	33,850	11,440	5,520	4,000

Calendar year 1964: Max 780 Min 17 Mean 101 Ac-ft 73,480  
Water year 1964-65: Max 912 Min 20 Mean 131 Ac-ft 94,740

Peak discharge (base, 500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5- 2	2345	3.07	500	6- 1	0030	3.27	634
5-23	0200	3.72	1,170	6-13	0615	3.61	956

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 12, Nov. 15 to Apr. 6.

9-2500. Milk Creek near Thornburg, Colo.

Location.--Lat 40°12', long 107°44', in NE¼ sec.32, T.3 N., R.92 W., on right bank 2½ miles northwest of Thornburg and 3 miles upstream from Little Creek.

Drainage area.--65 sq mi, approximately.

Records available.--October 1952 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 6,450 ft (by barometer).

Average discharge.--13 years, 21.5 cfs (15,570 acre-ft per year).

Extremes.--Maximum discharge during year, 352 cfs May 20 (gage height, 4.09 ft); minimum daily, 1.5 cfs Oct. 4.

1952-65: Maximum discharge, 491 cfs May 10, 1957; maximum gage height, 5.52 ft June 1, 1957; minimum daily discharge, 0.2 cfs Oct. 5-7, 1956, Aug. 10, 11, Oct. 15, 1963.

Remarks.--Records good except those for period of ice effect, which are poor. Diversions for irrigation of about 2,000 acres above station.

Cooperation.--One discharge measurement furnished by Bureau of Reclamation.

Rating tables, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Mar. 30

Mar. 31 to Sept. 30

2.0	0.5	2.1	1.7	2.8	62
2.1	1.7	2.2	4.2	3.2	125
2.2	4.0	2.3	8.4	3.6	215
		2.4	14	4.0	325
		2.5	23		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.7	2.4	5	5.5	5	3.8	30	139	149	22	10	* 3.4
2	1.6	2.2	4.8	5.5	4.8	3.6	32	202	141	21	8.4	3.7
3	1.6	* 2.4	* 4.6	5	5	* 4.2	32	220	143	20	1.3	3.0
4	1.5	2.4	4.4	5	* 5.5	4.6	30	188	149	18	* 11	2.7
5	1.6	1.9	4.2	5.5	6	4.8	28	180	129	17	7.6	2.4
6	1.6	1.9	4.0	6	6	4.8	28	* 145	131	13	6.7	3.4
7	1.6	2.2	3.8	5.5	5.5	4.6	30	112	135	14	5.9	4.2
8	1.6	2.2	4.0	5	5	4.6	30	109	135	13	5.0	4.2
9	1.6	2.2	4.4	5	4.6	4.8	28	92	131	12	5.0	4.6
10	1.6	2.2	4.6	5.5	4.4	4.8	27	82	* 123	12	4.6	4.0
11	1.6	2.4	4.6	5.5	4.0	4.6	18	70	157	10	4.2	3.7
12	1.6	2.6	4.0	5	3.8	4.4	17	78	163	12	4.6	3.7
13	* 1.7	2.8	4.0	4.8	4.0	4.2	15	109	165	13	4.2	3.2
14	1.6	3.0	4.2	4.8	4.2	4.2	15	168	135	* 11	4.0	2.7
15	1.6	3.2	4.8	5	4.0	4.4	17	172	118	8.4	4.6	2.4
16	1.7	3.2	4.8	5	3.8	4.6	24	155	104	7.1	5.5	2.4
17	1.6	3.2	4.2	4.8	3.8	4.8	30	172	90	7.1	4.2	3.2
18	1.6	3.2	4.0	4.8	4.0	4.6	27	232	76	8.4	5.0	5.5
19	1.6	3.4	4.4	5	4.2	4.4	31	* 248	62	8.4	11	6.3
20	1.6	3.4	5	5	4.0	4.6	50	286	59	9.0	9.5	9.0
21	1.6	3.2	5.5	4.8	3.8	4.8	66	280	* 58	8.0	6.7	7.6
22	1.6	3.0	6	4.6	4.0	5	* 84	286	56	8.0	6.3	11
23	2.2	3.2	6	4.6	3.8	5.5	86	265	46	9.0	5.5	13
24	2.4	3.6	6	4.8	3.6	6	84	190	42	12	4.6	11
25	2.2	3.8	5.5	4.8	* 3.4	6	68	165	41	4.6	3.4	10
26	2.2	4.2	5.5	4.6	3.6	6	60	153	39	24	3.4	9.0
27	1.9	4.6	5.5	4.4	3.8	6	53	137	31	13	3.0	10
28	1.9	4.8	5	4.6	4.0	7	48	116	28	10	2.7	9.0
29	1.9	5	4.8	5	-	9	72	121	25	9.0	3.0	17
30	2.2	5	4.6	5.5	-----	10	111	135	23	8.4	3.4	19
31	2.6	-----	5	5.5	-----	* 1.4	-----	145	-----	9.5	3.7	-----
Total	54.9	92.8	147.2	156.4	121.6	168.7	1,271	5,152	2,884	413.3	179.7	194.3
Mean	1.77	3.09	4.75	5.05	4.34	5.44	42.4	166	96.1	13.3	5.80	6.48
Ac-ft	109	184	292	310	241	335	2,520	10,220	5,720	820	356	385

Calendar year 1964: Max 228

Min -

Mean 18.3

Ac-ft 13,280

Water year 1964-65: Max 286

Min 1.5

Mean 29.7

Ac-ft 21,490

Peak discharge (base, 250 cfs).--May 3 (0515) 262 cfs (3.77 ft); May 20 (0430) 352 cfs (4.09 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 11 to Apr. 9 (no gage-height record Nov. 12 to Dec. 3, Dec. 5-13, Dec. 26 to Jan. 3).

## 9-2510. Yampa River near Maybell, Colo.

Location.--Lat 40°30'10", long 108°01'45", in NW¼ sec.2, T.6 N., R.95 W., on left bank 100 ft downstream from bridge on U. S. Highway 40, 2 miles downstream from Lay Creek, and 3 miles east of Maybell.

Drainage area.--3,410 sq mi, approximately.

Records available.--April 1904 to October 1905, June 1910 to November 1912, April 1916 to September 1965. Monthly discharge only for some periods, published in WSP 1313. No winter records prior to 1917.

Gage.--Water-stage recorder. Datum of gage is 5,900.23 ft above mean sea level, datum of 1929. Prior to Apr. 24, 1916, staff or chain gage at Thornburgh Bridge 14 miles downstream at different datum. Apr. 24, 1916, to Nov. 3, 1917, chain gage and Nov. 4, 1917, to Mar. 8, 1937, water-stage recorder, at site 700 ft downstream, at datum 0.92 ft higher prior to Oct. 1, 1932, and at present datum thereafter.

Average discharge.--49 years (1916-65), 1,554 cfs (1,125,000 acre-ft per year).

Extremes.--Maximum discharge during year, 11,800 cfs June 15 (gage height, 8.78 ft); minimum daily, 143 cfs Oct. 5, 8.

1904-5, 1910-12, 1916-65: Maximum discharge observed, 17,900 cfs May 19, 1917 (gage height, 10.4 ft, from floodmarks, site and datum then in use), from rating curve extended above 12,000 cfs; minimum daily, 2 cfs July 17-19, 1934.

Remarks.--Records good except those for period of ice effect, which are poor. Natural flow of stream affected by transbasin diversions, numerous storage reservoirs, and diversions above station for irrigation of about 65,000 acres above and about 800 acres below station. Records of chemical analyses and water temperatures for the water year 1965 are published in Part 2 of this report.

Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

1.4	115	4.0	2,060
1.7	205	5.0	3,640
2.0	325	7.0	7,400
2.5	600	9.0	12,300
3.0	950		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 158	202	* 280	250	260	270	600	5,230	6,410	4,240	1,220	* 430
2	155	216	290	280	250	260	1,010	6,170	6,690	3,860	1,450	410
3	149	222	280	250	* 280	* 240	1,050	7,110	6,430	4,240	1,190	370
4	149	216	260	280	280	240	1,010	7,250	6,710	4,060	* 1,080	350
5	143	* 216	250	* 290	290	240	1,080	* 6,880	6,860	3,880	1,290	350
6	146	208	240	300	270	250	1,120	6,710	6,570	3,610	1,040	370
7	149	194	220	290	280	250	1,120	5,210	6,490	3,390	901	415
8	143	188	200	280	260	260	* 1,170	4,440	7,290	3,100	831	522
9	152	191	230	280	270	260	1,440	4,490	* 8,140	3,010	740	425
10	155	194	260	280	270	260	1,570	3,860	8,500	2,990	670	375
11	170	198	280	290	260	250	1,530	3,520	9,060	2,670	642	375
12	180	202	280	280	240	250	1,550	3,660	10,100	2,670	614	390
13	180	200	240	280	240	260	1,320	4,000	10,300	2,750	576	345
14	184	170	240	280	260	260	1,420	5,140	10,500	* 2,460	570	335
15	188	180	240	280	280	260	1,610	5,790	11,300	2,140	576	330
16	184	210	280	270	270	260	2,240	5,350	10,900	1,860	558	302
17	188	240	250	260	280	270	2,990	5,210	9,900	1,660	594	294
18	191	250	240	260	290	250	2,860	6,630	9,560	1,570	582	330
19	177	250	240	260	290	240	2,400	* 7,810	9,320	1,530	614	436
20	174	240	290	270	280	240	3,090	8,140	8,670	1,660	775	480
21	170	230	320	290	270	260	* 4,850	9,130	7,880	1,630	915	588
22	170	240	310	280	260	280	5,480	9,610	7,520	1,720	866	649
23	177	260	330	260	250	300	5,580	9,970	* 7,110	1,520	768	635
24	180	280	360	250	250	280	5,680	9,870	6,690	1,730	740	649
25	184	300	350	250	240	260	5,410	8,910	6,150	1,920	663	670
26	188	290	330	260	250	260	4,390	7,570	5,960	2,400	621	691
27	191	290	300	250	260	300	3,910	6,590	5,370	2,140	534	782
28	191	290	280	240	270	350	3,310	5,620	4,530	1,590	469	838
29	191	290	260	240	-	430	3,640	4,760	4,200	1,340	425	901
30	194	280	250	260	-----	500	4,350	4,630	4,320	1,190	415	990
31	194	-----	270	280	-----	* 550	-----	5,430	-----	1,090	410	-----
Total	5,345	6,937	8,450	8,370	7,450	8,840	78,780	194,690	229,430	75,620	23,339	15,027
Mean	172	231	273	270	266	285	2,626	6,280	7,648	2,439	753	501
Ac-ft	10,600	13,760	16,760	16,600	14,780	17,530	156,300	386,200	455,100	150,000	46,290	29,810

Calendar year 1964: Max 9,850 Min 100 Mean 1,210 Ac-ft 878,600

Water year 1964-65: Max 11,300 Min 143 Mean 1,814 Ac-ft 1,314,000

Peak discharge (base, 7,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-4	0500	7.13	7,710	6-15	2030	8.78	11,800
5-23	2200	8.08	10,100				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 13 to Apr. 1.

9-2530. Little Snake River near Slater, Colo.

Location.--Lat 41°00'00", long 107°08'35", in NW¼ sec.15, T.12 N., R.87 W., on left bank just downstream from highway bridge at Focus Ranch, a quarter of a mile downstream from Spring Creek and 12 miles east of Slater.

Drainage area.--285 sq mi.

Records available.--October 1942 to September 1947, October 1950 to September 1965.

Gage.--Water-stage recorder. Datum of gage is 6,831.00 ft above mean sea level, datum of 1929.

Average discharge.--20 years, 214 cfs (154,900 acre-ft per year).

Extremes.--Maximum discharge during year, 2,680 cfs June 13 (gage height, 7.78 ft); minimum daily, 16 cfs Oct. 1-6, 19, Nov. 13. 1942-47, 1950-65: Maximum discharge, 3,230 cfs June 7, 1957 (gage height, 8.27 ft); minimum daily, 8.6 cfs Sept. 10, 1944.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 2,000 acres above station.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

3.3	14	4.5	198
3.6	31	4.8	310
3.9	68	5.5	680
4.2	118	7.5	2,420

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	16	23	28	34	30	32	55	904	1,330	530	79	28
2	16	25	27	32	30	30	* 60	1,100	1,330	515	71	27
3	16	24	* 28	30	* 32	* 28	60	1,110	1,310	480	84	28
4	16	* 18	28	34	32	28	60	* 1,090	1,300	460	* 89	29
5	16	17	28	36	32	30	55	974	1,240	450	72	28
6	16	19	26	36	34	30	55	736	1,260	390	61	30
7	17	18	26	34	32	32	60	596	1,440	345	54	32
8	* 17	18	24	32	30	32	65	608	1,590	340	51	34
9	18	19	28	* 34	32	30	71	505	1,700	301	46	35
10	18	22	32	36	32	32	71	475	2,130	265	45	30
11	20	21	34	34	30	30	68	515	* 2,280	248	45	29
12	19	18	34	34	28	30	61	626	2,130	237	45	28
13	19	16	28	32	30	30	62	799	2,290	204	44	27
14	18	18	24	32	32	32	58	890	2,220	* 171	57	27
15	18	18	30	32	34	32	64	792	1,990	148	74	30
16	18	20	36	30	32	32	82	862	1,890	133	57	72
17	18	22	30	30	34	30	89	1,210	1,790	127	50	68
18	17	24	24	32	34	28	81	* 1,410	1,640	133	57	84
19	16	26	30	32	34	28	85	1,480	1,510	189	69	74
20	17	28	36	34	34	30	136	1,700	1,410	138	72	72
21	18	26	38	34	32	32	* 217	1,690	1,330	122	58	65
22	18	24	36	32	32	34	244	1,700	1,220	101	61	68
23	22	24	44	30	30	34	340	1,630	* 1,070	120	55	82
24	23	26	48	32	30	32	360	1,450	1,000	146	61	81
25	19	28	40	32	30	30	330	1,280	939	177	45	97
26	19	28	34	30	32	32	301	1,090	806	148	36	99
27	20	26	36	30	32	36	258	939	680	105	31	107
28	20	26	36	30	34	40	340	841	614	96	30	143
29	21	28	34	30	-	44	480	925	602	87	30	148
30	25	28	30	32	-----	46	674	1,120	566	79	34	107
31	30	-----	28	32	-----	50	-----	1,290	-----	84	* 29	-----
Total	581	678	985	1,004	890	1,016	4,942	32,337	42,607	7,069	1,692	1,809
Mean	18.7	22.6	31.8	32.4	31.8	32.8	165	1,043	1,420	228	54.6	60.3
Ac-ft	1,150	1,340	1,950	1,990	1,770	2,020	9,800	64,140	84,510	14,020	3,360	3,590

Calendar year 1964: Max 2,090 Min 16 Mean 210 Ac-ft 152,300

Water year 1964-65: Max 2,290 Min 16 Mean 262 Ac-ft 189,600

Peak discharge (base, 1,600 cfs).--May 21 (2130) 2,010 cfs (7.14 ft); June 13 (2145) 2,680 cfs (7.78 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 12-24, 26-30, Dec. 3 to Apr. 7.

## 9-2550. Slater Fork near Slater, Colo.

Location.--Lat 40°59', long 107°23', in SW¼ sec.21, T.12 N., R.89 W., on right bank 25 ft downstream from highway bridge, 1 mile upstream from mouth, and 1½ miles south of Slater.

Drainage area.--161 sq mi.

Records available.--May to October, December 1910, March to October 1911, and April to May 1912 (published as Slater Creek), July 1931 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 6,600 ft (from river-profile map). May 28, 1910, to May 25, 1912, staff gage at site 1½ miles upstream at different datum. July 9, 1931, to May 6, 1932, chain gage at site a quarter of a mile downstream at different datum.

Average discharge.--34 years (1931-65), 70.2 cfs (50,820 acre-ft per year).

Extremes.--Maximum discharge during year, 878 cfs May 20 (gage height, 7.75 ft), from rating curve extended above 550 cfs; minimum daily, 5.7 cfs Oct. 2.

1910-12, 1931-65: Maximum discharge observed, 1,700 cfs May 19, 1912 (gage height, 5.00 ft, site and datum then in use); no flow Aug. 2-10, 1934, Aug. 18, 25-27, 1936, Aug. 29 to Sept. 3, 1954.

Remarks.--Records good except those for period of ice effect, which are poor. Diversions for irrigation of about 500 acres above station.

Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 18 to June 27, July 14, 15)

1.0	4.5	2.5	59
1.2	8.0	3.5	132
1.4	13	4.5	255
1.6	19	5.5	405
2.0	34	7.0	715

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5.8	16	15	16	14	12	40	381	399	112	21	* 9.2
2	5.7	16	16	16	14	12	* 42	490	388	117	17	9.0
3	6.0	15	* 17	16	* 14	* 11	42	488	372	103	15	9.0
4	6.2	* 12	16	17	14	10	36	* 480	358	98	* 25	9.2
5	6.2	11	15	18	13	11	34	446	322	95	21	9.4
6	6.4	13	14	18	13	11	32	306	322	88	15	10
7	7.4	12	13	18	12	11	34	222	430	79	14	15
8	* 6.8	14	14	17	11	11	36	245	506	73	15	15
9	7.0	12	15	* 16	10	11	36	180	484	71	10	16
10	7.2	14	15	17	9.5	10	34	160	* 500	66	9.4	12
11	7.6	14	15	17	9.5	10	32	162	558	61	8.6	9.4
12	7.8	7	14	16	9.5	11	28	198	582	73	8.2	8.4
13	7.8	10	13	16	9.5	11	28	348	668	60	8.6	7.8
14	7.8	13	13	15	10	11	28	411	612	* 52	8.0	7.4
15	7.6	13	14	15	10	10	32	296	520	44	11	7.2
16	7.6	14	15	16	11	10	38	303	460	40	11	12
17	7.6	14	15	17	12	11	43	518	418	36	9.8	21
18	7.8	13	14	16	12	13	37	* 571	376	37	14	29
19	7.4	12	14	14	11	14	46	571	340	38	30	29
20	8.0	11	15	14	11	14	93	704	306	38	28	29
21	8.8	11	16	14	12	13	* 131	620	290	34	18	26
22	9.4	11	17	14	12	12	156	604	267	29	15	27
23	11	12	18	13	11	12	181	564	* 244	33	18	36
24	12	13	19	12	11	13	161	438	227	48	16	34
25	11	14	19	12	10	13	120	392	214	37	14	34
26	10	14	18	12	10	13	104	346	191	37	12	34
27	12	13	17	12	10	13	87	300	143	27	9.4	36
28	12	14	15	12	11	15	101	247	116	18	8.0	42
29	12	15	14	13	-	18	169	222	116	17	7.8	50
30	14	15	14	13	-	19	276	285	118	15	9.2	42
31	18	-	15	13	-	24	-	369	-	20	10	-
Total	271.9	388	474	465	317.0	390	2,257	11,867	10,847	1,696	437.0	635.0
Mean	8.77	12.9	15.3	15.0	11.3	12.6	75.2	383	362	54.7	14.1	21.2
Ac-ft	539	770	940	922	629	774	4,480	23,340	21,510	3,360	867	1,260

Calendar year 1964: Max 733 Min 2.2 Mean 61.1 Ac-ft 44,380

Water year 1964-65: Max 704 Min 5.7 Mean 82.3 Ac-ft 59,590

Peak discharge (base, 430 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-2	1430	6.81	678	6-14	0100	7.34	770
5-20	0400	7.75	878				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 12 to Apr. 9.

## GREEN RIVER BASIN

9-2580. Willow Creek near Dixon, Wyo.

Location.--Lat 40°55'00", long 107°31'10", in SW¼ sec.8, T.11 N., R.90 W., in Colorado on right bank 6 miles south of Colorado-Wyoming State line, 7 miles south of Dixon, and 8 miles upstream from mouth.

Drainage area.--24 sq mi, approximately.

Records available.--October 1953 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 6,700 ft (from topographic map).

Average discharge.--12 years, 8.60 cfs (6,230 acre-ft per year).

Extremes.--Maximum discharge during year, 210 cfs Apr. 20 (gage height, 4.80 ft); minimum daily determined, 1.0 cfs Nov. 12.  
1953-65: Maximum discharge, that of Apr. 20, 1965; maximum gage height, 4.97 ft May 10, 1957; no flow Sept. 17-19, 1955.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station.  
Regulation by Elk Lake (capacity, 400 acre-ft).

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

2.0	0.4	2.7	14
2.1	1.3	3.0	27
2.3	4.0	3.4	55
2.5	8.4	3.8	92

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.3	2.3	2.6				15	52	22	28	4.8	* 2.6
2	1.3	2.1	2.6				10	46	21	29	4.0	2.8
3	1.4	2.3	* 2.6				8	36	20	26	4.8	2.8
4	1.5	* 1.7	2.6				6	* 35	24	26	* 5.6	2.8
5	1.5	1.6	2.6				4.5	28	26	24	3.8	2.8
6	1.5	2.0	2.4				4.0	22	27	23	3.1	3.0
7	1.5	1.8	1.6				4.5	18	36	20	3.0	3.4
8	1.7	2.1	1.8				5.5	21	41	18	2.6	3.2
9	* 1.5	1.9	2.0				6	24	48	17	2.5	3.1
10	1.5	2.0	2.2				5	22	* 56	16	2.4	3.0
11	1.8	1.9				1.4	4.5	19	61	15	2.5	2.8
12	1.7	1.0					4.0	20	57	15	2.4	2.8
13	1.7	2.0					4.5	25	78	14	2.3	2.6
14	1.7	2.6					5.0	78	73	* 11	2.1	2.4
15	1.7	2.4		1.8	1.6		8.7	30	62	10	2.5	2.5
16	1.5	2.4					16	24	55	10	2.4	3.7
17	1.5	2.6					12	31	48	10	2.3	4.4
18	1.5	2.6					9.7	* 32	41	10	3.7	5.0
19	1.2	2.4					27	32	42	10	5.0	5.2
20	1.5	2.4					80	35	44	9.2	3.8	4.8
21	1.8	2.4	2.0			1.6	* 92	31	45	7.9	2.6	4.8
22	1.9	2.2				* 1.8	65	32	43	7.0	2.6	7.4
23	2.3	2.2				2.0	47	31	* 46	10	3.7	6.7
24	2.1	2.4				1.8	39	23	48	7.0	2.4	5.8
25	1.9	2.6				1.6	27	22	45	8.4	1.9	5.6
26	2.0	2.6				1.6	22	22	36	6.7	1.7	5.6
27	2.3	2.6				1.8	17	20	26	5.4	1.8	6.0
28	2.1	2.4				2.2	26	16	24	4.8	2.5	8.7
29	2.0	2.6				2.2	36	14	26	4.4	2.5	12
30	2.6	2.6				3.0	46	18	28	4.0	2.6	7.0
31	2.8	---	---	---	---	1.0	---	22	---	5.4	2.5	---
Total	54.3	66.7	65.0	55.8	44.8	57.6	656.9	881	1,249	412.2	92.4	135.3
Mean	1.75	2.22	2.10	1.8	1.6	1.86	21.9	28.4	41.6	13.3	2.98	4.51
Ac-ft	108	132	129	111	89	114	1,300	1,750	2,480	818	183	268

Calendar year 1964: Max 64 Min - Mean 8.71 Ac-ft 6,320  
Water year 1964-65: Max 92 Min - Mean 10.3 Ac-ft 7,480

Peak discharge (base, 70 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-20	1800	4.80	210	6-13	2100	3.83	98
4-30	2000	3.77	93	7-23	2000	3.80	93
5-14	1700	4.42	167				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 5, Nov. 12 to Apr. 13 (no gage-height record Dec. 8 to Mar. 22). No gage-height record July 9-12.



9-2597. Little Snake River near Baggs, Wyo.

Location.--Lat 41°00'00", long 107°55'10", in NE¼ sec.24, T.12 N., R.94 W., in Wyoming, on left bank 600 ft upstream from Wyoming-Colorado State line, half a mile upstream from Scandinavian Wash, and 15 miles west of Baggs.

Drainage area.--3,020 sq mi, approximately.

Records available.--October 1961 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 6,050 ft (from topographic map). Prior to Apr. 12, 1962, at site 800 ft downstream at datum 3.00 ft lower.

Extremes.--Maximum discharge during year, 5,720 cfs May 14 (gage height, 5.87 ft); maximum gage height, 6.03 ft Mar. 30 (ice jam); minimum daily discharge, 1.8 cfs Oct. 4.  
1961-65: Maximum discharge, about 10,000 cfs Mar. 28, 1962 (gage height, 8.0 ft, from floodmark, present datum); minimum daily, 0.1 cfs Sept. 14-20, 1962.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 15,000 acres above station.

Rating tables, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Oct. 1 to Nov. 11)

Oct. 1 to May 13

May 14 to Sept. 30

0.4	1.0	1.4	145	0.6	20	2.0	525
.5	3.2	1.8	335	.9	68	3.0	1,320
.6	6.5	2.3	640	1.3	165	4.0	2,460
.7	13	3.0	1,180	1.6	275	5.6	5,100
.9	35	4.0	2,310				
1.1	70	4.5	3,070				

Discharge, in cubic feet per second, water year October 1966 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2.2	66	100	90	85	90	2,320	2,060	2,630	972	183	* 54
2	2.0	72	90	90	80	85	2,100	2,610	2,680	916	180	54
3	2.0	74	* 90	80	* 90	* 80	1,510	2,880	2,630	855	229	52
4	1.8	68	90	100	90	80	1,030	* 2,580	2,540	802	* 398	45
5	2.0	* 64	80	100	85	80	752	2,530	2,430	772	212	47
6	2.0	56	75	100	95	85	582	2,100	2,280	698	180	61
7	2.0	48	70	95	95	90	549	1,680	2,380	630	144	82
8	2.0	48	65	95	85	90	498	1,600	2,810	608	122	86
9	* 2.3	50	70	* 95	85	85	556	1,660	3,010	548	112	97
10	3.0	50	80	100	85	90	568	1,830	* 3,290	492	78	92
11	3.0	56	90	95	85	85	661	1,740	4,400	447	59	82
12	2.5	50	95	95	80	85	396	1,520	5,060	532	47	66
13	2.3	25	80	85	80	85	516	1,670	4,290	492	40	59
14	2.5	30	65	90	90	85	562	4,440	4,230	* 408	31	47
15	3.0	50	70	85	95	85	402	3,580	4,110	330	37	28
16	3.5	70	90	85	90	85	523	2,570	3,600	270	239	39
17	3.2	80	100	85	90	85	682	2,680	3,390	209	70	162
18	3.5	70	70	85	95	80	549	* 3,260	3,130	189	63	186
19	6.2	80	80	90	95	85	474	3,390	2,850	619	108	223
20	7.8	80	100	90	95	90	752	3,560	2,600	314	492	506
21	9.1	70	110	95	90	95	1,300	3,860	2,390	226	202	608
22	1.2	70	100	95	90	100	* 1,340	3,740	2,190	202	180	870
23	1.4	75	110	85	85	100	1,350	3,720	2,010	239	147	1,640
24	1.9	85	130	80	80	90	1,390	3,600	* 1,810	495	168	1,310
25	2.9	100	120	90	80	90	1,290	3,080	1,770	2,840	112	1,080
26	4.8	90	100	85	85	130	1,120	2,670	1,630	1,240	115	940
27	4.8	85	100	85	90	200	938	2,430	1,460	758	97	638
28	4.8	80	95	80	90	250	836	2,080	1,270	388	82	460
29	5.0	90	90	85	-	300	1,020	1,890	1,090	257	76	466
30	5.0	90	85	85	-----	700	1,460	2,000	1,040	202	65	466
31	4.8	-----	80	90	-----	* 1,500	-----	2,360	-----	195	59	-----
Total	433.9	2,022	2,770	2,785	2,460	5,260	28,026	81,370	81,000	18,145	4,327	10,546
Mean	14.0	67.4	89.4	89.8	87.9	170	934	2,625	2,700	585	140	352
Ac-ft	861	4,010	5,490	5,520	4,880	10,430	55,990	161,400	160,700	35,990	8,580	20,920

Calendar year 1964: Max 4,370 Min 1.4 Mean 434 Ac-ft 315,400

Water year 1964-65: Max 5,060 Min 1.8 Mean 655 Ac-ft 474,400

Peak discharge (base, 3,400 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-14	1730	5.87	5,720	6-11	2200	5.70	5,300
5-22	2000	5.02	4,090	7-25	1100	5.55	5,060

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-8. Stage-discharge relation affected by ice Nov. 12 to Mar. 31 (no gage-height record Jan. 1-4, Jan. 23 to Feb. 3).

## 9-2600. Little Snake River near Lily, Colo.

Location.--Lat 40°32'50", long 108°25'25", in NW 1/4 sec.20, T.7 N., R.98 W., on left bank 170 ft downstream from highway bridge, 6 miles north of Lily, and 10 miles upstream from mouth

Drainage area.--3,730 sq mi, approximately.

Records available.--June to August 1904 (published as "near Maybell"), October 1921 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Altitude of gage is 5,685 ft (from river-profile map). June 9 to Aug. 14, 1904, chain gage and May 5, 1922, to Nov. 30, 1935, water-stage recorder, at site 300 ft upstream at different datums.

Average discharge.--44 years (1921-65), 563 cfs (407,600 acre-ft per year).

Extremes.--Maximum discharge during year, 6,470 cfs May 15 (gage height, 6.33 ft); minimum daily, 1.1 cfs Oct. 16, 17. 1904, 1921-65: Maximum discharge, 14,200 cfs May 27, 1926 (gage height, 10.5 ft, site and datum then in use), from rating curve extended above 3,600 cfs; maximum gage height, 11.1 ft (from floodmark, backwater from ice), Feb. 13, 1962; no flow at times in many years.

Remarks.--Records good except those for period of ice effect, which are poor. Diversions for irrigation of about 21,000 acres above station. Records of chemical analyses, water temperatures, and suspended sediment loads are published in Part 2 of this report as "above Lily."

Rating table, except period of ice effect (gage height, in feet, and discharge, in cubic feet per second)

0.3	0.4	1.0	66	4.0	2,360
.4	1.8	1.5	185	5.0	3,920
.5	5.5	2.0	370	6.0	5,730
.6	11	2.5	705		
.8	30	3.0	1,170		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*1.5	38	*100	100	90	110	2,500	1,340	2,290	946	289	*56
2	1.7	40	100	100	90	100	2,200	1,990	2,500	899	274	62
3	1.7	53	100	100	*95	*100	1,600	2,560	2,570	817	240	60
4	1.5	62	100	90	95	100	1,100	2,780	2,540	756	*209	62
5	1.2	*68	90	*90	95	100	900	*2,490	2,540	714	334	60
6	1.2	70	85	100	95	110	826	2,500	2,420	689	257	116
7	1.2	72	80	100	95	110	756	2,060	2,360	641	222	200
8	1.4	72	80	95	90	110	*649	1,720	2,510	580	191	90
9	1.5	66	90	95	90	110	602	1,590	*2,900	536	167	90
10	1.8	66	100	90	90	110	633	1,700	3,080	494	145	86
11	1.5	70	110	90	90	110	697	1,880	4,090	474	132	84
12	1.5	68	110	90	85	110	756	1,760	5,300	610	109	86
13	1.4	27	100	90	85	110	572	1,480	4,880	444	88	80
14	1.4	28	80	90	85	110	536	1,840	4,070	*432	70	64
15	1.4	40	90	90	90	110	657	4,830	4,140	400	76	56
16	1.1	50	110	85	90	110	508	3,240	3,870	356	62	42
17	1.1	90	100	85	90	110	487	2,700	3,450	321	68	42
18	1.5	100	90	85	95	100	633	3,040	3,240	285	185	90
19	1.5	90	100	90	100	100	722	*3,470	3,020	254	243	123
20	1.7	85	120	95	100	100	558	3,290	2,730	330	218	182
21	3.3	80	120	95	100	110	*625	3,680	2,510	395	271	385
22	2.5	80	110	95	100	120	1,220	3,770	2,320	289	343	522
23	4.4	90	120	90	95	120	1,270	3,700	*2,130	240	257	937
24	6.0	100	150	90	100	110	1,290	3,610	1,890	420	188	1,230
25	7.7	110	130	90	100	110	1,320	3,470	1,720	550	161	1,030
26	8.8	110	110	90	110	140	1,310	2,960	1,610	3,000	140	946
27	9.9	100	110	90	110	220	1,130	2,600	1,520	1,190	123	862
28	12	110	110	90	120	280	975	2,420	1,380	739	112	714
29	23	110	100	90	-	340	790	2,080	1,210	494	101	580
30	37	110	90	95	-----	550	890	1,860	1,040	361	76	487
31	40	-----	90	95	-----	1,700	-----	1,920	-----	317	60	-----
Total	183.4	2,255	3,175	2,860	2,670	5,930	28,712	80,330	81,830	18,973	5,511	9,414
Mean	5.92	75.2	102	92.3	95.4	191	957	2,591	2,728	612	178	314
Ac-ft	364	4,470	6,300	5,670	5,300	11,760	56,950	159,300	162,300	37,630	10,930	18,670

Calendar year 1964: Max 4,360 Min 1.1 Mean 445 Ac-ft 323,200  
Water year 1964-65: Max 5,300 Min 1.1 Mean 663 Ac-ft 479,600

Peak discharge (base, 3,500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-15	0600	6.33	6,470	6-12	0130	5.84	5,520
5-21	1630	5.02	4,060	7-26	Unknown	Unknown	†4,000

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 14 to Apr. 5.

† About.

9-3024. White River below Trapper's Lake, Colo.

Location.--Lat 39°59'50", long 107°13'50", in sec.2, T.1 S., R.88 W., on right bank 200 ft below Trapper's Lake, 1 mile upstream from Skinny Fish Creek, and 21 miles east of Buford.

Drainage area.--21.4 sq mi.

Records available.--October 1956 to September 1965 (discontinued).

Gage.--Water-stage recorder. Altitude of gage is 9,600 ft (from topographic map).

Average discharge.--9 years, 27.8 cfs (20,130 acre-ft per year).

Extremes.--Maximum discharge during year, 238 cfs June 21 (gage height, 7.03 ft); minimum daily, 7.2 cfs Apr. 16.

1956-65: Maximum discharge, 481 cfs July 4, 1957 (gage height, 8.03 ft), from rating curve extended above 250 cfs; minimum daily, 2.9 cfs Sept. 2, 1964, caused by temporary storage behind moss jam at lake outlet upstream.

Remarks.--Records fair. No diversion above station. Natural regulation by Trapper's Lake.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	11	11	13	13	8.4	8.0	14	53	138	32	* 16
2	* 12	11	13	12	12	8.4	8.2	16	55	152	33	16
3	12	11	13	12	11	8.2	8.2	17	60	155	36	17
4	12	* 10	12	11	10	8.0	8.0	19	66	150	34	19
5	11	9.6	12	11	10	7.8	7.8	21	65	140	32	20
6	11	9.8	12	10	9.8	7.8	8.0	21	63	134	* 30	20
7	11	9.6	11	10	9.8	7.8	7.8	19	75	125	27	16
8	11	9.6	11	11	9.6	7.8	7.8	18	83	114	25	18
9	11	9.0	11	11	9.4	7.8	* 7.8	18	90	106	24	18
10	10	9.0	11	11	9.4	8.2	7.6	18	99	97	23	17
11	10	9.2	11	11	9.6	8.6	7.6	17	* 105	93	23	16
12	10	10	12	12	9.6	8.6	7.4	16	111	89	22	17
13	10	11	12	12	9.6	8.8	7.6	16	132	* 86	21	16
14	10	11	12	11	9.4	8.8	7.6	20	154	76	20	14
15	11	11	11	11	9.6	8.6	7.4	21	168	65	21	14
16	11	11	10	10	9.4	8.4	7.2	20	192	60	24	14
17	10	10	10	9.8	9.2	8.6	7.4	21	195	57	24	13
18	10	10	9.8	9.4	9.0	8.8	7.6	24	209	58	25	10
19	10	10	10	9.2	9.0	8.6	7.6	26	223	59	28	12
20	10	9.8	10	9.2	9.0	8.2	8.0	* 32	228	56	24	15
21	10	9.6	10	9.2	8.8	8.4	8.6	39	230	52	21	18
22	10	9.4	10	9.6	8.8	8.4	9.6	50	212	46	19	24
23	11	9.2	11	9.6	9.4	8.6	11	58	211	45	17	14
24	11	9.2	14	9.8	9.2	9.0	11	56	* 209	49	15	20
25	11	9.4	15	10	9.0	9.2	11	52	203	50	14	32
26	10	10	15	11	8.8	9.0	12	49	190	45	12	32
27	10	12	14	10	8.4	9.2	12	44	159	41	12	30
28	10	12	16	11	8.2	9.2	12	35	142	37	12	26
29	10	12	16	13	-	9.0	12	32	141	32	13	28
30	11	11	14	14	-----	8.4	12	34	145	30	14	30
31	11	-----	13	14	-----	8.2	-----	45	-----	32	15	-----
Total	330	306.4	372.8	337.8	268.0	262.8	265.8	888	4,268	2,469	692	572
Mean	10.6	10.2	12.1	10.9	9.57	8.48	8.86	28.6	142	79.6	22.3	19.1
Ac-ft	655	608	739	670	532	521	527	1,760	8,470	4,900	1,370	1,130

Calendar year 1964: Max 192 Min 2.9 Mean 25.9 Ac-ft 18,830

Water year 1964-65: Max 230 Min 7.2 Mean 30.2 Ac-ft 21,880

\* Discharge measurement made on this day.

## GREEN RIVER BASIN

9-3024.5 Lost Creek near Buford, Colo.

Location.--Lat 40°03'00", long 107°28'05", in SE¼ sec.15, T.1 N., R.90 W., on left bank at downstream side of highway bridge, 540 ft upstream from mouth, 0.5 mile downstream from Long Creek, and 9 miles northeast of Buford.

Drainage area.--21.6 sq mi.

Records available.--October 1964 to September 1965.

Gage.--Water-stage recorder.

Extremes.--Maximum discharge during year, 655 cfs May 21 (gage height, 4.65 ft); minimum daily, 1.9 cfs Aug. 27, 28, Sept. 11, 14-16.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. No diversion above station.

Cooperation.--One discharge measurement furnished by Bureau of Reclamation.

Rating table, except periods of ice effect (gage heights, in feet,  
and discharge, in cubic feet per second)

1.6	1.0	2.7	48
1.8	3.0	3.0	83
2.0	7.0	3.5	170
2.2	14	4.0	300
2.4	24	4.2	380

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			2.3	3.0	2.6	3.6	* 6.0	184	160	18	4.0	* 2.1
2			* 2.4	2.6	3.0	3.4	5.8	235	147	18	9.5	2.1
3			2.3	2.8	* 3.2	3.2	5.6	228	144	14	6.6	2.2
4			2.3	3.0	3.4	* 3.0	5.4	218	144	13	4.4	2.2
5			2.2	3.0	3.4	3.2	5.2	170	129	12	* 3.8	2.6
6			2.0	* 3.2	3.2	3.4	5.0	* 124	128	10	3.2	2.9
7		2.6	2.0	3.0	2.8	3.4	4.6	96	138	9.2	2.9	2.5
8			2.1	3.0	2.8	3.2	4.6	94	131	9.0	2.7	2.3
9			2.2	2.7	2.8	3.0	4.8	74	119	8.8	2.5	2.1
10			2.3	3.0	2.8	3.0	4.4	68	* 108	7.8	2.6	2.0
11			2.3	3.0	2.8	3.0	4.0	75	117	7.0	2.6	1.9
12			2.3	3.0	2.6	3.0	3.8	113	110	7.2	2.6	2.1
13			2.1	2.8	2.4	2.8	3.6	182	151	* 7.0	2.4	2.0
14		2.7	2.2	2.6	2.8	2.6	3.2	172	112	5.6	2.6	1.9
15		2.7	2.4	2.4	2.6	3.0	3.2	144	96	5.2	3.4	1.9
16		2.6	2.5	2.4	2.4	2.8	4.6	198	83	5.0	2.8	1.9
17		2.8	2.5	2.4	2.6	2.8	5.2	312	75	4.8	3.6	2.3
18		2.6	2.2	2.6	2.8	2.6	5.6	293	70	4.8	4.6	3.2
19		2.7	2.5	2.8	3.0	2.6	7.2	308	63	4.8	5.0	5.2
20		* 2.5	2.6	3.2	3.2	2.6	11	* 372	57	5.6	4.4	4.8
21		2.3	2.6	2.8	3.4	2.8	20	376	53	5.0	3.4	4.2
22		2.4	2.6	2.8	3.8	3.0	36	376	* 49	4.2	3.0	4.6
23		2.5	2.7	3.0	3.6	3.0	* 50	293	44	4.6	2.6	5.6
24		2.4	2.7	2.8	3.5	3.0	50	202	41	5.2	2.3	8.2
25		2.5	2.6	2.8	* 3.4	3.0	45	162	38	8.2	2.1	8.5
26		2.4	2.6	2.8	3.2	3.0	39	138	37	5.2	2.0	8.5
27		2.4	2.7	2.8	2.8	2.9	34	119	27	5.6	1.9	8.0
28		2.5	2.8	3.0	3.6	2.9	38	131	24	6.0	1.9	7.8
29		2.3	2.8	3.2	-	3.0	64	146	22	4.2	2.5	8.8
30		2.3	2.6	3.0	-	3.6	124	166	20	3.8	2.4	7.2
31		-	3.0	2.8	-	4.6	-	178	-	4.4	2.1	-
Total	86.8	76.4	75.4	88.3	84.5	95.0	602.8	5,937	2,637	233.2	102.4	121.6
Mean	2.8	2.55	2.43	2.85	3.02	3.06	20.1	192	87.9	7.52	3.30	4.05
Ac-ft	172	152	150	175	168	188	1,200	11,780	5,230	463	203	241

Calendar year 1964: Max - Min - Mean - Ac-ft -  
 Water year 1964-65: Max 376 Min 1.9 Mean 27.8 Ac-ft 20,120

Peak discharge (base, 150 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-2	1930	4.07	328	5-31	1900	3.75	222
5-21	1645	4.65	655	6-13	0300	3.75	222

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1 to Nov. 13. Stage-discharge relation affected by ice Nov. 24 to Mar. 21 (no gage-height record Feb. 28 to Mar. 4), Mar. 29-31, Apr. 10-15.

9-3028. White River near Buford, Colo.

Location.--Lat 40°02', long 107°31', in SW¼ sec.20, T.1 N., R.90 W., on right bank a third of a mile upstream from highway bridge, three-quarters of a mile downstream from Ute Creek, and 6½ miles northeast of Buford.

Drainage area.--223 sq mi.

Records available.--July 1903 to December 1906, October 1956 to September 1965. Monthly discharge only for some periods, published in WSP 1313. Published as North Fork White River near Buford prior to 1956. Records for May 1910 to December 1915 and July 1919 to December 1920 at site 6½ miles downstream not equivalent owing to inflow between the sites.

Gage.--Water-stage recorder. Prior to October 1956, staff gage at highway bridge a third of a mile downstream at different datum.

Average discharge.--12 years, 305 cfs (220,800 acre-ft per year).

Extremes.--Maximum discharge during year, 1,690 cfs May 22; maximum gage height, 5.04 ft June 13; minimum daily discharge, 109 cfs Jan. 2.

1903-6, 1956-65: Maximum daily discharge, 1,950 cfs June 8, 1905; minimum daily, 90 cfs Jan. 13, 14, 1964.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for irrigation of a few hay meadows.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 6 to May 23)

2.8	100	4.0	700
3.0	165	5.1	1,660
3.5	400		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	158	151	151	b 130	148	127	* 154	563	931	922	350	246
2	* 162	154	* 162	109	148	124	151	668	895	940	350	* 241
3	169	154	154	130	154	115	144	694	958	895	345	246
4	169	* 148	151	b 150	* 148	* 118	140	700	958	850	330	236
5	169	151	144	b 160	154	127	137	654	886	794	* 315	255
6	162	151	134	* 154	151	144	137	* 527	949	756	315	250
7	162	148	b 140	140	148	137	134	455	1,140	728	310	232
8	162	151	b 140	140	144	134	130	428	1,160	714	300	232
9	154	148	b 150	151	148	134	134	390	1,180	674	290	228
10	162	148	162	140	148	130	127	365	* 1,160	635	290	223
11	162	151	165	144	137	124	127	370	1,260	605	285	218
12	162	151	158	144	118	124	124	428	1,260	593	280	218
13	165	158	144	140	115	127	127	545	1,550	* 581	270	214
14	162	158	b 150	144	137	124	127	605	1,470	527	290	205
15	158	154	b 160	144	134	121	124	521	1,480	467	305	210
16	158	154	b 160	140	130	124	130	605	1,430	a 440	290	214
17	158	154	b 150	144	b 130	121	130	786	1,400	a 420	300	218
18	154	154	b 140	148	b 130	121	134	877	1,420	a 430	320	250
19	151	151	b 140	151	137	118	148	931	1,430	a 440	330	260
20	154	b 150	b 170	144	137	121	197	* 1,130	1,440	a 430	330	260
21	151	b 140	169	140	137	134	236	1,270	1,420	a 420	305	246
22	154	b 140	151	137	134	130	270	1,350	* 1,340	a 400	310	250
23	162	b 140	162	137	137	130	* 285	1,320	1,260	a 430	290	260
24	162	148	162	137	b 130	130	270	1,080	1,230	a 460	280	270
25	158	151	154	137	b 120	127	241	895	1,240	a 480	270	285
26	158	148	151	134	b 120	130	218	794	1,160	a 420	255	300
27	151	148	148	134	130	130	205	700	1,030	a 380	255	295
28	151	158	148	140	127	130	218	668	985	370	255	295
29	151	154	148	144	-	130	300	687	985	355	270	315
30	158	151	137	154	-----	137	422	778	958	355	265	280
31	162	-----	b 140	151	-----	144	-----	904	-----	375	250	-----
Total	4,931	4,517	4,695	4,392	3,831	3,967	5,421	22,688	35,965	17,286	9,200	7,452
Mean	159	151	151	142	137	128	181	732	1,199	558	297	248
Ac-ft	9,780	8,960	9,310	8,710	7,600	7,870	10,750	45,000	71,340	34,290	18,250	14,780

Calendar year 1964: Max 1,100 Min 90 Mean 261 Ac-ft 189,300  
 Water year 1964-65: Max 1,550 Min 109 Mean 341 Ac-ft 246,600

Peak discharge (base, 1,000 cfs).--May 22 (2000) 1,690 cfs (5.03 ft); June 13 (0530) 1,650 cfs (5.04 ft).

\* Discharge measurement made on this day.  
 a No gage-height record.  
 b Stage-discharge relation affected by ice.

## GREEN RIVER BASIN

9-3030. White River at Buford, Colo.

Location.--Lat 39°59', long 107°37', in NW¼ sec.9, T.1 S., R.91 W., on right bank 600 ft east of Buford and 1½ miles upstream from South Fork White River.

Drainage area.--254 sq mi.

Records available.--May 1910 to December 1915, July 1919 to December 1920, October 1951 to September 1965. Monthly discharge only for some periods, published in WSP 1313. Published as North Fork White River near Buford prior to 1951. Records for July 1903 to December 1906 at site 6½ miles upstream not equivalent owing to inflow between sites.

Gage.--Water-stage recorder. Altitude of gage is 7,010 ft (from topographic map). May 24, 1910, to May 27, 1914, staff gage at site 1½ miles upstream at different datum. May 28, 1914, to Dec. 7, 1915, and July 1, 1919, to Oct. 9, 1920, staff gage at present site at different datum.

Average discharge.--20 years, 316 cfs (228,800 acre-ft per year).

Extremes.--Maximum discharge during year, 1,780 cfs May 22 (gage height, 6.44 ft); minimum daily, 127 cfs Mar. 19. 1910-15, 1919-20, 1951-65: Maximum daily discharge, 3,150 cfs May 30, 1912; maximum gage height, 7.22 ft Jan. 9, 1961 (backwater from ice); minimum daily discharge, 90 cfs Feb. 21, 1955.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for irrigation of about 900 acres above and 300 acres below station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	184	193	181	168	145	a 140	*168	668	985	817	380	268
2	* 181	199	* 190	148	145	a 130	170	817	950	845	380	* 268
3	190	196	181	158	150	a 130	158	852	985	810	375	280
4	190	* 178	175	b 170	* 146	*a 140	158	831	985	768	360	268
5	187	181	162	175	145	158	155	775	922	722	* 347	288
6	187	187	160	172	148	158	150	* 614	978	680	342	292
7	187	184	158	* 168	146	160	148	525	1,110	650	338	264
8	187	184	b 150	158	145	158	145	500	1,150	644	316	264
9	190	181	b 170	162	148	a 150	150	440	1,150	604	308	256
10	193	184	190	162	146	a 150	146	410	* 1,120	576	304	252
11	196	181	196	160	145	a 140	143	410	1,230	550	308	244
12	193	178	184	162	132	a 130	143	475	1,230	550	300	244
13	193	193	146	152	132	a 130	143	620	1,520	* 535	288	233
14	193	184	170	155	146	a 140	141	686	1,460	485	308	226
15	190	187	b 190	155	141	*a 140	145	598	1,460	455	338	226
16	187	190	b 180	152	136	134	155	662	1,400	435	312	233
17	187	187	b 160	150	146	136	162	887	1,360	425	324	244
18	184	175	b 150	148	145	132	162	978	1,370	445	342	292
19	181	175	b 180	b 150	145	127	178	1,010	1,370	440	380	312
20	184	b 160	b 210	148	146	128	233	* 1,190	1,370	445	370	292
21	181	b 160	b 190	148	141	145	300	1,310	1,330	435	334	280
22	181	b 150	190	146	a 140	139	338	1,470	* 1,240	410	352	284
23	196	b 160	184	146	a 140	139	* 360	1,350	1,180	435	316	288
24	193	168	184	150	a 130	139	342	1,110	1,140	470	308	300
25	187	181	175	148	a 140	134	300	971	1,130	490	300	324
26	187	178	170	145	a 140	137	276	873	1,080	410	284	334
27	190	175	170	143	a 140	137	260	761	950	405	272	342
28	187	175	162	150	a 150	141	272	740	901	390	276	338
29	187	178	160	152	-	141	365	775	880	375	296	360
30	193	172	132	158	-----	146	510	859	873	375	288	320
31	199	-----	158	155	-----	158	-----	978	-----	400	272	-----
Total	5,845	5,374	5,358	4,814	3,999	4,367	6,476	25,145	34,809	16,476	10,018	8,416
Mean	189	179	173	155	143	141	216	811	1,160	531	323	281
Ac-ft	11,590	10,660	10,630	9,550	7,930	8,660	12,840	49,870	69,040	32,680	19,870	16,690

Calendar year 1964: Max 1,280 Min 100 Mean 289 Ac-ft 210,100  
 Water year 1964-65: Max 1,520 Min 127 Mean 359 Ac-ft 260,000

Peak discharge (base, 1,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-22	2100	6.44	1,780	6-13	0645	6.29	1,640
5-31	2000	5.62	1,110				

\* Discharge measurement made on this day.

a No gage-height record.

b Stage-discharge relation affected by ice.

9-3040. South Fork White River at Buford, Colo.

Location.--Lat 39°58', long 107°38', in NE¼ (corrected) sec.17, T.1 S., R.91 W., on left bank 300 ft downstream from highway bridge, three-quarters of a mile upstream from mouth, and 1 mile south of Buford.

Drainage area.--170 sq mi, approximately.

Records available.--July 1919 to December 1920 (monthly discharge only, published in WSP 1313), October 1951 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 6,970 ft (from topographic map). Prior to Nov. 30, 1920, staff gage at site 300 ft upstream at different datum.

Average discharge.--15 years; 260 cfs (188,200 acre-ft per year).

Extremes.--Maximum discharge during year, 2,070 cfs June 15 (gage height, 6.27 ft); minimum daily, 82 cfs Mar. 19, 20.

1919-20, 1951-65: Maximum discharge, about 3,000 cfs June 30, 1957; maximum gage height, 7.07 ft June 30, 1957; minimum daily discharge determined, 60 cfs Feb. 21, 1955.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for irrigation of about 1,100 acres above station and a few acres below.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 16-28, Apr. 2-4, May 31 to July 11)

2.8	80	4.5	620
3.0	96	5.0	1,020
3.3	137	5.6	1,580
3.6	205	6.0	1,970
4.0	355		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	108	108	113	100	130	120	* 100	251	1,020	768	247	149
2	107	110	* 113	95	140	110	106	335	939	800	239	* 151
3	107	108	98	95	140	110	103	360	1,020	725	259	166
4	107	* 103	105	100	* 140	* 110	103	360	1,070	683	229	168
5	106	104	100	110	122	120	103	373	975	602	* 220	162
6	106	106	95	* 110	120	120	102	* 339	1,020	554	211	182
7	106	105	95	110	119	120	104	295	1,240	506	202	162
8	106	107	100	100	113	120	105	287	1,350	485	198	155
9	106	105	110	100	116	110	107	255	1,470	450	195	153
10	107	107	110	110	110	110	105	239	* 1,370	415	192	147
11	106	107	110	110	103	100	105	223	1,460	396	198	145
12	106	98	100	110	89	90	102	235	1,370	391	195	145
13	105	106	90	110	96	90	106	299	1,660	* 386	190	143
14	* 105	104	100	100	125	90	105	368	1,950	331	190	139
15	103	b 100	110	100	130	* 90	108	339	1,960	311	190	137
16	100	b 100	110	100	120	87	113	323	1,830	295	188	139
17	105	b 100	110	100	120	91	118	400	1,770	291	190	147
18	104	106	100	110	120	85	118	518	1,820	307	198	171
19	102	100	110	110	120	82	122	572	1,780	315	217	175
20	104	b 100	110	110	120	82	143	* 816	1,740	283	195	171
21	104	99	100	110	120	95	168	1,000	1,670	279	182	162
22	104	100	100	110	120	94	182	1,180	* 1,410	255	185	164
23	108	b 100	110	110	120	93	* 188	1,280	1,340	255	173	162
24	108	106	110	110	110	93	188	1,130	1,340	251	166	166
25	107	b 110	110	110	120	91	171	948	1,300	275	162	175
26	108	b 110	110	100	120	91	166	800	1,180	247	157	180
27	108	107	110	100	120	91	159	683	921	232	155	190
28	107	108	100	110	130	92	153	578	867	226	153	205
29	107	114	90	110	-	95	164	536	894	217	155	229
30	110	108	85	110	-----	95	195	596	903	220	157	205
31	112	-----	100	120	-----	100	-----	800	-----	255	155	-----
Total	3,289	3,146	3,214	3,290	3,353	3,067	3,912	16,718	40,639	12,006	5,943	4,945
Mean	106	105	104	106	120	98.9	130	539	1,355	387	192	165
Ac-ft	6,520	6,240	6,370	6,530	6,650	6,080	7,760	33,160	80,610	23,810	11,790	9,810

Calendar year 1964: Max 1,830 Min 65 Mean 243 Ac-ft 176,200

Water year 1964-65: Max 1,960 Min 82 Mean 284 Ac-ft 205,300

Peak discharge (base, 1,300 cfs).--May 23 (0900) 1,320 cfs (5.34 ft); June 15 (0230) 2,070 cfs (6.27 ft).

\* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 5 to Feb. 4, Feb. 16 to Mar. 15 (stage-discharge relation affected by ice during part of periods), Mar. 29 to Apr. 1.

## GREEN RIVER BASIN

9-3042. White River above Coal Creek, near Meeker, Colo.

Location.--Lat 40°00'20", long 107°49'30", on base line between sec.33, T.1 N., and sec.3, T.1 S., R.93 W., on right bank 16 ft upstream from county road bridge, 2 miles upstream from Coal Creek, and 5 miles southeast of Meeker.

Drainage area.--660 sq mi, approximately.

Records available.--October 1961 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 6,400 ft (from topographic map).

Extremes.--Maximum discharge during year, 3,460 cfs June 15 (gage height, 5.34 ft); minimum daily, 220 cfs Dec. 13.  
1961-65: Maximum discharge, 3,580 cfs May 13, 1962 (gage height, 5.41 ft); minimum daily, 127 cfs July 30 to Aug. 1, 1963.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions above station for irrigation of about 8,000 acres above station and about 4,000 acres below.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	284	312	312	340	280	280	348	940	2,240	1,690	624	328
2	284	312	* 316	300	300	260	352	1,210	2,120	1,760	595	* 336
3	296	304	288	280	* 320	240	340	1,350	2,200	1,690	624	364
4	296	* 288	292	320	288	* 240	332	1,290	2,340	1,600	575	378
5	296	300	280	340	280	280	324	1,290	2,170	1,470	* 550	382
6	300	308	260	320	296	280	320	1,060	2,210	1,450	535	441
7	308	304	260	* 300	296	260	324	* 900	2,490	1,160	520	428
8	312	300	260	288	280	260	324	860	* 2,620	1,120	495	414
9	316	296	320	284	292	260	328	790	2,780	1,050	485	410
10	320	300	360	292	280	280	320	734	2,090	972	475	405
11	320	308	360	288	260	260	312	714	2,880	924	460	414
12	316	292	300	288	260	260	300	776	2,840	908	446	418
13	* 324	312	220	268	260	260	312	956	3,170	964	428	410
14	320	304	260	276	260	260	308	1,260	3,350	811	428	400
15	316	308	300	268	280	260	312	1,070	3,360	790	446	396
16	316	320	360	268	280	260	324	1,110	3,210	* 741	460	410
17	324	324	320	276	260	250	336	1,490	3,110	702	423	423
18	320	308	260	288	280	250	340	* 1,760	3,230	708	446	485
19	312	300	300	316	280	250	352	1,840	3,180	727	510	525
20	308	280	340	284	280	250	* 410	2,210	3,150	702	505	520
21	304	260	340	284	284	260	480	2,550	3,090	696	460	495
22	304	280	320	284	292	260	550	2,870	* 2,800	630	441	500
23	324	280	340	292	288	260	575	3,000	2,630	630	410	505
24	328	288	360	292	280	260	575	2,600	2,550	690	400	510
25	316	316	340	272	280	250	520	2,280	2,550	762	387	530
26	316	308	320	288	280	260	495	2,010	2,450	678	360	550
27	316	308	300	284	284	270	465	1,770	2,040	636	336	560
28	308	308	300	296	288	280	455	1,590	1,880	618	328	575
29	304	304	280	288	-	290	540	1,540	1,900	595	344	636
30	312	300	240	288	-----	300	696	1,550	1,900	585	348	575
31	316	-----	280	292	-----	* 324	-----	1,490	-----	630	340	-----
Total	9,636	9,032	9,388	9,044	7,888	8,214	11,969	46,860	79,130	29,089	14,184	13,723
Mean	311	301	303	292	282	265	399	1,512	2,638	938	458	457
Ac-ft	19,110	17,910	18,620	17,940	15,650	16,290	23,740	92,950	157,000	57,700	28,130	27,220

Calendar year 1964: Max 2,770 Min 170 Mean 505 Ac-ft 366,200  
Water year 1964-65: Max 3,360 Min 220 Mean 680 Ac-ft 492,300

Peak discharge (base, 2,000 cfs).--May 23 (0300) 3,170 cfs (5.10 ft); June 15 (0215) 3,460 cfs (5.34 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 20-23, Dec. 6-13, Feb. 10-20, Mar. 2-30. No gage-height record Dec. 14 to Jan. 7 (stage-discharge relation affected by ice during part of period).



9-3043. Coal Creek near Meeker, Colo.

Location.--Lat 40°05'30", long 107°46'05", in NE¼ sec.1, T.1 N., R.93 W., on right bank 200 ft downstream from unnamed tributary, 300 ft above headgate of ditch, 1.3 miles below Ninemile Draw, and 8 miles northeast of Meeker.

Drainage area.--25 sq mi, approximately.

Records available.--October 1957 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 6,820 ft (from topographic map).

Average discharge.--8 years, 5.50 cfs (3,980 acre-ft per year).

Extremes.--Maximum discharge during year, 82 cfs May 22 (gage height, 4.08 ft); minimum daily, 0.8 cfs Oct. 1-3.

1957-65: Maximum discharge, 102 cfs May 11, 1958 (gage height, 4.37 ft); minimum daily, 0.4 cfs Sept. 9, 10, Nov. 20-23, 1959, Aug. 24, 1961.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Slight regulation by two small storage reservoirs above station. Diversions for irrigation of a few acres of hay meadows above station.

Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 24 to May 17, Sept. 29-30)

2.2	0.5	3.0	15
2.3	1.0	3.4	29
2.4	2.0	3.6	39
2.6	5.6	4.0	68

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.8	1.7					5	19	32	10	3.0	* 2.5
2	.8	1.7					6	24	32	9.5	2.5	1.9
3	.8	* 1.7					6	26	30	8.3	2.3	2.2
4	.9	1.6	(*)		(*)	(*)	4.3	24	30	7.2	* 2.3	2.0
5	1.0	1.7					3.5	24	28	6.6	3.0	2.3
6	1.0	1.7					3.4	* 21	24	6.2	2.7	2.3
7	1.1	1.7		(*)			3.4	19	20	6.0	2.5	2.5
8	1.2	1.7					3.7	19	18	5.8	2.3	3.2
9	1.3	1.7					4.3	16	18	5.6	2.2	2.8
10	1.4	1.7			2	3	3.5	14	* 18	5.6	2.0	2.0
11	1.4	1.6					3.2	14	20	5.2	2.2	2.0
12	1.4	1.6					2.8	14	24	5.6	2.3	2.0
13	* 1.4	1.6					2.8	17	26	5.0	2.0	2.0
14	1.4	1.8					3.0	32	24	* 3.4	2.0	1.9
15	1.4	1.8					4.1	32	22	3.0	2.7	2.0
16	1.4	1.8	1.8	1.4			5.8	29	20	2.8	2.8	1.7
17	1.5	2.0					6.2	34	18	2.8	2.5	1.3
18	1.5	1.8					6.2	39	18	3.0	2.7	1.6
19	1.5	1.6					7.8	43	16	3.0	3.0	2.0
20	1.6	1.4					12	* 49	16	2.3	3.9	1.9
21	1.6	1.4					15	55	* 14	2.2	3.5	2.0
22	1.6	1.4					* 15	66	18	2.0	3.5	3.0
23	1.8	1.6					14	62	17	2.8	2.5	3.0
24	1.8	1.8					14	45	16	5.0	3.0	2.0
25	1.7	2.0			2.5	4	12	38	16	6.6	2.8	1.9
26	1.7	1.8					12	34	16	3.7	2.7	1.8
27	1.7	1.8					9.8	30	14	3.0	2.5	1.7
28	1.7	1.6					9.3	26	12	2.5	2.5	1.7
29	1.7	1.6					10	28	12	2.3	3.2	3.7
30	1.7	1.8					14	30	11	3.4	3.2	3.2
31	1.8					(*)		32		3.5	2.8	
Total	43.6	50.7	55.8	43.4	60.0	104	222.1	955	600	143.9	83.1	66.1
Mean	1.41	1.69	1.8	1.4	2.1	3.4	7.40	30.8	20.0	4.64	2.68	2.20
Ac-ft	86	101	111	86	119	206	441	1,890	1,190	285	165	131

Calendar year 1964: Max 36

Min 0.8

Mean 4.22

Ac-ft 3,070

Water year 1964-65: Max 66

Min 0.8

Mean 6.65

Ac-ft 4,810

Peak discharge (base, 50 cfs). May 14 (1930) 79 cfs (4.04 ft); May 22 (2100) 82 cfs (4.08 ft)

\* Discharge measurement made on this day.

Note.--No gage-height record Oct. 2-13, May 26 to June 21. Stage-discharge relation affected by ice Nov. 11 to Apr. 3 (no gage-height record Nov. 14 to Mar. 31).

## GREEN RIVER BASIN

9-3045. White River near Meeker, Colo.

Location.--Lat 40°02'00", long 107°51'35", in NE¼ sec.30, T.1 N., R.93 W., on left bank 1 mile upstream from Curtis Creek and 2½ miles east of Meeker.

Drainage area.--762 sq mi.

Records available.--June 1901 to December 1906, October 1909 to September 1965. Monthly discharge only for some periods, published in WSP 1313. Published as "at Meeker" 1901-13.

Gage.--Water-stage recorder. Altitude of gage is 6,320 ft (from topographic map). Prior to Oct. 31, 1906, and May 7 to Aug. 13, 1910, staff gage and Aug. 14, 1910, to Oct. 19, 1913, water-stage recorder, at site 2½ miles downstream at different datum. Oct. 20, 1913, to Sept. 30, 1933, water-stage recorder at present site at datum 1.00 ft higher.

Average discharge.--61 years, 629 cfs (455,400 acre-ft per year).

Extremes.--Maximum discharge during year, 4,030 cfs June 15 (gage height, 3.84 ft); minimum daily, 210 cfs Dec. 13.

1901-6, 1909-65: Maximum discharge observed, 6,370 cfs June 16, 1921 (gage height, 5.60 ft, present datum), from rating curve extended above 4,700 cfs; minimum daily, 112 cfs July 17, 1934.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions above station for irrigation of about 12,000 acres above station and about 3,000 acres below.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

0.1	240	2.0	1,260
.4	315	3.0	2,450
.9	530	3.9	4,150
1.5	890		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	329	350	326	360	291	278	450	985	2,070	1,500	680	368
2	329	350	* 336	290	* 280	256	475	1,240	1,970	1,570	632	* 368
3	336	354	300	300	312	244	393	1,340	2,030	1,470	698	401
4	340	332	315	350	297	* 275	368	* 1,310	2,120	1,420	* 626	421
5	336	340	272	364	297	291	346	1,300	1,990	1,300	590	421
6	336	* 350	272	350	306	291	329	1,110	2,020	1,220	566	514
7	346	340	240	* 350	303	288	332	950	2,290	1,060	548	492
8	350	340	240	329	285	280	329	926	* 2,510	1,050	524	470
9	354	332	330	300	291	272	336	866	2,680	992	508	470
10	357	332	350	332	291	285	332	812	2,530	950	497	450
11	357	348	340	332	275	272	315	788	2,730	914	470	455
12	354	326	320	329	250	275	300	824	2,780	896	460	460
13	354	350	210	306	256	275	312	964	3,190	944	445	440
14	* 354	340	240	315	315	275	306	1,220	3,670	842	440	425
15	343	346	360	309	312	272	309	1,110	3,770	812	475	425
16	336	357	370	300	278	270	326	1,090	3,450	* 758	508	435
17	346	360	340	300	315	275	343	1,370	3,150	722	465	450
18	340	343	230	291	309	260	346	* 1,680	3,250	728	492	508
19	332	326	380	332	300	250	357	1,750	3,150	770	596	602
20	332	329	360	309	300	256	* 425	2,100	3,110	740	596	590
21	332	306	340	326	280	288	560	2,450	3,060	728	578	566
22	332	315	340	300	294	278	650	2,750	* 2,750	674	530	578
23	360	340	460	288	280	275	692	2,940	2,510	668	480	560
24	364	306	440	315	270	278	692	2,420	2,400	740	455	566
25	350	350	370	300	278	265	626	2,070	2,380	842	435	608
26	346	332	330	291	280	275	584	1,870	2,260	734	409	626
27	350	329	340	278	280	278	530	1,630	1,830	674	385	638
28	346	315	340	306	291	285	497	1,420	1,680	644	368	650
29	343	322	320	303	-	294	602	1,420	1,670	620	393	734
30	354	309	270	306	-----	318	770	1,500	1,680	608	393	662
31	360	-----	282	315	-----	* 385	-----	1,790	-----	668	385	-----
Total	10,698	10,069	9,963	9,776	8,116	8,659	13,232	45,995	76,680	28,258	15,627	15,353
Mean	345	336	321	315	290	279	441	1,484	2,556	912	504	512
Ac-ft	21,220	19,970	19,760	19,390	16,100	17,170	26,250	91,230	152,100	56,050	31,000	30,450

Calendar year 1964: Max 2,780 Min 190 Mean 542 Ac-ft 393,600

Water year 1964-65: Max 3,770 Min 210 Mean 692 Ac-ft 500,700

Peak discharge (base, 2,100 cfs).--May 23 (0500) 3,130 cfs (3.39 ft); June 15 (0900) 4,030 cfs (3.84 ft).

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 7-29, Jan. 1, 2, 4.

9-3048. White River below Meeker, Colo.

Location.--40°00'30", long 108°06'00", in center of sec.31, T.1 N., R.95 W., on left bank 30 ft downstream from county bridge, 3½ miles downstream from Strawberry Creek, and 10 miles west of Meeker.

Drainage area.--1,040 sq mi, approximately.

Records available.--October 1961 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is about 5,900 ft (estimated from nearby level line).

Extremes.--Maximum discharge during year, 4,010 cfs June 15 (gage height, 4.09 ft); minimum daily, 268 cfs Dec. 14.  
1961-65: Maximum discharge, that of June 15, 1965; minimum daily, 200 cfs Jan. 13, 1964.

Remarks.--Records good. Diversions above station for irrigation of about 22,000 acres above and a few acres below.

Rating table (gage height, in feet, and discharge,  
in cubic feet per second)

0.7	255	2.5	1,460
.9	310	3.0	2,110
1.2	440	4.0	3,810
2.0	990		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	368	405	386	395	338	324	* 590	934	2,120	1,520	753	440
2	363	400	400	363	* 317	* 304	596	1,180	2,050	1,550	711	470
3	372	405	* 363	338	363	295	512	1,380	2,100	1,500	* 753	512
4	376	390	381	400	338	301	464	* 1,350	2,220	1,440	690	530
5	376	386	338	420	338	314	430	1,340	2,050	1,340	655	518
6	372	* 390	320	* 400	368	320	395	1,130	2,020	1,240	620	578
7	381	386	286	400	354	331	400	974	2,290	1,110	602	578
8	390	381	280	395	334	334	390	934	* 2,470	1,060	584	554
9	386	381	345	363	338	324	390	870	2,600	1,020	554	542
10	390	381	410	400	342	334	395	816	2,520	974	536	536
11	390	390	400	390	328	320	372	781	2,630	926	518	530
12	386	376	390	376	301	320	354	802	2,890	942	494	536
13	* 381	395	283	345	301	324	368	926	3,160	999	476	518
14	376	386	268	372	354	324	354	1,200	3,620	* 894	476	500
15	372	390	372	350	372	328	354	1,120	3,660	816	518	500
16	358	405	415	342	331	334	358	1,060	3,560	802	530	518
17	372	415	368	342	363	342	376	1,250	3,450	746	512	536
18	368	395	270	345	376	314	390	* 1,700	3,340	753	572	608
19	368	368	405	363	368	304	395	1,770	3,320	923	627	676
20	363	376	440	372	368	298	* 482	2,170	3,270	788	620	690
21	363	372	452	381	345	350	590	2,550	3,140	774	608	655
22	363	363	405	345	342	368	662	2,830	* 2,900	697	566	662
23	390	390	530	338	324	372	690	3,050	2,570	690	542	634
24	400	372	566	358	307	338	711	2,620	2,440	816	524	620
25	390	430	458	342	324	314	662	2,230	2,400	958	494	648
26	386	400	390	342	331	328	614	2,000	2,350	838	464	662
27	386	395	400	328	338	354	584	1,760	1,890	746	446	662
28	386	395	405	342	350	390	542	1,520	1,720	718	435	676
29	386	386	381	338	-	400	596	1,470	1,670	683	470	788
30	390	372	334	342	-----	476	725	1,530	1,700	676	482	718
31	405	-----	314	358	-----	536	-----	1,670	-----	725	* 458	-----
Total	11,753	11,676	11,755	11,285	9,553	10,615	14,741	46,917	78,110	29,564	17,290	17,595
Mean	379	389	379	364	341	342	491	1,513	2,604	954	558	586
Ac-ft	23,310	23,160	23,320	22,380	18,950	21,050	29,240	93,060	154,900	58,640	34,290	34,900

Calendar year 1964: Max 2,800 Min 200 Mean 569 Ac-ft 412,900

Water year 1964-65: Max 3,660 Min 268 Mean 742 Ac-ft 537,200

Peak discharge (base, 2,000 cfs)--May 23 (0800) 3,410 cfs (3.77 ft); June 15 (1700) 4,010 cfs (4.09 ft).

\* Discharge measurement made on this day.

## GREEN RIVER BASIN

9-3062. Piceance Creek below Ryan Gulch, near Rio Blanco, Colo.

Location.--Lat 39°55'16", long 108°17'49", in sec.32, T.1 S., R.97 W., on left bank at downstream side of bridge 40 ft below Ryan Gulch and 23 miles northwest of Rio Blanco.

Drainage area.--485 sq mi.

Records available.--October 1964 to September 1965.

Gage.--Water-stage recorder and concrete control. Altitude of gage is 6,070 ft (from topographic map).

Extremes.--Maximum discharge during year, 190 cfs Aug. 19 (gage height, 5.00 ft), from rating curve extended above 43 cfs; minimum daily, 1.2 cfs Oct. 1.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Jan. 19 to Feb. 22, Mar. 26 to Apr. 1)

2.4	0.5	3.0	16
2.5	1.5	3.4	36
2.6	3.0	3.8	62
2.7	5.0	4.1	87
2.8	8.0		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.2	6.2	16	14	14	16	28	1.5	18	8.8	36	23
2	1.4	6.2	16	14	* 9.6	* 12	26	1.6	18	8.8	33	23
3	1.4	* 4.8	* 15	11	12	14	24	2.1	a 17	10	* 42	24
4	1.4	4.8	14	18	14	18	22	* 2.1	a 16	10	38	22
5	1.6	4.6	13	17	14	20	20	3.0	a 16	9.6	35	22
6	2.1	5.3	12	* 16	16	19	18	2.8	a 17	8.4	32	22
7	2.1	6.2	12	19	16	16	16	3.0	a 18	10	30	22
8	2.2	6.2	13	16	13	15	14	2.8	* a 17	9.2	29	21
9	2.2	6.2	* 14	11	14	15	11	3.6	16	8.8	28	20
10	2.8	5.9	15	12	13	16	7.1	3.2	20	8.8	28	19
11	2.8	5.3	16	10	12	16	5.9	3.6	48	9.6	32	18
12	2.6	5.3	16	10	11	15	5.9	3.6	37	25	31	18
13	* 2.1	7.1	14	9.2	13	15	6.5	4.6	28	6.0	29	18
14	2.1	7.4	14	11	14	15	8.0	4.0	24	41	28	18
15	2.1	7.7	15	10	12	15	6.8	5.0	20	* 28	30	18
16	1.6	8.4	16	9.2	10	14	6.5	5.0	19	21	28	18
17	1.8	12	14	7.4	11	14	5.6	6.5	19	19	58	20
18	2.0	14	13	7	12	14	3.6	8.4	18	26	35	20
19	2.6	14	15	9	12	14	3.0	12	16	42	81	22
20	3.6	14	16	8.5	13	14	* 2.7	16	14	25	39	24
21	3.4	14	17	10	14	20	2.2	18	14	19	31	24
22	3.4	14	18	9	15	28	2.2	22	12	20	30	24
23	3.0	13	18	7.5	* 15	24	2.1	24	11	31	28	22
24	4.0	15	17	9	14	15	2.1	28	* 12	57	27	20
25	4.0	16	16	9	14	14	2.2	24	12	44	26	20
26	4.0	17	15	8	15	14	2.1	24	13	35	25	19
27	3.2	17	14	7.5	15	20	1.8	26	13	30	25	19
28	4.2	16	12	9	14	28	1.6	28	13	28	24	19
29	5.0	16	11	11	-	26	1.6	20	12	28	24	20
30	4.6	16	10	13	-----	* 30	1.6	18	9.2	46	24	21
31	4.6	-----	11	15	-----	31	-----	18	-----	43	* 26	-----
Total	85.1	305.6	448	347.3	371.6	557	260.1	344.4	537.2	770.0	1,012	620
Mean	2.75	10.2	14.5	11.2	13.3	18.0	8.67	11.1	17.9	24.8	32.6	20.7
Ac-ft	169	606	889	689	737	1,100	516	683	1,070	1,530	2,010	1,230

Calendar year 1964: Max - Min - Mean - Ac-ft -  
Water year 1964-65: Max 81 Min 1.2 Mean 15.5 Ac-ft 11,230

\* Discharge measurement made on this day.

a No gage-height record.

Note.--Stage-discharge relation affected by ice Nov. 21-23, Dec. 4-31, Jan. 1, 18-29, Feb. 11-15, 17-22, 27, 28, Mar. 3-6, 15-18.

9-3065, White River near Watson, Utah

Location.--Lat 39°59', long 109°11', in sec.2, T.10 S., R.24 E., Salt Lake meridian, on right bank 350 ft downstream from bridge on State Highway 45, 1 mile downstream from Evacuation Creek, and 7 miles north of Watson.

Drainage area.--4,020 sq mi, approximately.

Records available.--April 1904 to October 1906 (no winter records), May to November 1918, April 1923 to September 1965. Monthly discharge only for some periods, published in WSP 1313. Published as "near Dragon" 1906 and as "near Rangely, Colo." 1904-5, 1918.

Gage.--Water-stage recorder. Datum of gage is 4,946.78 ft above mean sea level, datum of 1929. Apr. 15, 1904, to Oct. 31, 1905, and May 19 to Nov. 23, 1918, staff gage at site 25 miles upstream (half a mile northwest of Rangely, Colo.) at different datum. Apr. 1 to Oct. 31, 1906, staff or chain gages at site 350 ft upstream at different datum. Apr. 1, 1923, to Oct. 3, 1938, water-stage recorder at site 350 ft upstream at datum 4.48 ft higher; Oct. 4, 1938, to Apr. 17, 1939, at site 1,450 ft upstream at different datum; Apr. 18, 1939, to Sept. 6, 1956, at site 100 ft upstream at datum 3.00 ft higher; Sept. 7, 1956, to Oct. 26, 1959, at site 250 ft upstream at datum 3.00 ft higher.

Average discharge.--42 years (1923-65), 711 cfs (514,700 acre-ft per year).

Extremes.--Maximum discharge during year, 6,830 cfs July 25 (gage height, 9.22 ft); minimum daily, 220 cfs Dec. 9, 10. 1904-6, 1918, 1923-65: Maximum daily discharge, 8,160 cfs July 15, 1929; maximum gage height, 13.1 ft Feb. 11, 1962, from floodmark in well (backwater from ice); minimum discharge, 52 cfs July 19, 20, 1934; minimum daily, 53 cfs July 19, 1934.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 30,000 acres above station. Records of chemical analyses and water temperatures for the water year 1965 are published in Part 2 of this report.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 29 to Apr. 12, May 4 to June 6)

2.5	110	4.0	930
2.8	205	5.0	1,880
3.0	280	6.0	2,970
3.5	570	7.0	4,150

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 312	345	* 350	360	410	400	1,250	668	1,860	1,750	731	400
2	304	350	350	330	400	* 420	1,160	843	2,180	1,600	696	412
3	304	345	340	360	380	400	1,090	1,020	2,140	1,590	* 745	430
4	304	355	330	400	360	370	815	1,310	2,160	1,530	808	514
5	304	* 350	310	** 380	400	350	661	* 1,290	2,160	1,460	675	563
6	308	330	300	390	380	360	598	1,340	2,130	1,310	598	612
7	308	335	292	410	380	380	563	1,200	2,080	1,200	577	668
8	316	340	248	400	420	400	528	1,060	2,310	1,060	570	724
9	325	340	220	400	400	400	514	1,030	* 2,490	1,010	563	738
10	330	330	220	400	390	400	507	946	2,670	970	563	640
11	330	330	280	380	390	400	479	914	2,780	922	556	570
12	335	340	380	400	390	400	451	866	2,900	978	521	535
13	330	360	360	410	350	390	418	906	3,300	1,010	430	500
14	330	350	300	** 400	350	380	406	1,030	3,240	946	370	479
15	330	365	250	380	380	400	400	1,410	3,600	* 866	412	430
16	325	345	280	400	420	410	382	1,290	3,720	808	633	370
17	320	365	350	380	440	420	382	1,260	3,570	766	556	400
18	320	360	380	370	380	430	400	1,550	3,350	689	528	400
19	325	376	350	360	410	410	400	* 1,850	3,290	752	493	465
20	325	350	280	350	440	390	394	1,900	3,250	882	479	465
21	330	350	250	360	450	380	* 437	2,310	3,160	1,000	444	535
22	325	300	400	380	460	390	535	2,720	3,080	745	430	535
23	325	230	360	400	470	420	612	3,000	* 2,780	668	420	605
24	340	260	400	380	* 430	520	647	3,240	2,550	978	410	605
25	355	340	450	360	440	510	661	2,790	2,480	4,010	410	668
26	350	360	550	400	360	500	675	2,480	2,420	1,420	400	661
27	340	400	600	380	370	700	633	2,290	2,300	954	390	654
28	340	380	500	360	380	1,100	598	1,970	1,990	787	380	612
29	340	340	400	350	-	1,420	542	1,700	1,800	724	420	591
30	345	340	400	360	-----	* 1,350	556	1,610	1,760	745	437	612
31	340	-----	380	380	-----	1,660	-----	1,640	-----	850	* 444	-----
Total	10,115	10,261	10,860	11,770	11,290	16,870	17,694	49,433	79,500	34,980	16,089	16,393
Mean	326	342	350	380	403	544	590	1,595	2,650	1,128	519	546
Ac-ft	20,060	20,350	21,540	23,350	22,390	33,460	35,100	98,050	157,700	69,380	31,910	32,520

Calendar year 1964: Max 2,700 Min 182 Mean 562 Ac-ft 408,300  
Water year 1964-65: Max 4,010 Min 220 Mean 782 Ac-ft 565,800

Peak discharge (base, 2,900 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-24	0800	6.27	3,490	7-25	0530	9.22	6,830
6-16	1500	6.75	3,900				

\* Discharge measurement made on this day.

\*\* Field estimate made on this day.

Note.--Stage-discharge relation affected by ice Nov. 24 to Dec. 6, Dec. 11 to Mar. 17. No gage-height record Dec. 9, 10, Mar. 18-28 (Stage-discharge relation affected by ice during most of periods), Aug. 22-29.

## SAN JUAN RIVER BASIN

9-3399. East Fork San Juan River above Sand Creek, near Pagosa Springs, Colo.

Location.--Lat 37°23'25", long 106°50'25", in NE¼ sec.4, T.36 N., R.1 E., on right bank 0.3 mile upstream from Sand Creek, 4 miles upstream from West Fork San Juan River, and 13 miles northeast of Pagosa Springs.

Drainage area.--64.1 sq mi.

Records available.--October 1956 to September 1965. Prior to October 1959, published as San Juan River above Sand Creek, near Pagosa Springs.

Gage.--Water-stage recorder. Altitude of gage is 8,900 ft (from topographic map).

Average discharge.--9 years, 87.6 cfs (63,420 acre-ft per year).

Extremes.--Maximum discharge during year, 1,050 cfs June 20; maximum gage height, 5.60 ft May 19; minimum daily discharge determined, 8 cfs Nov. 20.

1956-65: Maximum discharge, 1,210 cfs June 6, 1957 (gage height, 6.32 ft); minimum daily determined, 3.4 cfs Dec. 26, 1958.

Maximum flood known occurred Oct. 5, 1911.

Remarks.--Records good except those for periods of ice effect, which are poor, and those for period June 1 to July 15, which are fair. No diversion above station.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 28				May 29 to Sept. 30			
2.5	5.0	4.0	210	2.8	25	4.0	250
2.8	18	4.5	390	3.0	40	5.0	720
3.0	33	5.0	610	3.4	88	5.5	1,040
3.3	68	5.5	900	3.7	150		
3.6	116						

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	11				14	40	493	470	490	198	31
2	23	12				13	37	574	446	500	222	46
3	23	*13				12	31	574	*446	515	*186	*38
4	22	11				10	31	494	424	460	159	38
5	22	11				12	27	366	384	475	138	34
6	22	11				13	26	326	428	433	121	54
7	20	11				14	28	303	510	438	107	43
8	20	11				14	27	278	550	*490	98	62
9	19	12				13	30	228	555	402	90	67
10	19	14				*12	27	216	470	370	84	50
11	19	14				12	20	188	428	424	80	43
12	18	10				13	20	198	415	415	77	42
13	*17	12				12	26	275	495	358	74	36
14	16	11				11	26	261	676	302	68	32
15	16	9.4				11	20	231	756	298	64	30
16	16	12	12	13	14	12	*32	261	726	266	67	28
17	15	12				12	62	*414	*768	250	68	30
18	14	11				11	93	556	864	278	67	107
19	14	9.5				11	134	722	858	262	58	183
20	14	8				11	198	800	894	*226	52	159
21	14	10				12	275	812	786	201	49	119
22	13	11				11	366	740	638	180	46	100
23	13	13				13	434	610	632	168	42	103
24	12	13				14	434	466	756	156	38	115
25	12	14				12	350	390	621	148	36	117
26	12	14				11	247	306	505	138	34	115
27	12	15				14	195	254	460	130	31	111
28	12	12				15	168	219	451	125	31	121
29	13	13				18	200	234	480	115	36	117
30	13	14				19	330	294	480	165	47	102
31	12					22		366		189	34	
Total	51.2	354.9	372	403	392	404	3,934	12,439	17,372	9,367	2,502	2,273
Mean	16.5	11.8	12	13	14	13.0	131	401	579	302	80.7	75.8
Ac-ft	1,020	704	738	799	778	801	7,800	24,670	34,460	18,580	4,960	4,510

Calendar year 1964: Max 466 Min - Mean 55.4 Ac-ft 40,270  
 Water year 1964-65: Max 894 Min - Mean 138 Ac-ft 99,820

Peak discharge (base, 500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-23	2100	4.84	560	6-9	0130	4.82	616
5-2	2100	5.12	690	6-20	2130	5.52	1,050
5-19	2215	5.60	1,010	7-11	2300	4.65	535

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4-9, 12, Nov. 19 to Mar. 22 (no gage-height record Nov. 20 to Mar. 10), Mar. 26, 30, 31, Apr. 11, 12, 15, 16.

9-3400. East Fork San Juan River near Pagosa Springs, Colo.

Location.--Lat 37°22'00", long 106°53'30", in NW¼SW¼ sec.7, T.36 N., R.1 E., on right bank a quarter of a mile upstream from private highway bridge, half a mile upstream from West Fork, and 9.5 miles northeast of Pagosa Springs.

Drainage area.--86.9 sq mi.

Records available.--May 1935 to September 1965. Prior to October 1959, published as San Juan River near Pagosa Springs.

Gage.--Water-stage recorder. Datum of gage is 7,597.63 ft above mean sea level, datum of 1929. Prior to Sept. 8, 1938, at site a quarter of a mile downstream at different datum.

Average discharge.--30 years, 120 cfs (86,880 acre-ft per year).

Extremes.--Maximum discharge during year, 1,270 cfs May 19 (gage height, 4.35 ft); minimum daily, 13 cfs Dec. 14.

1935-65: Maximum discharge, 2,070 cfs May 12, 1941 (gage height, 4.84 ft), from rating curve extended above 1,300 cfs; minimum daily, 5.5 cfs Dec. 20, 1939.

Maximum flood known occurred Oct. 5, 1911.

Remarks.--Records good except those for periods of ice effect or no gage-height record and those for May 1-4, 16-24, June 14, 15, 17-25, which are poor. Diversions above station for irrigation of a few hundred acres of hay meadows below station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used May 2, 20, 21, 23, June 21 to July 8)

1.1	10	2.5	245
1.2	14	3.0	450
1.4	24	3.5	705
1.7	54	4.2	1,140
2.0	106		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	35	16	* 20	19	* 19	* 24	66	749	* 678	590	266	46
2	33	16	22	18	18	20	58	808	672	635	280	60
3	30	* 17	22	17	18	* 17	52	862	645	640	* 252	* 60
4	30	15	20	18	19	20	50	688	565	590	214	60
5	28	15	16	18	20	22	* 44	505	500	590	183	50
6	27	16	15	* 17	20	22	41	* 455	555	560	158	86
7	26	15	14	18	19	24	43	414	688	540	140	66
8	25	15	16	19	18	24	42	382	784	* 580	128	96
9	24	15	18	18	18	24	50	324	802	500	115	104
10	24	17	18	18	18	22	49	308	650	460	110	74
11	23	17	17	18	* 18	22	44	270	580	530	110	64
12	22	16	18	17	17	24	42	284	550	500	100	63
13	* 22	16	15	18	15	23	48	405	738	440	95	54
14	21	15	13	18	16	21	48	392	988	390	90	48
15	20	15	17	17	17	21	43	352	* 988	370	85	46
16	20	20	17	18	18	23	66	396	940	340	90	42
17	20	22	16	18	18	23	113	630	922	320	90	43
18	20	22	15	18	18	22	150	850	1,050	340	85	162
19	19	20	15	19	18	20	198	1,040	1,000	320	80	348
20	19	17	16	19	19	18	300	982	1,080	280	70	332
21	19	16	17	19	20	20	414	994	964	* 245	65	224
22	18	17	16	17	20	22	520	976	862	217	60	186
23	18	18	17	15	22	23	625	850	838	201	55	189
24	17	18	18	16	19	22	630	672	910	189	50	192
25	16	18	19	18	20	22	460	530	749	180	50	192
26	16	20	19	16	22	20	* 332	405	610	166	46	177
27	16	20	18	15	24	23	276	340	550	164	42	175
28	16	18	17	17	24	26	238	320	535	161	46	192
29	17	19	16	18	-	32	288	336	560	143	55	177
30	17	20	15	18	-----	35	475	410	585	268	65	148
31	16	-----	18	19	-----	49	-----	505	-----	270	50	-----
Total	674	521	530	548	532	730	5,805	17,434	22,538	11,719	3,325	3,756
Mean	21.7	17.4	17.1	17.7	19.0	23.5	194	562	751	378	107	125
Ac-ft	1,340	1,030	1,050	1,090	1,060	1,450	11,510	34,580	44,700	23,240	6,600	7,450

Calendar year 1964: Max 656 Min 8.5 Mean 74.7 Ac-ft 54,240  
Water year 1964-65: Max 1,080 Min 13 Mean 187 Ac-ft 135,100

Peak discharge (base, 600 cfs)

Data	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-23	2130	3.80	844	6-9	0100	3.79	874
5-2	2245	4.06	1,130	6-20	2200	4.17	1,180
5-19	1730	4.35	1,270	7-7	Unknown	3.34	694
6-1	2100	3.54	727	7-31	1600	3.41	650

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4-9, 11, 12, Nov. 14 to Mar. 11 (no gage-height record Nov. 25-27), Mar. 20-22, 26. No gage-height record July 7-20, Aug. 10 to Sept. 2.

## SAN JUAN RIVER BASIN

9-3425. San Juan River at Pagosa Springs, Colo.

Location.--Lat 37°15'50", long 107°00'40", in S½ sec.13, T.35 N., R.2 W., on right bank at former bridge site in Pagosa Springs, 0.2 mile upstream from McCabe Creek, 0.6 mile downstream from bridge on U. S. Highway 160, and 2 miles upstream from Mill Creek.

Drainage area.--298 sq mi.

Records available.--October 1910 to December 1914, May 1935 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 7,052.04 ft above mean sea level, datum of 1929. Jan. 29 to Mar. 6, 1911, staff gage at site half a mile upstream at different datum. Mar. 7 to Oct. 4, 1911, staff gage at present site at different datum. Nov. 23, 1911, to Nov. 14, 1914, staff gage at site 300 ft downstream at different datum.

Average discharge.--34 years, 375 cfs (271,500 acre-ft per year).

Extremes.--Maximum discharge during year, 3,250 cfs May 21 (gage height, 6.57 ft); minimum daily, 31 cfs Nov. 8.

1910-14, 1935-65: Maximum discharge, about 25,000 cfs Oct. 5, 1911 (gage height, 17.8 ft, from floodmarks), from velocity-area study; minimum daily, 9.7 cfs Oct. 5, 6, 1956.

Maximum stage known, that of Oct. 5, 1911. Flood of June 29, 1927, reached a stage of 13.5 ft (discharge, about 16,000 cfs), from information by local residents.

Remarks.--Records good. Diversions for irrigation of several thousand acres above station.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 30

May 1 to Sept. 30

1.6	17	3.5	600	1.8	92	4.5	1,380
2.0	61	4.0	940	2.2	176	5.5	2,160
2.4	140	5.5	2,400	2.8	385	6.5	3,170
3.0	360			3.5	720		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	130	45	64	57	55	*75	311	1,810	1,890	1,960	697	* 108
2	115	42	71	54	50	65	295	2,130	1,910	2,090	793	143
3	107	42	*69	51	50	60	232	2,190	* 1,910	2,040	682	148
4	99	* 35	64	56	54	60	224	2,020	1,780	1,920	* 605	148
5	93	34	48	55	59	64	* 170	1,640	1,620	1,820	* 547	124
6	85	36	44	* 54	64	67	170	1,510	1,720	1,760	444	184
7	83	36	44	53	65	71	210	1,420	2,010	1,720	385	154
8	79	31	47	54	61	71	197	1,320	2,160	* 1,800	341	196
9	75	40	55	56	62	75	235	1,160	2,260	1,610	305	288
10	74	41	56	56	59	74	182	1,140	1,930	1,480	291	187
11	72	45	47	53	51	71	152	1,000	1,780	1,660	263	166
12	* 65	40	57	51	51	71	152	1,040	1,680	1,650	235	166
13	64	48	45	55	46	68	150	1,340	1,980	1,430	229	150
14	62	46	39	54	51	65	197	1,320	2,420	1,230	210	134
15	61	45	54	53	56	65	235	1,220	2,700	1,200	198	120
16	60	60	51	54	57	68	405	1,250	2,660	1,060	198	112
17	61	67	49	54	51	67	600	1,600	* 2,580	1,000	201	124
18	62	67	46	55	53	67	818	1,900	2,770	1,270	246	331
19	60	59	48	57	56	61	924	* 2,220	2,740	1,090	190	835
20	59	48	51	57	62	55	1,160	2,690	2,890	908	166	704
21	56	47	53	59	69	67	1,400	2,810	2,860	* 841	152	511
22	55	51	50	56	75	69	1,730	2,860	2,480	* 720	150	* 421
23	55	55	53	46	81	71	1,990	2,550	2,370	645	141	426
24	53	54	55	50	62	69	1,960	2,160	2,630	595	132	457
25	51	57	56	53	65	69	1,540	1,780	2,420	560	122	466
26	51	62	56	47	69	62	* 1,200	1,480	2,030	511	114	448
27	51	67	55	* 45	74	72	988	1,270	1,880	475	106	444
28	51	50	51	49	85	95	832	1,110	1,880	452	101	475
29	51	59	47	53	---	125	956	1,140	1,920	385	108	466
30	48	64	46	53	---	155	1,370	1,380	1,940	610	152	390
31	46	---	54	54	---	243	---	1,550	---	660	124	---
Total	2,134	1,473	1,625	1,654	1,693	2,437	21,045	52,010	65,800	37,152	8,618	9,026
Mean	68.8	49.1	52.4	53.4	60.5	78.6	702	1,678	2,193	1,198	278	301
Ac-ft	4,230	2,920	3,220	3,280	3,360	4,830	41,740	103,200	130,500	73,690	17,090	17,900

Calendar year 1964: Max 1,770 Min 24 Mean 205 Ac-ft 148,500

Water year 1964-65: Max 2,890 Min 31 Mean 561 Ac-ft 406,000

Peak discharge (base, 1,500 cfs)

\* Discharge measurement made on this day.

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-23	2000	5.89	2,780	6-20	2400	6.56	3,240
5- 2	2200	5.89	2,550	7-12	0200	5.21	1,910
5-21	2330	6.57	3,250	7-18	0330	4.74	1,540



9-3430. Rio Blanco near Pagosa Springs, Colo.

Location.--Lat 37°12'46", long 106°47'38", in center of sec.1, T.34 N., R.1 E., on right bank 40 ft downstream from highway bridge, 0.4 mile upstream from Leche Creek, 1½ miles downstream from Fish Creek, and 12.5 miles southeast of Pagosa Springs.

Drainage area.--58.0 sq mi.

Records available.--May 1935 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 7,950 ft (from topographic map).

Average discharge.--30 years, 85.4 cfs (61,830 acre-ft per year).

Extremes.--Maximum discharge during year, about 1,000 cfs June 17; maximum gage height, 3.14 ft May 2; minimum daily discharge, 10 cfs Dec. 28.

1935-65: Maximum discharge, about 1,600 cfs July 26 or 27, 1957; maximum gage height, 4.12 ft June 18, 1949; minimum daily discharge, 3.0 cfs Oct. 10, 1956.

Maximum flood known occurred Oct. 5, 1911.

Remarks.--Records fair except those for periods of ice effect, no gage-height record, or indefinite stage-discharge relation, which are poor. Diversions for irrigation of about 350 acres above station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	21	13	19	18	16	* 22	36	497	450	440	184	* 32
2	20	13	* 18	17	* 15	19	38	778	* 492	450	* 172	67
3	19	13	17	16	15	* 17	42	563	420	420	151	61
4	18	* 13	16	18	16	16	42	475	380	380	122	49
5	18	12	15	* 18	17	18	* 36	355	360	350	108	40
6	16	12	14	16	19	20	36	312	460	* 322	98	73
7	16	12	14	16	21	20	38	* 271	540	304	92	60
8	15	13	16	16	19	20	40	222	760	328	85	133
9	15	12	17	15	18	20	42	180	* 540	262	83	110
10	14	12	17	15	19	22	40	161	430	268	79	83
11	14	13	15	15	* 17	20	36	136	400	304	75	55
12	* 14	12	15	15	15	20	34	143	420	268	73	45
13	14	13	14	15	14	20	38	226	520	225	73	* 38
14	14	13	13	13	16	19	44	196	620	196	77	36
15	14	14	17	15	17	19	* 50	176	700	220	81	33
16	14	16	16	16	17	20	70	192	* 630	184	87	32
17	14	16	15	16	15	20	91	271	780	180	81	32
18	14	16	15	16	16	19	126	415	660	215	90	99
19	14	16	15	17	17	18	180	* 580	620	* 188	69	148
20	14	16	16	16	18	16	* 226	560	590	168	60	120
21	14	16	17	17	20	19	330	600	* 580	151	54	90
22	14	17	16	16	22	20	465	580	520	142	49	87
23	13	18	17	14	21	20	* 602	610	540	139	46	94
24	13	18	16	15	19	18	634	450	650	130	43	103
25	13	18	18	15	20	17	350	350	580	133	35	94
26	13	18	17	14	21	16	201	250	500	128	31	87
27	13	17	17	13	22	20	129	200	460	148	26	79
28	13	18	10	14	23	22	113	200	450	125	20	94
29	13	19	16	15	-	24	150	250	460	110	45	83
30	13	18	15	16	-----	26	340	350	450	205	61	75
31	13	-----	17	16	-----	32	-----	400	-----	164	36	-----
Total	457	447	490	484	505	619	4,599	10,949	15,962	7,247	2,386	2,232
Mean	14.7	14.9	15.8	15.6	18.0	20.0	153	353	532	234	77.0	74.4
Ac-ft	906	887	972	960	1,000	1,230	9,120	21,720	31,660	14,370	4,730	4,430

Calendar year 1964: Max 602 Min 7.5 Mean 60.5 Ac-ft 43,950  
 Water year 1964-65: Max 780 Min 10 Mean 127 Ac-ft 91,980

Peak discharge (base, 800 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-23	2000	3.00	925	6-8	1930	3.02	†800
5-2	2000	3.14	913	6-17	2000	3.09	†1,000

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 21-24, 28-30, Dec. 1, 5-12, 15-23, 30, 31, Jan. 1-5, 11-20, 22-26, Feb. 3-6, 8, 11, 12, 15-22, 24-27, Mar. 2-6. No gage-height record Dec. 13, 14, Jan. 27-31, Feb. 1, 2, 13, 14, Mar. 7 to Apr. 16 (stage-discharge relation affected by ice during most of periods), Sept. 11, 12. Stage-discharge relation indefinite May 20-31, June 3 to July 5.

† About.

SAN JUAN RIVER BASIN

9-3440. Navajo River at Banded Peak Ranch, near Chromo, Colo.

Location.--Lat 37°05'07", long 106°41'20", in NW¼ sec.24, T.33 N., R.2 E., on left bank at downstream side of private bridge on Banded Peak Ranch, half a mile downstream from Aspen Creek, 4 miles downstream from East Fork, and 9 miles northeast of Chromo.

Drainage area.--69.8 sq mi.

Records available.--October 1936 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 7,940.6 ft above mean sea level (river-profile survey). Prior to Oct. 1, 1949, at datum 3.00 ft higher.

Average discharge.--29 years, 104 cfs (75,290 acre-ft per year).

Extremes.--Maximum discharge during year, about 1,100 cfs June 18 (gage height, 4.03 ft); minimum daily, 19 cfs Feb. 13.  
1936-65: Maximum discharge, 1,340 cfs May 13, 1941 (gage height, 7.02 ft, present datum); minimum daily, 8.4 cfs Sept. 29, 1960, result of temporary blockage by channel alteration upstream.  
Maximum flood known occurred Oct. 5, 1911.

Remarks.--Records fair except those for periods of ice effect or indefinite stage-discharge relation, which are poor. Diversions for irrigation of about 430 acres above station.

Rating tables, except periods of ice effect or indefinite stage-discharge relation  
(gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Mar. 10-13, 16-18, Apr. 14 to May 22)

Oct. 1 to Apr. 13		Apr. 14 to Sept. 30	
1.4	19	1.1	35
1.8	51	1.6	77
		2.0	135
		2.5	264
		3.0	445
		4.0	1,080

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	25	b 24	b 26	27	30	46	368	396	480	162	* 50
2	33	25	* 28	b 22	* b 24	* 28	44	440	* 422	540	* 165	60
3	32	25	29	b 20	b 24	b 24	42	455	388	560	151	53
4	32	* 25	29	b 24	b 26	b 24	42	414	335	500	128	52
5	32	25	b 24	* 27	b 28	b 24	40	321	306	460	111	50
6	32	25	b 22	26	29	b 26	* 41	309	342	* 440	99	62
7	32	25	b 22	28	29	b 28	42	* 309	440	432	92	58
8	31	25	b 22	26	29	b 28	42	288	537	440	87	76
9	31	25	b 24	25	28	b 28	43	231	* 501	349	83	69
10	31	25	24	25	* 28	32	41	220	400	328	79	56
11	31	24	b 22	b 24	b 26	32	40	188	346	360	75	55
12	* 31	22	24	25	b 24	33	40	199	342	338	72	56
13	30	23	b 22	b 26	b 19	32	41	267	465	294	70	52
14	30	24	b 20	b 24	22	b 30	41	255	639	255	72	48
15	29	23	24	b 24	24	b 30	45	240	687	237	71	48
16	29	27	24	b 26	24	32	56	231	* 687	220	78	47
17	29	28	24	b 26	22	32	76	279	730	215	82	48
18	29	28	22	b 28	24	32	90	388	800	220	87	133
19	28	25	22	28	26	b 28	117	531	840	* 220	74	160
20	28	23	24	28	28	b 24	199	591	820	202	67	158
21	28	b 22	24	27	28	b 26	285	651	810	178	63	106
22	28	b 22	b 24	27	28	b 28	356	639	730	168	61	106
23	28	b 22	25	b 22	28	31	* 396	543	680	153	58	119
24	27	b 22	28	b 24	26	28	356	440	760	141	57	119
25	26	23	28	25	26	28	288	338	660	160	55	116
26	25	24	27	b 22	28	b 26	202	264	490	147	54	108
27	26	b 26	27	b 20	30	32	158	215	460	162	52	106
28	26	b 28	b 22	b 22	32	32	145	196	460	131	52	128
29	26	b 26	b 24	b 24	-	32	172	220	510	121	53	122
30	26	b 24	b 22	b 26	-----	34	261	276	480	203	58	105
31	25	-----	b 24	28	-----	42	-----	318	-----	170	52	-----
Total	905	736	751	775	737	916	3,787	10,624	16,463	8,824	2,520	2,526
Mean	29.2	24.5	24.2	25.0	26.3	29.5	126	343	549	285	81.3	84.2
Ac-ft	1,800	1,460	1,490	1,540	1,460	1,820	7,510	21,070	32,650	17,500	5,000	5,010

Calendar year 1964: Max 540 Min 15 Mean 70.2 Ac-ft 50,930  
Water year 1964-65: Max 840 Min 19 Mean 136 Ac-ft 98,310

Peak discharge (base, 500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-23	1745	3.61	585	6-18	2200	4.03	†1,100
5- 2	1900	3.52	591	7- 2	2100	3.34	† 700
5-21	1945	3.87	842	7- 7	2400	3.30	609
6- 8	2000	3.33	621	7-11	2230	3.16	531

\* Discharge measurement made on this day.  
b Stage-discharge relation affected by ice.  
Note.--No gage-height record Dec. 15-21, Feb. 14 to Mar. 2 (stage-discharge relation affected by ice during all of periods). Stage-discharge relation indefinite June 17 to July 5.

† About.

9-3443. Navajo River above Chromo, Colo.

Location.--Lat 37°01'55", long 106°43'56", in NW¼ sec.9, T.32 N., R.2 E., on right bank 5 ft downstream from private road bridge, 6 miles east of Chromo, and 7 miles upstream from Little Navajo River.

Drainage area.--96.4 sq mi.

Records available.--October 1956 to September 1965. Published as "near Chromo" 1956-58.

Gage.--Water-stage recorder. Altitude of gage is 7,700 ft (from topographic map).

Average discharge.--9 years, 117 cfs (84,700 acre-ft per year).

Extremes.--Maximum discharge during year, about 1,000 cfs June 18 (gage height, 5.42 ft); maximum gage height, 5.52 Dec. 19 (backwater from ice); minimum daily discharge, 22 cfs Dec. 14, Jan. 3, 27, Feb. 13.

1956-65: Maximum discharge, 1,340 cfs June 7, 1957 (gage height, 5.95 ft); maximum gage height, 6.13 ft during period Feb. 1-8, 1957 (ice jam); minimum daily discharge, 6.4 cfs Sept. 2, 1962.  
Maximum flood known occurred Oct. 5, 1911.

Remarks.--Records good except those for periods of ice effect, no gage-height record, or indefinite stage-discharge relation, which are poor. Diversions above station for irrigation of about 750 acres above station and about 250 acres below.

Rating table, except periods of ice effect or indefinite stage-discharge relation  
(gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used June 28 to July 21)

3.3	15	4.3	220
3.5	34	5.0	630
3.8	68	5.5	1,000
4.0	110		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	34	28	28	28	28	32	73	434	510	500	200	* 55
2	33	28	* 31	24	* 26	* 30	75	494	* 500	554	* 192	64
3	32	29	32	22	26	26	67	518	460	560	194	56
4	32	* 26	31	26	28	26	68	458	420	512	152	55
5	32	26	28	* 28	30	26	60	392	400	482	125	53
6	32	26	26	28	30	28	* 59	386	440	* 488	108	65
7	32	25	24	30	30	30	63	* 386	520	452	100	63
8	32	26	24	28	30	30	65	310	610	440	92	78
9	32	27	26	28	30	30	70	245	690	368	88	76
10	32	29	26	28	* 30	33	62	235	460	338	80	59
11	32	27	24	28	28	33	50	208	420	362	75	55
12	* 32	24	26	26	26	34	50	204	420	362	73	56
13	32	26	24	28	22	33	68	275	500	326	71	54
14	31	28	22	26	24	31	71	290	640	285	75	52
15	30	27	26	26	26	31	80	290	730	270	75	51
16	31	30	26	28	26	34	130	270	* 700	235	78	48
17	30	32	26	30	24	32	208	310	740	230	88	47
18	30	33	24	30	26	32	255	410	820	260	100	144
19	30	31	24	30	28	30	315	540	870	* 260	76	200
20	30	26	26	30	30	26	398	620	870	216	68	196
21	30	24	26	30	30	28	452	670	840	192	68	128
22	30	26	26	28	31	30	542	700	750	172	65	122
23	30	26	28	24	31	31	* 595	630	740	152	63	134
24	29	26	30	26	27	28	494	550	780	144	60	140
25	29	26	30	28	27	28	416	460	670	168	56	137
26	28	26	30	24	30	26	310	370	550	164	55	125
27	28	28	30	22	33	33	260	330	500	184	54	116
28	28	30	24	24	34	37	235	300	482	148	54	134
29	28	32	26	26	-	39	250	330	518	131	56	148
30	28	28	24	28	-----	42	338	390	482	235	67	119
31	28	-----	26	30	-----	58	-----	440	-----	196	56	-----
Total	947	826	824	842	791	987	6,179	12,445	18,032	9,386	2,754	2,830
Mean	30.5	27.5	26.6	27.2	28.2	31.8	206	401	601	303	88.8	94.3
Ac-ft	1,880	1,640	1,630	1,670	1,570	1,960	12,260	24,680	35,770	18,620	5,460	5,610

Calendar year 1964: Max 574 Min 17 Mean 76.2 Ac-ft 55,320

Water year 1964-65: Max 870 Min 22 Mean 156 Ac-ft 112,800

Peak discharge (base, 550 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-23	1900	5.03	714	6- 8	2100	4.94	†630
5- 2	1900	4.85	560	6-18	2330	5.42	†1,000
5-21	1900	5.07	†800	7- 2	2230	5.18	672

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 20-26, 28-30, Dec. 1, Dec. 6 to Feb. 20 (no gage-height record Dec. 13-16, Dec. 26 to Feb. 11), Mar. 3-9, 19-22, 26, Apr. 11, 12, 15, 16. No gage-height record June 26, 27. Stage-discharge relation indefinite May 17 to June 25.

† About.

## SAN JUAN RIVER BASIN

9-3460. Navajo River at Edith, Colo.

Location.--Lat 37°00'10", long 106°54'25", in NW¼ sec.24, T.32 N., R.1 W., on right bank 290 ft downstream from highway bridge, 0.15 mile southeast of Edith, 0.5 mile upstream from Colorado-New Mexico State line, and 1.3 miles upstream from Coyote Creek.

Drainage area.--172 sq mi.

Records available.--September 1912 to September 1965. Monthly or yearly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 7,033.00 ft above mean sea level (Bureau of Reclamation bench mark). Prior to Jan. 1, 1929, staff gage at site 240 ft upstream at different datum. June 2, 1935, to June 27, 1941, water-stage recorder at sites 210 and 240 ft upstream at datum 2.0 ft higher. June 28, 1941, to June 20, 1961, at site 50 ft downstream at same datum.

Average discharge.--53 years, 158 cfs (114,400 acre-ft per year).

Extremes.--Maximum discharge during year, 1,010 cfs Apr. 21; maximum gage height, 5.28 ft June 19; minimum daily discharge, 26 cfs Dec. 14, Jan. 3, 27, Feb. 13.

1935-65: Maximum discharge, 2,840 cfs Apr. 23, 1942 (gage height, 6.55 ft), from rating curve extended above 1,100 cfs; minimum daily, 8 cfs Sept. 25, 1953.

Maximum flood known occurred Oct. 5, 1911.

Remarks.--Records good except those for period of ice effect, which are poor. Diversions for irrigation of about 1,700 acres above station.

Rating table, except period of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 15-22)

2.9	26	4.3	370
3.0	36	4.8	670
3.4	90	5.2	1,030
3.7	155		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	36	33	34	32	32	36	254	551	530	500	203	* 57
2	34	33	* 36	28	* 30	* 34	250	649	* 565	558	* 209	67
3	31	34	36	26	32	32	200	670	565	558	188	61
4	34	* 32	34	30	34	30	200	628	476	524	167	60
5	34	33	32	* 34	34	32	132	518	430	482	138	57
6	29	33	30	32	34	34	* 128	488	445	* 465	123	68
7	35	31	28	34	34	36	152	* 482	579	455	112	71
8	35	30	28	32	34	36	170	465	635	500	101	80
9	35	33	30	32	34	36	179	366	656	415	95	92
10	34	34	30	32	* 36	38	132	346	518	385	90	67
11	34	34	28	30	32	38	101	318	465	395	87	61
12	* 34	32	32	30	28	40	106	306	450	425	82	60
13	34	32	28	32	26	40	185	400	579	380	79	52
14	34	34	26	30	28	38	179	430	759	326	84	51
15	32	36	30	30	30	40	212	435	813	310	79	51
16	32	38	30	32	30	44	318	380	* 804	270	84	47
17	34	42	30	32	28	42	400	410	759	243	103	42
18	34	44	28	34	30	43	455	512	885	278	123	116
19	34	38	28	34	32	40	460	656	939	* 278	95	200
20	33	35	30	34	34	38	* 607	734	903	243	77	222
21	33	32	30	34	36	40	686	768	885	212	70	142
22	32	33	30	34	38	42	750	777	786	197	70	123
23	32	33	32	28	38	42	795	726	734	176	63	138
24	28	33	34	30	30	43	786	670	831	167	61	148
25	27	35	34	32	32	38	649	579	742	179	59	140
26	28	33	34	28	34	40	476	506	565	179	57	132
27	29	35	34	26	38	46	400	435	518	203	54	126
28	33	34	28	28	38	61	354	395	500	167	50	140
29	33	38	30	30	-	76	358	400	518	145	51	155
30	34	34	28	32	-----	103	435	450	500	232	61	130
31	33	-----	30	34	-----	173	-----	465	-----	209	60	-----
Total	1,014	1,031	952	966	916	1,451	10,509	15,915	19,334	10,056	2,975	2,956
Mean	32.7	34.4	30.7	31.2	32.7	46.8	350	513	644	324	96.0	98.5
Ac-ft	2,010	2,040	1,890	1,920	1,820	2,880	20,840	31,570	38,350	19,950	5,900	5,860

Calendar year 1964: Max 607 Min 19 Mean 85.7 Ac-ft 62,220  
Water year 1964-65: Max 939 Min 26 Mean 187 Ac-ft 135,000

Peak discharge (base, 600 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-21	2100	5.23	1,010	6-9	0030	4.90	710
5-3	0100	4.94	742	6-19	0245	5.28	1,000
5-20	0015	5.09	894	7-3	0100	4.88	686
6-2	2200	4.76	642	7-8	0315	4.77	621

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 28 to Mar. 17.

9-3464. San Juan River near Carracas, Colo.

Location.--Lat 37°00'47", long 107°18'39", in SE¼SW¼ sec.17, T.32 N., R.4 W., on right bank at river mile 178.8 just above flow line of Navajo Reservoir and 3 miles northwest of Carracas, 7.2 miles upstream from Piedra River.

Drainage area.--1,230 sq mi, approximately.

Records available.--October 1961 to September 1965.

Gage.--Water-stage recorder (digital). Altitude of gage is 6,090 ft (from river-profile map).

Extremes.--Maximum discharge during year, 6,120 cfs May 22 (gage height, 6.85 ft); minimum, 40 cfs Dec. 15.  
1961-65: Maximum discharge, that of May 22, 1965; minimum discharge, about 5 cfs Dec. 10, 1961, result of freezeup.  
Maximum flood known occurred Oct. 5, 1911. Major floods occurred Sept. 5 or 6, 1909, and June 29, 1927.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Discharge measurements generally made twice a month. Diversions for irrigation of about 11,000 acres above station.

Cooperation.--Records furnished by New Mexico district.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 26-30)

Oct. 1 to Apr. 16

Apr. 17 to Sept. 30

1.3	45	2.5	360	1.9	170	5.0	2,920
1.6	94	3.0	670	2.5	390	6.0	4,540
1.9	156	4.0	1,560	3.0	670	6.5	5,440
2.2	235	4.4	2,050	4.0	1,560		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	226	101	140	130	140	257	1,710	3,220	3,150	2,980	1,350	211
2	205	98	160	120	150	205	1,970	3,890	3,240	3,280	1,560	221
3	186	97	180	130	130	179	1,340	4,020	3,270	3,370	1,270	294
4	174	95	155	120	120	148	1,300	3,830	2,920	3,130	1,100	294
5	170	86	128	130	140	150	928	2,950	2,610	2,940	972	242
6	163	87	95	140	160	168	695	2,640	2,670	2,860	812	253
7	154	89	91	490	190	192	1,130	2,380	3,180	2,710	705	354
8	154	87	80	880	180	220	971	2,580	3,490	2,860	621	358
9	152	86	111	320	160	246	1,250	1,970	3,860	2,650	558	635
10	146	93	145	240	150	265	952	1,950	3,380	2,340	530	405
11	143	97	131	210	130	252	652	1,660	2,800	2,590	500	330
12	141	95	129	200	120	254	543	1,590	2,620	2,700	440	310
13	136	75	80	180	90	225	988	2,020	2,980	2,250	425	294
14	135	90	75	180	80	194	1,060	2,220	3,950	2,020	425	253
15	133	120	50	170	110	226	931	2,090	4,590	1,840	405	225
16	130	120	65	160	120	257	1,410	2,000	4,770	1,750	395	211
17	126	155	120	160	120	238	1,870	2,500	4,520	1,660	435	191
18	127	170	140	170	110	248	2,340	3,180	4,720	1,890	520	314
19	127	150	140	170	130	215	2,470	3,760	4,770	1,690	510	1,500
20	120	130	130	160	150	172	2,950	4,610	4,760	1,500	378	1,200
21	120	100	140	160	170	182	3,190	4,680	4,770	1,390	330	900
22	121	90	160	160	200	240	3,860	5,370	4,140	1,230	314	800
23	115	110	150	150	230	274	4,020	4,760	3,730	1,090	290	800
24	112	120	160	130	200	393	4,310	4,160	4,140	1,040	270	850
25	106	110	170	140	160	313	3,730	3,280	3,980	972	249	850
26	100	125	170	140	160	236	2,910	2,470	3,340	1,030	228	850
27	99	140	170	120	190	383	2,260	2,050	2,940	932	207	850
28	101	110	420	120	276	618	1,990	1,870	2,860	948	188	900
29	104	100	240	130	-	769	1,690	1,780	2,980	780	176	908
30	106	125	100	130	-----	903	2,320	2,180	3,100	1,050	256	740
31	105	-----	110	150	-----	1,310	-----	2,290	-----	1,240	267	-----
Total	4,237	3,251	4,335	5,990	4,266	9,932	57,740	89,950	108,230	60,712	16,686	16,543
Mean	137	108	140	193	152	320	1,925	2,902	3,608	1,958	538	551
Ac-ft	8,400	6,450	8,600	11,880	8,460	19,700	14,500	78,400	214,700	120,400	33,100	32,810

Calendar year 1964: Max 2,970 Min 50 Mean 405 Ac-ft 294,100

Water year 1964-65: Max 5,370 Min 50 Mean 1,046 Ac-ft 757,400

Peak discharge (base, 2,500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-24	0330	6.88	6,070	6-16	0730	6.49	5,390
5-3	0230	6.17	4,920	7-17	2330	5.07	3,070
5-22	0800	6.85	6,120				

Note.--No gage-height record Nov. 13 to Dec. 3, Sept. 20-28.  
Stage-discharge relation affected by ice Dec. 13 to Feb. 27.

9-3495. Piedra River near Piedra, Colo.

Location.--Lat 37°13'20", long 107°20'30", in NW¼ sec.17, T.34 N., R.4 W., on right bank 0.1 mile downstream from bridge on U. S. Highway 160, 0.4 mile upstream from Yellow Jacket Creek, and 1½ miles northwest of Piedra.

Drainage area.--371 sq mi.

Records available.--October 1911 to September 1912, October 1938 to September 1965. Monthly discharge only for some periods, published in WSP 1313. Published as "at Piedra" 1912.

Gage.--Water-stage recorder. Altitude of gage is 6,510 ft (from topographic map). Nov. 26, 1911, to July 22, 1912, staff gages near present site at different datums. Jan. 11, 1939, to Mar. 19, 1940, chain gage 0.3 mile upstream at different datum. Mar. 20, 1940, to May 9, 1941, water-stage recorder at site 2 miles upstream at different datum. May 10 to Sept. 27, 1941, chain gage and Sept. 28, 1941, to Sept. 18, 1962, water-stage recorder, 0.3 mile upstream at different datum.

Average discharge.--28 years, 317 cfs (229,500 acre-ft per year).

Extremes.--Maximum discharge during year, 2,710 cfs May 22 (gage height, 5.42 ft); minimum daily, 38 cfs Nov. 12.

1911-12, 1938-65: Maximum discharge not determined, occurred Oct. 5, 1911. Maximum discharge determined, 6,870 cfs July 26, 1957 (gage height, 8.60 ft, site and datum then in use), from rating curve extended above 2,800 cfs; minimum daily, 17 cfs Nov. 11, 1950.

Maximum flood known, that of Oct. 5, 1911. Another major flood occurred June 29, 1927.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Diversions for irrigation of about 2,220 acres above station. Also two small ditches divert water above station for irrigation below. Piedra Pass and Squaw Pass ditches (see elsewhere in this report) export small amount of water above station to Rio Grande basin.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to May 17

May 18 to Sept. 30

1.1	36	2.3	290	1.4	85	3.0	670
1.3	56	2.8	560	2.0	230	4.0	1,450
1.7	125	3.8	1,490	2.5	405	5.5	2,750

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	128	47	55	65	* 55	* 69	155	1,550	1,350	1,410	437	117
2	113	48	57	60	55	65	170	1,800	1,350	1,550	495	145
3	103	48	* 60	60	50	55	162	1,900	* 1,420	1,500	458	* 165
4	97	43	57	65	50	55	170	1,800	1,340	1,370	* 381	160
5	85	* 43	46	65	55	60	* 150	1,500	1,120	1,270	* 369	132
6	77	44	45	64	60	60	138	1,350	1,320	1,210	323	175
7	71	45	42	* 65	62	60	152	1,250	1,630	1,150	295	192
8	68	43	46	66	61	61	* 145	1,150	1,820	* 1,230	267	170
9	65	45	50	66	64	64	170	1,000	1,890	1,110	248	245
10	62	47	55	64	64	62	150	950	1,480	978	233	200
11	65	53	48	55	55	62	125	900	1,180	1,060	224	175
12	61	38	55	50	50	62	121	950	1,040	1,180	198	168
13	* 57	52	46	55	44	62	132	1,200	1,350	986	190	168
14	57	49	40	59	48	59	155	1,150	1,740	818	192	148
15	55	42	46	50	55	59	158	1,100	* 2,210	782	175	132
16	55	49	50	55	55	65	284	1,100	2,140	705	178	125
17	54	72	50	55	48	62	497	1,400	1,900	649	168	119
18	56	68	46	55	50	64	720	* 1,580	1,940	691	175	164
19	55	57	46	60	55	61	864	* 1,870	1,850	588	180	358
20	53	47	50	61	60	53	* 1,350	2,190	2,180	546	150	320
21	50	41	55	62	60	60	1,500	2,380	2,170	* 628	138	284
22	48	46	50	60	60	68	1,700	2,460	1,840	505	135	254
23	47	50	55	55	68	68	1,800	2,080	1,680	445	125	254
24	45	50	57	50	60	71	1,700	1,790	2,020	397	119	270
25	44	54	60	55	55	69	1,300	1,460	1,980	393	111	292
26	44	57	60	50	60	66	1,100	1,150	1,570	365	103	292
27	44	61	62	46	66	71	880	* 986	1,390	369	95	298
28	45	49	60	50	72	77	750	858	1,380	348	87	316
29	45	45	61	55	-	83	920	834	1,430	369	89	320
30	44	55	55	55	-	89	1,200	962	1,450	450	172	278
31	46	-	60	55	-	111	-	1,060	-	495	142	-
Total	1,939	1,488	1,625	1,788	1,597	2,053	18,818	43,710	49,160	25,547	6,642	6,426
Mean	62.5	49.6	52.4	57.7	57.0	66.2	627	1,410	1,639	824	214	214
Ac-ft	3,850	2,950	3,220	3,550	3,170	4,070	37,320	86,700	97,510	50,670	13,170	12,750

Calendar year 1964: Max 1,420 Min 28 Mean 172 Ac-ft 124,700  
 Water year 1964-65: Max 2,460 Min 38 Mean 441 Ac-ft 318,900

Peak discharge (base, 1,300 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-23	Unknown	Unknown	†2,300	6- 9	0530	4.68	2,020
5- 2	Unknown	Unknown	†2,100	6-21	0200	5.17	2,450
5-22	0245	5.42	2,710	7-12	0330	3.98	1,430
6- 3	0530	4.00	1,470				

† About.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 7-23, 26, 28, 30, 31, Jan. 1-5, 11-13, 15-19, 23-31, Feb. 2-5, 11-22, 24-26, Mar. 3-7. No gage-height record Apr. 21 to May 17.

9-3498. Piedra River near Arboles, Colo.

Location.--Lat 37°05'17", long 107°23'52", in NE¼SW¼ sec.21, T.33 N., R.5 W., on left bank 3 miles downstream from Ignacio Creek, 5.2 miles northeast of Arboles Post Office, 8 miles upstream from mouth.

Drainage area.--629 sq mi.

Records available.--August 1962 to September 1965. Gage operated 1895-1899, 1910-1927 at a site 7½ miles downstream at altitude 6,000 ft. Low flow records probably not equivalent.

Gage.--Water-stage recorder (digital). Datum of gage is 6,147.52 ft above mean sea level (from Colorado State Highway Department bench mark).

Extremes.--Maximum discharge during year, 4,000 cfs Apr. 23 (gage height, 5.20 ft); minimum, 24 cfs Dec. 8.

1962-65: Maximum discharge, that of Apr. 23, 1965; minimum, 11 cfs Dec. 9, 1963.

Maximum flood known occurred Oct. 5, 1911. A major flood occurred Sept. 5 or 6, 1909.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements generally made twice a month. Diversions for irrigation of about 2,800 acres above station.

Cooperation.--Records furnished by New Mexico district.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 21-27)

Oct. 1 to Mar. 31		Apr. 1-23		Apr. 24 to Sept. 30	
1.5	32	2.4	305	1.2	90
1.7	69	2.9	610	1.6	188
2.0	150	3.4	1,010	2.0	350
2.3	260	4.0	1,680	2.5	660
2.7	470	5.0	3,200	4.5	2,980

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	135	51	57	70	65	100	652	2,220	1,550	1,500	524	126
2	123	51	62	65	68	85	771	2,630	1,540	1,630	619	135
3	112	53	63	60	64	75	636	2,660	1,600	1,630	565	159
4	108	51	60	65	63	75	610	2,480	1,570	1,500	452	160
5	101	48	45	65	64	80	463	2,030	1,380	1,470	417	136
6	89	48	40	65	68	85	401	1,760	1,490	1,410	358	155
7	79	48	40	65	74	89	541	1,500	1,750	1,320	316	182
8	71	47	45	70	72	94	486	1,370	1,870	1,360	283	165
9	70	49	50	70	70	98	591	1,170	2,030	1,250	257	226
10	68	50	55	65	70	104	506	1,140	1,710	1,040	238	199
11	69	57	60	60	60	101	368	1,020	1,490	1,120	234	171
12	68	51	55	55	55	103	330	1,050	1,370	1,240	209	162
13	61	49	50	60	50	103	404	1,380	1,550	1,050	196	163
14	62	56	45	59	55	95	500	1,470	1,880	902	186	149
15	60	53	50	60	60	101	550	1,350	2,230	843	182	135
16	59	49	55	60	70	116	800	1,320	2,190	774	180	127
17	59	75	55	60	65	114	1,320	1,550	1,940	721	178	122
18	62	78	50	61	65	114	1,840	1,860	1,980	747	184	148
19	64	66	50	61	70	106	2,200	2,080	1,910	673	193	419
20	59	58	55	65	78	91	2,450	2,480	2,180	608	167	363
21	55	51	60	65	70	99	2,740	2,600	2,200	689	153	315
22	57	51	55	65	80	112	3,030	2,680	1,950	553	150	272
23	55	53	60	60	86	115	3,090	2,300	1,760	477	142	263
24	53	55	65	55	78	151	2,820	2,070	2,010	419	134	278
25	54	51	65	60	75	145	2,360	1,710	2,050	403	123	296
26	53	57	65	55	81	134	1,950	1,400	1,710	373	112	301
27	52	61	65	50	90	161	1,760	1,200	1,520	370	106	298
28	54	57	70	52	102	211	1,520	1,050	1,500	370	99	318
29	48	48	65	60	-	274	1,470	998	1,530	385	97	330
30	47	57	60	70	-----	321	1,700	1,120	1,590	460	146	294
31	50	-----	65	70	-----	451	-----	1,230	-----	556	153	-----
Total	2,157	1,629	1,737	1,923	1,968	4,103	38,859	52,878	53,030	27,843	7,353	6,567
Mean	69.6	54.3	56.0	62.0	70.3	132	1,295	1,706	1,768	898	237	219
Ac-ft	4,280	3,230	3,450	3,810	3,900	8,140	77,080	104,900	105,200	55,230	14,580	13,030

Calendar year 1964: Max 1,420 Min 24 Mean 183 Ac-ft 133,000  
Water year 1964-65: Max 3,090 Min 40 Mean 548 Ac-ft 396,800

Peak discharge (base, 1,500 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-23	2330	5.20	4,000	5-22	0600	4.46	2,930
5-3	0200	4.57	3,030	6-21	0430	4.12	2,390

Note.--Stage-discharge relation affected by ice Dec. 5 to Jan. 17, Jan. 23-31, Feb. 10-18.

## SAN JUAN RIVER BASIN

9-3505. San Juan River at Rosa, N. Mex.

Location.--Lat 37°00'20", long 107°24'10", in SW¼ sec.21, T.32 N., R.5 W., on right bank a quarter of a mile downstream from Piedra River and 0.9 mile upstream from Colorado-New Mexico State line.

Drainage area.--1,990 sq mi, approximately.

Records available.--July to November 1895, May 1896 to December 1897, April to December 1898, May to September 1899, September 1910 to May 1965 (discontinued). Monthly discharge only for some periods, published in WSP 1313. Prior to October 1920, published as two stations, Piedra and San Juan Rivers at Arboles, Colo., sum of which is equivalent.

Gage.--Water-stage recorder. Datum of gage is 5,972 ft above mean sea level (National Park Service bench mark). Prior to Oct. 1, 1920, at sites on Piedra and San Juan Rivers at Arboles (see WSP 1313 for descriptions). Oct. 1, 1920, to Apr. 12, 1922, chain gage at site 75 ft downstream at different datum. Apr. 13, 1922, to Sept. 18, 1930, water-stage recorder at site 550 ft upstream at datum 0.7 ft higher. Sept. 19, 1930, to Aug. 31, 1938, water-stage recorder at sites 330 and 430 ft upstream at datum 1.0 ft higher. Sept. 1, 1938, to Dec. 19, 1949, water-stage recorder at present site at datum 1.0 ft higher.

Average discharge.--55 years (1896-97, 1910-64), 1,193 cfs (863,700 acre-ft per year).

Extremes.--Maximum discharge during period, 9,880 cfs Apr. 24 (gage height, 7.70 ft); minimum, 69 cfs Dec. 15.

1920-65: Maximum discharge, about 25,000 cfs June 29, 1927 (gage height, 13.5 ft, from estimated graph, site and datum then in use), from rating curve extended above 8,000 cfs by logarithmic plotting; minimum, about 12 cfs Dec. 9, 1963, result of freezeup. Maximum flood known occurred Oct. 5, 1911. A major flood occurred Sept. 5 or 6, 1909.

Remarks.--Records good except those for periods of indefinite stage-discharge relation or doubtful gage-height record, which are fair. Diversions for irrigation of about 14,000 acres above station.

Cooperation.--Records furnished by New Mexico district.

Discharge, in cubic feet per second, October 1964 to May 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	371	146	194	203	d 210	354	2,370	5,350				
2	326	146	216	190	d 220	284	2,820	6,580				
3	296	146	230	189	d 190	d 250	2,000	6,960				
4	273	144	216	188	d 190	d 220	1,920	6,620				
5	265	133	172	199	* 201	d 230	1,400	5,000				
6	* 245	132	127	203	232	d 250	1,110	4,360				
7	228	133	123	546	270	d 280	1,640	3,780				
8	221	130	* 111	955	252	* d 300	1,470	3,600				
9	216	127	136	397	237	335	1,850	3,020				
10	207	133	188	314	219	364	1,480	* 2,880				
11	207	146	190	276	192	350	1,100	2,590				
12	205	* 146	180	252	176	357	908	2,530				
13	194	133	133	* 237	143	326	1,560	e 3,400				
14	194	150	121	237	136	282	1,580	e 3,600				
15	190	174	97	228	172	314	1,440	e 3,400				
16	194	170	122	221	192	389	2,240	e 3,300				
17	192	228	176	226	190	350	3,080	e 4,200				
18	190	242	196	226	180	374	4,080	e 5,300				
19	190	219	188	230	* 200	326	4,670	e 6,000				
20	184	188	190	230	235	265	* 5,460	* 6,960				
21	180	157	203	232	242	265	6,080	7,380				
22	180	148	212	226	276	354	7,120	8,100				
23	168	163	212	207	314	389	7,260	7,140				
24	166	174	226	188	282	555	7,490	6,280				
25	163	170	242	203	232	478	6,150	5,020				
26	148	182	237	194	244	368	4,650	3,920				
27	144	212	235	172	291	546	3,840	3,360				
28	* 145	176	493	168	364	836	3,260	2,960				
29	145	157	311	192	-	1,080	3,100	2,850				
30	145	182	164	203	-----	1,230	3,780	3,300				
31	148	-----	176	220	-----	* 1,750	-----	3,500	-----			-----
Total	6,320	4,887	6,017	7,952	6,282	14,051	96,708	143,240				
Mean	204	163	194	257	224	453	3,224	4,621				
Ac-ft	12,540	9,690	11,930	15,770	12,460	27,870	191,800	284,100				

Calendar year 1964: Max 4,460 Min 85 Mean 592 Ac-ft 429,600  
 Water year 1964-65: Max - Min - Mean - Ac-ft -

Peak discharge (base, 4,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-24	0330	7.70	9,880	5-22	0730	7.29	8,960
5-3	0530	7.05	7,950				

\* Discharge measurement made on this day.  
 d Doubtful gage-height record.  
 e Stage-discharge relation indefinite.



9-3529. Vallecito Creek near Bayfield, Colo.

Location.--Lat 37°28'45", long 107°32'35", in NW¼ sec.16, T.37 N., R.6 W. (projected), on right bank 60 ft upstream from Fall Creek, 0.7 mile downstream from Bear Creek, 7 miles north of Vallecito Dam, and 18 miles north of Bayfield.

Drainage area.--72.1 sq mi.

Records available.--October 1962 to September 1965.

Gage.--Water-stage recorder and concrete control. Datum of gage is 7,906.08 ft above mean sea level, datum of 1929.

Extremes.--Maximum discharge during year, 1,530 cfs June 19 (gage height, 3.43 ft); minimum daily, 15 cfs Dec. 28.

1962-65: Maximum discharge, that of June 19, 1965; minimum daily, 11 cfs for several days in January, February, March, 1964. Major floods occurred in October 1911 and June 1927.

Remarks.--Records good except those for periods of ice effect, which are fair. No diversion above station. Records of chemical analyses, water temperatures, and suspended sediment loads for the water year 1965 are published in Part 2 of this report.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 28 to July 6)

0.5	12	1.6	145
.8	26	2.0	310
1.1	50	2.5	620
1.4	95	3.1	1,150

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	90	23	24	24	19	22	*32	370	526	746	460	134
2	* 81	22	24	22	19	20	31	514	532	859	460	152
3	74	22	23	23	19	b 20	29	* 538	599	810	382	137
4	66	19	* 19	24	19	b 20	29	478	599	746	316	125
5	62	20	17	b 22	20	*b 20	29	364	544	730	270	120
6	57	* 20	20	b 20	22	b 20	29	285	690	714	232	224
7	55	20	20	b 20	20	20	30	232	842	706	200	188
8	50	20	22	* 22	20	20	31	196	895	730	184	176
9	47	20	24	22	* 21	20	31	166	778	641	170	228
10	46	20	21	22	20	20	22	159	526	571	166	188
11	43	19	21	22	20	20	19	142	436	641	162	159
12	40	19	22	21	b 18	20	32	152	460	778	156	142
13	38	20	18	19	b 17	20	36	192	714	578	156	128
14	37	19	21	20	b 18	19	34	192	* 950	514	152	113
15	36	19	22	20	b 18	19	35	204	1,020	* 520	139	* 102
16	34	22	20	20	19	20	51	248	834	484	* 134	91
17	34	23	19	20	18	20	84	352	683	454	152	108
18	33	28	19	20	19	20	117	478	794	514	248	192
19	31	27	19	22	19	19	145	620	970	478	204	236
20	30	27	19	22	20	18	248	770	1,110	448	159	212
21	29	27	18	22	22	b 20	382	* 877	1,020	448	139	192
22	28	27	18	20	22	20	484	886	826	394	139	184
23	28	27	17	b 20	22	20	532	655	810	358	125	200
24	25	24	18	21	20	19	538	478	1,020	376	115	228
25	23	27	b 17	20	22	19	502	358	754	424	106	248
26	24	24	20	19	22	20	370	275	564	364	99	248
27	25	25	20	18	22	20	270	232	550	* 322	93	248
28	24	24	15	20	23	21	212	200	* 676	300	88	240
29	24	24	19	20	-	21	192	220	794	424	126	216
30	23	22	21	19	-----	22	232	300	754	454	228	180
31	23	-----	24	19	-----	26	-----	412	-----	460	173	-----
Total	1,260	680	621	645	560	625	4,808	11,545	22,270	16,986	5,933	5,339
Mean	40.6	22.7	20.0	20.8	20.0	20.2	160	372	742	548	191	178
Ac-ft	2,500	1,350	1,230	1,280	1,110	1,240	9,540	22,900	44,170	33,690	11,770	10,590

Calendar year 1964: Max 810 Min 11 Mean 95.9 Ac-ft 69,610

Water year 1964-65: Max 1,110 Min 15 Mean 195 Ac-ft 141,400

Peak discharge (base, 1,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-21	2200	3.27	1,310	6-19	2100	3.43	1,530
6- 7	2200	3.10	1,110	7- 2	2130	3.08	1,250
6-14	2015	3.39	1,440	7-11	2345	3.00	1,140

\* Discharge measurement made on this day.  
b Stage-discharge relation affected by ice.

## SAN JUAN RIVER BASIN

9-3530. Vallecito Reservoir near Bayfield, Colo.

Location.--Lat 37°23'00", long 107°34'30", in SW¼SW¼ sec.18, T.36 N., R.6 W., in gatehouse above outlet gates at Vallecito Dam on Los Pinos (Pine) River, 300 ft left of spillway, a quarter of a mile upstream from Little Red Creek, and 11 miles northeast of Bayfield.

Records available.--April 1941 to September 1965.

Gage.--Float gage read once a day. Datum of gage is 7,580 ft above mean sea level (Bureau of Reclamation bench mark); gage readings have been reduced to elevations above mean sea level.

Extremes.--Maximum contents observed during year, 118,000 acre-ft July 12 (elevation, 7,661.93 ft); minimum observed, 27,300 acre-ft Oct. 31 (elevation, 7,617.93 ft).  
1941-65: Maximum contents observed, 128,200 acre-ft July 27, 1957 (elevation, 7,665.72 ft); minimum observed, 1,520 acre-ft Oct. 24, 25, 1944 (elevation, 7,584.10 ft). No usable storage prior to April 1941.

Remarks.--Reservoir is formed by an earth- and rock-fill dam; dam completed in March 1941. Capacity of reservoir, 126,300 acre-ft between elevations 7,580 (sill of outlet gate) and 7,665 ft (top of spillway gates). Dead storage, 3,395 acre-ft. Figures given herein represent usable contents. Reservoir is used to store water for irrigation in Los Pinos (Pine) River basin.

Cooperation.--Records furnished by Bureau of Reclamation.

Month-end elevation and contents, water year October 1964 to September 1965

Date	Elevation (feet)†	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	7,622.27	33,160	-
Oct. 31.....	7,617.93	27,300	-5,860
Nov. 30.....	7,619.49	29,320	+2,020
Dec. 31.....	7,620.88	31,200	+1,880
Calendar year 1964.....	-	-	+180
Jan. 31.....	7,622.47	33,450	+2,250
Feb. 28.....	7,623.81	35,430	+1,980
Mar. 31.....	7,624.73	36,840	+1,410
Apr. 30.....	7,636.46	57,790	+20,950
May 31.....	7,641.12	67,490	+9,700
June 30.....	7,659.57	111,800	+44,310
July 31.....	7,661.70	117,400	+5,600
Aug. 31.....	7,654.78	99,530	-17,870
Sept. 30.....	7,648.77	84,840	-14,690
Water year 1964-65.....	-	-	+51,680

† Elevation at 0800.

9-3535. Los Pinos River near Bayfield, Colo.  
(Locally known as Pine River)

Location.--Lat 37°23'00", long 107°34'30", in SW¼ sec.18, T.36 N., R.6 W., on left side of outlet flume from Vallecito Reservoir, a quarter of a mile upstream from Little Red Creek, 2 miles upstream from Red Creek, and 11 miles north of Bayfield.

Drainage area.--270 sq mi, approximately.

Records available.--October 1927 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder and concrete weir. Datum of gage is 7,582.54 ft above mean sea level (Bureau of Reclamation bench mark). Oct. 26, 1927, to Aug. 17, 1956, at sites 2½ miles downstream with datum of gage at 7,415.58 ft above mean sea level, adjustment of 1912, prior to July 8, 1934, and at 7,415.08 ft above mean sea level July 9, 1934, to Aug. 17, 1956. Since Aug. 18, 1956, supplementary water-stage recorder at former site 2½ miles downstream for use when upper spillway at Vallecito Reservoir is operating.

Average discharge.--38 years, 348 cfs (251,900 acre-ft per year).

Extremes.--Maximum discharge during year, 2,800 cfs July 15 (gage height, 4.93 ft); minimum daily, 31 cfs Nov. 1-30. 1927-65: Maximum discharge, 13,800 cfs July 27, 1957 (gage height, 12.2 ft, from floodmarks at supplementary gage), from rating curve extended above 2,500 cfs on basis of slope-area measurement of peak flow (result of automatic spillway gates releasing from Vallecito Reservoir); minimum daily, 3.2 cfs Feb. 11, 1951 (result of storage in Vallecito Reservoir); minimum daily prior to construction of Vallecito Reservoir, 38 cfs Dec. 21, 22, 1937. Maximum flood known prior to construction of Vallecito Reservoir occurred Oct. 5, 1911.

Remarks.--Records good. Flow regulated by storage in Vallecito Reservoir (see preceding page). Transmountain diversions above station by Raber-Lohr and Fuchs ditches (see elsewhere in this report).

Rating table (gage height, in feet, and discharge,  
in cubic feet per second)

0.3	31	1.5	393
.4	49	2.0	618
.7	115	3.0	1,200
1.0	205	5.0	2,860

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	247	31	33	33	36	38	*53	317	1,200	1,090	775	613
2	247	31	33	33	36	38	53	980	1,200	1,290	932	608
3	247	31	33	33	36	38	53	859	1,210	1,580	890	608
4	247	31	33	33	36	38	53	1,430	1,370	1,670	850	608
5	247	31	33	33	36	38	53	1,550	1,450	1,670	780	608
6	247	31	33	33	36	38	53	1,540	1,450	1,480	674	608
7	247	31	33	35	36	38	53	1,530	1,610	1,350	669	604
8	247	31	33	35	36	38	55	1,520	854	1,500	669	604
9	244	31	33	35	36	38	55	1,500	1,130	1,500	669	604
10	244	31	33	35	36	53	55	1,140	1,340	1,310	669	604
11	244	31	33	35	36	53	55	1,030	1,460	1,220	628	604
12	240	31	33	35	36	53	55	758	1,270	1,410	608	604
13	240	31	33	35	36	53	55	659	1,010	1,360	536	604
14	240	31	33	35	36	53	55	659	1,320	1,100	604	604
15	273	31	33	35	36	53	55	659	1,500	1,070	599	604
16	189	31	33	35	36	53	55	659	1,670	1,220	599	604
17	161	31	33	35	36	53	55	659	1,780	1,280	599	604
18	161	31	33	35	36	53	55	664	1,790	974	599	623
19	161	31	33	35	36	53	57	669	1,800	844	594	589
20	158	31	33	35	36	53	57	705	1,810	844	594	589
21	158	31	33	35	36	53	57	1,110	1,630	926	623	589
22	158	31	33	35	36	53	499	867	1,380	932	638	589
23	158	31	33	35	38	53	335	599	987	932	633	589
24	158	31	33	35	38	53	161	599	775	832	633	589
25	158	31	33	35	38	53	164	867	920	786	628	589
26	134	31	33	35	38	53	105	1,220	980	786	628	589
27	115	31	33	35	38	53	53	1,220	987	786	623	584
28	115	31	33	35	38	53	44	1,220	920	710	618	584
29	115	31	33	36	-	53	44	1,200	950	674	618	584
30	115	31	33	36	-----	53	44	1,200	1,090	674	613	580
31	57	-----	33	36	-----	53	-----	1,200	-----	742	613	-----
Total	5,972	930	1,023	1,076	1,020	1,558	2,596	30,789	38,843	34,542	20,405	17,964
Mean	193	31.0	33.0	34.7	36.4	50.3	86.5	993	1,295	1,114	658	599
Ac-ft	11,850	1,840	2,030	2,130	2,020	3,090	5,150	61,070	77,040	68,520	40,470	35,630

Calendar year 1964: Max 659 Min. 27 Mean 219 Ac-ft 159,000  
Water year 1964-65: Max 1,810 Min 31 Mean 429 Ac-ft 310,800

\* Discharge measurement made on this day.

## SAN JUAN RIVER BASIN

9-3545. Los Pinos River at La Boca, Colo.  
(Locally known as Pine River)

Location.--Lat 37°00'40", long 107°35'55", in S½ sec.15, T.32 N., R.7 W., on downstream end of right abutment of The Denver and Rio Grande Western Railroad Co. bridge at southeast edge of La Boca, 0.1 mile upstream from Spring Creek and 13 miles upstream from mouth.

Drainage area.--510 sq mi, approximately.

Records available.--October 1950 to September 1965. Monthly discharge only for some periods, published in WSP 1733.

Gage.--Water-stage recorder. Datum of gage is 6,143.58 ft above mean sea level, datum of 1929.

Average discharge.--15 years, 192 cfs (139,000 acre-ft per year).

Extremes.--Maximum discharge during year, 1,820 cfs May 6 (gage height, 6.05 ft); minimum, 23 cfs Dec. 14.  
1950-65: Maximum discharge, 6,400 cfs July 27, 1957 (gage height, 8.95 ft); minimum, 13 cfs Apr. 23, 1951.  
Maximum flood known occurred Oct. 5, 1911.

Remarks.--Records good except those for periods of ice effect or doubtful or no gage-height record, which are poor. Discharge measurements generally made twice a month. Flow regulated by Vallecito Reservoir (capacity, 126,280 acre-ft). Diversions for irrigation of about 33,000 acres above station.

Cooperation.--Records furnished by New Mexico district.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	69	50	58	60	97	107	d290	390	919	645	358	165
2	69	41	61	50	71	80	d360	1,110	902	750	554	203
3	66	38	61	50	66	61	d330	1,010	878	1,040	596	218
4	64	32	58	55	69	58	d320	1,410	928	1,210	534	215
5	66	29	49	60	76	55	a260	1,700	1,070	1,220	486	226
6	66	29	45	60	80	61	a200	1,790	1,060	1,130	274	314
7	66	31	40	70	108	73	a190	1,770	1,110	927	243	286
8	69	32	40	72	92	85	188	1,730	764	1,070	236	290
9	69	31	40	70	76	130	236	1,680	658	1,100	222	330
10	73	32	45	65	71	120	244	1,470	870	1,020	209	306
11	78	36	45	65	60	102	194	1,160	1,160	878	218	274
12	73	35	50	70	55	94	164	1,010	1,140	1,000	197	290
13	78	34	35	70	60	85	170	838	680	1,080	185	294
14	80	49	25	60	70	73	194	838	787	846	185	286
15	120	60	30	55	80	80	198	774	1,090	782	194	270
16	85	107	35	55	80	104	264	750	1,150	822	206	270
17	55	115	40	55	65	123	335	701	1,300	946	206	282
18	48	85	40	54	67	118	395	680	1,360	815	222	339
19	46	71	45	54	74	85	370	687	1,400	486	174	450
20	44	61	50	52	80	66	380	610	1,350	420	154	405
21	41	58	50	52	85	102	474	870	1,290	405	150	395
22	41	71	50	50	94	140	643	942	1,050	498	163	400
23	41	64	55	46	92	140	922	438	822	504	163	390
24	41	61	60	45	73	208	596	380	492	522	157	380
25	48	60	60	50	71	177	540	486	486	522	144	380
26	94	58	55	48	78	126	468	991	575	456	142	370
27	78	60	55	45	100	140	438	1,000	575	410	147	366
28	66	56	70	44	123	191	370	973	568	395	144	370
29	64	55	60	50	-	216	355	937	438	320	163	362
30	71	56	50	69	-	202	345	937	624	318	206	366
31	69	-----	55	102	-----	240	-----	955	-----	375	185	-----
Total	2,038	1,597	1,512	1,803	2,213	3,642	10,433	31,017	27,496	22,912	7,417	9,492
Mean	65.7	53.2	48.8	58.2	79.0	117	348	1,001	917	739	239	316
Ac-ft	4,040	3,170	3,000	3,580	4,390	7,220	20,690	61,520	54,540	45,450	14,710	18,830

Calendar year 1964: Max 682 Min 25 Mean 80.3 Ac-ft 58,320  
Water year 1964-65: Max 1,790 Min 25 Mean 333 Ac-ft 241,100

a No gage-height record.

d Doubtful gage-height record.

Note.--Stage-discharge relation affected by ice Dec. 6 to Jan. 16, Jan. 24, 25, 27-29, Feb. 11-17.

9-3550. Spring Creek at La Boca, Colo.

Location.--Lat 37°00'50", long 107°35'40", in S½ sec.15, T.32 N., R.7 W., on right bank in an excavated channel, a quarter of a mile upstream from mouth and a quarter of a mile east of La Boca.

Drainage area.--58 sq mi, approximately.

Records available.--October 1950 to September 1965. Monthly discharge only for some periods, published in WSP 1733.

Gage.--Water-stage recorder. Altitude of gage is 6,160 ft (from topographic map).

Average discharge.--15 years, 27.7 cfs (20,050 acre-ft per year).

Extremes.--Maximum discharge during year, 182 cfs June 18 (gage height, 2.35 ft); maximum gage height, 2.61 ft Jan. 7 (backwater from ice); minimum, 1.4 cfs Mar. 4.

1950-65: Maximum discharge, 580 cfs Aug. 12, 1964 (gage height, 4.35 ft); maximum gage height, 5.98 ft Mar. 9, 1960 (ice jam); minimum, 0.6 cfs Nov. 27, 1960.

Remarks.--Records good except those for periods of ice effect or no gage-height record and those below 5 cfs, which are poor. Discharge measurements generally made twice a month. Part of flow is return waste from irrigation.

Cooperation.--Records furnished by New Mexico district.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Apr. 1

Apr. 2 to Sept. 30

0.4	1.0	0.8	10	0.6	4.5	1.5	60
.5	2.5	1.1	24	.8	10	2.0	130
.6	4.5	1.4	43	1.0	22		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	15	5	6	20	a10	17	14	39	65	65	67
2	26	14	5.0	4	15	a5	29	14	36	62	73	76
3	25	13	5	3	10	a3	17	19	38	71	80	85
4	27	14	5	a4	8	1.5	13	12	39	64	81	80
5	28	16	5	a5	10	2	10	10	50	64	80	84
6	28	18	5	a6	a12	3	a7	9.5	42	67	72	85
7	24	18	5	40	a20	5	9.8	10	42	61	67	72
8	24	17	4.5	30	a21	7	12	8.8	47	60	66	79
9	23	17	4	26	a15	8	13	7.1	45	61	68	110
10	22	16	3.7	15	a12	10	15	5.8	86	59	62	85
11	24	18	4	10	a10	9	10	10	106	70	59	86
12	25	20	3.9	8	a6	8.4	6.1	9.5	110	65	a55	97
13	25	19	3	7	a4	8.1	6.3	12	84	61	a50	88
14	25	14	3	6	a5	6.6	8.1	17	75	54	a45	88
15	24	8.4	2.5	6	a6	5.8	8.8	13	76	50	a45	81
16	30	21	2.5	5	a7	8.7	13	27	73	57	a50	84
17	29	17	2.5	5	a8	9.4	18	75	70	57	46	75
18	24	14	2.5	5	a7	8.8	22	91	100	62	47	94
19	22	12	2.5	5	a6	5	25	73	92	57	56	124
20	21	8.1	2.8	5	a5	4	26	a38	64	55	58	77
21	22	8.4	2.9	6.3	a5	4.5	28	46	59	57	58	72
22	24	7.4	3	5	a6	4.3	28	a35	66	57	64	65
23	22	6.6	3	4	a8	4.5	27	a30	61	64	62	65
24	20	6.3	4	3	a6	9.1	24	a30	60	60	60	65
25	19	5.8	4	3	a5	11	20	59	75	60	57	66
26	22	5.0	6	3	a4	6.1	a18	46	75	59	58	64
27	20	5.0	8	2.5	a5	5.0	26	45	65	53	55	61
28	20	5	3.5	2.2	a8	9.1	18	44	60	54	53	60
29	21	5	15	2.5	-	9.7	22	41	52	59	58	54
30	17	5	5	3	-----	10	14	42	57	58	72	54
31	15	-----	6	10	-----	13	-----	48	-----	64	67	-----
Total	725	369.0	168.3	245.5	254	214.6	511.1	941.7	1,944	1,867	1,889	2,343
Mean	23.4	12.3	5.43	7.92	9.07	6.92	17.0	30.4	64.8	60.2	60.9	78.1
Ac-ft	1,440	732	334	487	504	426	1,010	1,870	3,860	3,700	3,750	4,650

Calendar year 1964: Max 183 Min 2.0 Mean 18.8 Ac-ft 13,660  
 Water year 1964-65: Max 124 Min 1.5 Mean 31.4 Ac-ft 22,760

Peak discharge (base, 120 cfs).--June 18 (2200) 182 cfs (2.35 ft).

a No gage-height record.

Note.--Stage-discharge relation affected by ice Nov. 28 to Dec. 1, Dec. 3-9, 11, Dec. 13 to Jan. 3, Jan. 7-20, Jan. 22 to Feb. 5, Mar. 4-11, 19, 20.

## SAN JUAN RIVER BASIN

9-3575. Animas River at Howardsville, Colo.

Location--Lat 37°50'00", long 107°36'00", in sec.12, T.41 N., R.7 W., on right bank 1,000 ft downstream from bridge on State Highway 110, 0.4 mile southwest of Howardsville, and half a mile downstream from Cunningham Creek.

Drainage area--55.9 sq mi.

Records available--October 1935 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage--Water-stage recorder. Datum of gage is 9,616.98 ft above mean sea level, adjustment of 1912. Prior to Aug. 18, 1939, at datum 1.00 ft higher.

Average discharge--30 years, 105 cfs (76,020 acre-ft per year).

Extremes--Maximum discharge during year, 1,180 cfs June 19 (gage height, 3.71 ft); minimum daily, 9 cfs Feb. 13.

1935-65: Maximum discharge, 1,980 cfs June 18, 1949 (gage height, 4.36 ft), from rating curve extended above 950 cfs; maximum gage height, 5.24 ft Feb. 18, 1958 (backwater from snowslide); minimum daily discharge, 9 cfs Jan. 10, 1957, Feb. 15, Mar. 9, 1964, Feb. 13, 1965.

Maximum flood known occurred Oct. 5, 1911.

Remarks--Records good except those for periods of ice effect, which are poor. No diversion above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used July 30 to Sept. 30)

0.7	7.0	2.1	205
.9	15	2.5	365
1.1	27	3.0	630
1.4	55	3.5	1,010
1.7	100		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	39	16	* 17	15	* 12	11	12	294	316	606	280	85
2	37	16	16	14	13	10	12	378	320	700	365	92
3	35	16	16	15	12	9.5	11	370	374	659	320	88
4	33	16	15	16	13	* 11	11	329	* 401	606	284	83
5	33	* 16	14	16	13	10	12	248	334	612	* 244	92
6	32	16	13	* 16	11	10	11	199	365	624	212	122
7	* 30	15	12	15	12	11	11	169	485	582	190	110
8	29	15	13	14	12	10	* 11	142	612	570	172	112
9	29	15	14	14	11	10	10	120	528	* 552	157	116
10	29	15	14	13	11	10	11	* 116	420	490	145	* 106
11	27	15	14	13	11	10	10	108	388	522	135	100
12	24	15	15	13	10	10	10	116	342	606	130	95
13	24	15	13	13	9	10	10	118	410	500	132	88
14	24	15	13	13	10	10	11	114	582	455	125	80
15	24	15	15	14	11	10	11	108	700	420	114	74
16	24	16	13	12	12	10	13	114	* 644	370	110	68
17	24	17	13	13	13	10	17	163	582	378	122	80
18	24	15	13	13	14	10	21	236	693	420	157	122
19	21	17	14	13	14	10	26	316	791	435	128	154
20	20	16	13	12	13	10	45	420	* 896	435	114	122
21	20	16	12	13	12	10	80	485	805	415	108	102
22	20	15	12	12	11	10	108	534	714	383	108	100
23	20	16	12	12	10	11	138	445	644	356	98	102
24	18	16	12	13	12	10	154	312	658	396	92	112
25	16	15	13	13	13	10	230	226	510	406	85	122
26	16	16	13	12	13	10	222	181	430	365	80	132
27	16	15	12	12	12	11	169	148	440	308	76	142
28	16	15	11	13	10	10	128	122	546	* 284	71	151
29	16	15	13	13	-	10	140	135	618	268	95	145
30	16	16	14	13	---	11	199	187	612	260	106	128
31	16	---	15	13	---	11	---	233	---	264	95	---
Total	75.2	467	419	416	330	316.5	1,854	7,176	16,160	14,246	4,650	3,225
Mean	24.3	15.6	13.5	13.4	11.8	10.2	61.8	231	539	460	150	108
Ac-ft	1,490	926	831	825	655	628	3,680	14,230	32,050	28,260	9,220	6,400

Calendar year 1964: Max 624 Min 9 Mean 72.9 Ac-ft 52,900  
Water year 1964-65: Max 896 Min 9 Mean 137 Ac-ft 99,200

Peak discharge (base, 700 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
6- 8	2030	3.13	728	7- 2	2000	3.35	896
6-15	2000	3.30	864	7-11	2300	3.18	784
6-19	1845	3.71	1,180				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 12, 14-24, 26-28, 30, Dec. 1, 4-11, 13-31, Jan. 1-3, 8-11, 13, 14, 16-20, 22, 23, 26-28, Feb. 2-5, 8, 10-21, 23-27, Mar. 1-6, 8, 14, 15, 18-21, 24-26, Apr. 10-13, 15.

## SAN JUAN RIVER BASIN

349

9-3610. Hermosa Creek near Hermosa, Colo.

Location.--Lat 37°25'20", long 107°50'40", in NW¼ sec. 3, T.36 N., R.9 W., on right bank 20 ft downstream from private bridge, 1 mile northwest of Hermosa, and 2 miles upstream from mouth.

Drainage area.--172 sq mi.

Records available.--November and December 1911 (gage heights and discharge measurements only), January 1912 to September 1914, October 1919 to September 1928, October 1939 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 6,705.88 ft above mean sea level, datum of 1929. Prior to September 1914, staff gage and April 1920 to September 1928, water-stage recorder (staff or chain gages for short periods), within half a mile at different datums.

Average discharge.--37 years, 140 cfs (101,400 acre-ft per year).

Extremes.--Maximum discharge during year, 1,620 cfs May 21 (gage height, 4.22 ft); minimum daily, 12 cfs Dec. 30.  
1912-14, 1919-28, 1939-65: Maximum discharge, 2,980 cfs May 12, 1941 (gage height, 6.02 ft); maximum gage height, 8.50 ft Sept. 12, 1927, from floodmarks, site and datum then in use; minimum daily discharge, 4.0 cfs Dec. 9, 1956.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of a few acres above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used June 21, 22)

0.5	13	1.7	210
.8	33	2.0	320
1.0	52	3.0	810
1.3	98	4.0	1,480

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 23	17	18	16	17	28	87	828	684	* 368	217	85
2	* 22	* 17	17	15	17	26	* 100	1,110	673	400	242	87
3	20	16	16	13	17	24	82	1,060	734	376	224	75
4	20	13	14	14	18	22	75	942	768	348	189	75
5	19	13	13	15	19	24	67	* 756	678	332	* 165	74
6	18	13	15	16	22	26	63	635	728	320	147	100
7	18	14	16	17	20	28	69	530	828	304	128	80
8	18	13	17	17	20	28	64	476	* 984	280	112	93
9	18	14	18	16	* 20	26	72	400	948	252	103	110
10	18	15	16	17	19	27	67	368	750	231	103	89
11	18	17	16	17	17	* 27	62	344	651	224	96	80
12	18	* 15	16	16	14	29	58	384	690	296	87	77
13	18	17	14	17	15	27	56	495	834	231	87	72
14	18	18	16	16	17	24	60	476	876	198	96	66
15	18	20	17	17	18	24	74	481	876	186	96	63
16	18	18	15	17	19	28	144	515	798	* 192	96	62
17	18	17	14	17	18	29	242	656	656	162	174	64
18	18	18	16	18	18	28	352	900	646	174	220	136
19	18	20	15	19	* 20	28	414	1,160	668	153	177	192
20	17	19	14	19	22	28	575	* 1,380	668	144	150	189
21	17	19	15	18	24	32	* 700	1,430	630	133	133	171
22	17	19	15	18	26	33	852	1,400	* 590	112	139	150
23	18	19	16	17	24	35	936	1,160	550	110	112	139
24	18	17	17	18	22	38	966	846	610	144	103	133
25	18	19	16	17	22	35	804	646	570	186	93	130
26	19	17	15	* 17	24	34	585	550	454	207	87	122
27	20	18	16	14	26	33	445	468	384	174	* 80	117
28	18	17	16	18	28	35	364	436	376	180	77	117
29	18	17	16	18	—	37	364	463	380	201	93	115
30	18	* 16	* 12	17	—	39	510	550	368	198	130	103
31	17	—	14	17	—	53	—	590	—	201	100	—
Total	571	502	481	518	563	935	9,309	22,435	20,050	7,017	4,056	3,166
Mean	18.4	16.7	15.5	16.7	20.1	30.2	310	724	668	226	131	106
Ac-ft	1,130	996	954	1,030	1,120	1,850	18,460	44,500	39,770	13,920	8,040	6,280

Calendar year 1964: Max 610 Min — Mean 65.6 Ac-ft 47,630

Water year 1964-65: Max 1,430 Min 12 Mean 191 Ac-ft 138,000

Peak discharge (base, 800 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-23	2200	3.58	1,160	6-9	0100	3.33	1,010
5-2	2100	3.86	1,350	6-14	2330	3.32	972
5-21	2300	4.22	1,620				

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 4-10, Nov. 19 to Mar. 8, Mar. 14, 15, 19-21.

## SAN JUAN RIVER BASIN

9-3612. Falls Creek near Durango, Colo.

Location.--Lat 37°22'00", long 107°52'00", in SW¼ sec.21, T.36 N., R.9 W., on right bank 1.2 miles upstream from mouth and 6.5 miles north of Durango.

Drainage area.--7.18 sq mi.

Records available.--October 1959 to September 1965 (discontinued).

Gage.--Water-stage recorder and concrete control. Altitude of gage is 7,120 ft (from topographic map).

Average discharge.--6 years, 1.71 cfs (1,240 acre-ft per year).

Extremes.--Maximum discharge during year, 45 cfs May 19 (gage height, 4.12 ft); minimum daily, 0.1 cfs for many days.  
1959-65: Maximum discharge, that of May 19, 1965; minimum daily, 0.1 cfs for many days in most years.

Remarks.--Records good except those for periods of ice effect, which are fair. Small diversions above station for irrigation of meadows.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)

3.1	0.1	3.6	7.1
3.2	.7	3.8	15
3.3	1.6	4.0	27
3.5	4.6	4.2	48

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 0.2	0.2	0.1	0.1	0.1	0.2	1.2	19	17	* 3.6	1.5	0.9
2	.1	.2	.1	b .1	.1	.2	1.2	27	17	3.6	1.5	1.2
3	.1	.2	.1	b .1	.1	.2	1.1	27	16	3.3	1.5	1.0
4	.1	.2	.1	.1	.1	b .2	1.0	* 24	16	3.2	1.3	.9
5	.1	.2	.1	.1	.1	.2	.9	21	14	3.0	1.2	.9
6	.1	.2	.1	.1	.1	.2	1.0	18	13	2.6	* 1.2	1.2
7	.1	.1	.1	.1	.1	.2	1.1	15	13	2.4	1.2	1.0
8	.1	.1	.1	.1	.1	.2	1.2	14	* 13	2.2	1.2	1.2
9	.1	.1	.1	.1	.1	.2	1.1	11	15	2.0	1.2	1.2
10	.1	.1	.1	.1	.1	.2	.9	10	13	1.9	1.2	1.0
11	.1	.1	.1	.1	.1	* .2	.8	10	12	1.9	1.2	.9
12	.1	.1	.1	.1	b .1	.2	.8	13	12	2.0	1.1	1.0
13	.1	.1	b .1	.1	b .1	.2	* .9	19	12	2.2	1.1	.9
14	.1	.1	b .1	.1	b .1	.2	1.3	18	12	1.7	1.2	.7
15	.1	.1	b .1	.1	b .1	.2	1.9	18	11	1.9	1.2	.7
16	.2	.2	* .1	.1	* .1	.2	1.9	19	10	1.9	1.2	.7
17	.2	.2	.1	.1	.1	.2	2.4	23	9.1	1.6	2.0	.7
18	.2	.2	.1	.1	.1	.2	4.0	32	8.5	1.7	1.4	1.0
19	.2	.2	.1	.1	.1	.3	5.8	39	7.8	1.5	1.2	1.7
20	.2	.2	.1	.1	.1	.3	9.1	* 40	7.4	1.5	1.2	1.6
21	.2	.2	.1	.1	.1	.3	12	39	6.8	1.5	1.2	1.4
22	.2	.2	.1	* .1	.2	.3	* 16	32	* 6.6	1.4	1.2	1.2
23	.2	* .2	.1	.1	.2	.3	19	24	6.4	1.3	1.2	1.1
24	.2	.1	.1	.1	.2	.3	20	20	6.8	1.4	1.1	1.0
25	.2	.1	.1	.1	.2	.3	17	17	6.1	2.0	1.0	.9
26	* .2	.1	.1	b .1	.2	.3	15	14	5.4	1.7	1.0	.9
27	.2	.1	.1	b .1	.2	.4	12	12	4.8	1.4	* .9	.8
28	.2	.1	b .1	b .1	.2	.5	8.5	11	4.4	1.3	.9	.9
29	.2	.1	* b .1	.1	.1	.6	8.5	12	4.0	1.4	1.3	.8
30	.2	.1	b .1	.1	-----	.9	11	14	3.8	1.7	1.3	.8
31	.2	-----	.1	.1	-----	1.2	-----	16	-----	1.5	1.0	-----
Total	4.8	4.4	3.1	3.1	3.5	9.6	178.6	628	303.9	62.3	37.9	30.2
Mean	0.15	0.15	0.10	0.10	0.12	0.31	5.95	203	10.1	2.01	1.22	1.01
Ac-ft	9.5	8.7	6.1	6.1	6.9	19	354	1,250	603	124	75	60

Calendar year 1964: Max 4.8 Min 0.1 Mean 0.59 Ac-ft 428  
Water year 1964-65: Max 40 Min 0.1 Mean 3.48 Ac-ft 2,520

Peak discharge (base, 12 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-23	2400	3.90	24	5-19	2330	4.12	45
5-2	2300	4.08	33	6-1	0300	3.85	18

\* Discharge measurement made on this day.  
b Stage-discharge relation affected by ice.



9-3614. Junction Creek near Durango, Colo.

Location.--Lat 37°20'05", long 107°54'30", in sec.36, T.36 N., R.10 W., on left bank 4½ miles upstream from mouth and 4½ miles northwest of Durango.

Drainage area.--26.3 sq mi.

Records available.--October 1959 to September 1965 (discontinued).

Gage.--Water-stage recorder. Datum of gage is 7,045.65 ft above mean sea level (Bureau of Reclamation bench mark).

Average discharge.--6 years, 17.8 cfs (12,890 acre-ft per year).

Extremes.--Maximum discharge during year, about 300 cfs May 21 (gage height, 4.66 ft); minimum daily, 1.7 cfs Nov. 8-10.

1959-65: Maximum discharge, that of May 21, 1965; maximum gage height, 4.95 ft Dec. 14, 1961 (backwater from ice); minimum daily discharge, 0.9 cfs Sept. 3-5, 10-13, 18, 1962, Dec. 8, 1963.

Remarks.--Records good except those for periods of ice effect or indefinite stage-discharge relation, which are poor. No regulation or diversion above station.

Rating tables, except periods of ice effect or indefinite stage-discharge relation  
(gage height, in feet, and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 17-19, 21-23)

Oct. 1 to Apr. 20

Apr. 21 to Sept. 30

2.3	1.7	3.4	61	2.7	8.0	3.7	80
2.5	5.5	3.7	106	3.0	19	4.0	145
2.7	11	4.0	185	3.4	47	4.5	270
3.0	26						

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	* 4.1	2.1	2.4			9	21	88	128	* 53	21	12
2	3.9	2.1	2.6			8	* 21	142	118	59	20	14
3	3.7	2.1	2.6			7	19	208	118	54	18	12
4	3.5	2.1	2.2			6	17	* 175	132	49	16	11
5	3.3	2.1	2.0			6.5	16	* 130	118	48	14	12
6	3.1	2.1	2.2			7	14	100	125	46	13	14
7	3.1	2.1	2.4			7	15	71	158	45	12	12
8	3.0	1.7	2.8			7	14	58	* 170	41	12	15
9	3.0	1.7	2.8			7	14	52	142	37	12	18
10	3.0	1.7	2.6			7	13	48	108	33	12	15
11	3.0	2.1	2.6		3.5	* 8.0	12	49	82	32	11	14
12	3.0	1.9	2.8			8.3	12	58	94	33	10	14
13	3.0	1.9	2.2			8.0	13	98	132	* 28	10	13
14	2.6	2.1	2.6			8	13	84	158	28	11	12
15	2.6	2.1	2.8			7.5	15	76	138	28	17	11
16	2.6	2.8	(*)	2.8		7.8	23	84	130	30	19	10
17	2.4	2.6				7.8	46	120	108	26	46	11
18	2.4	2.4				7.8	80	192	116	26	33	22
19	2.4	2.2			(*)	7.5	* 108	e 230	120	23	26	30
20	2.2	* 2.4			5.5	7	147	e 200	120	21	22	29
21	2.2	2.4			6	8.5	* e 165	* e 190	114	21	19	26
22	2.2	2.2			7	9.8	e 170	e 150	* 98	21	18	25
23	2.2	2.2	2.4		8	10	e 170	e 140	86	* 19	15	25
24	2.2	2.2			2	10	e 140	152	112	20	14	* 25
25	2.2	2.2			* 8	10	90	125	86	31	13	24
26	* 2.2	2.2		(*)	7	9.8	72	108	68	29	12	21
27	2.1	2.6			8	9.8	54	100	58	23	* 11	19
28	1.9	2.4			8.5	9.8	45	96	55	21	11	18
29	1.9	2.4	(*)		-	10	46	102	56	21	14	16
30	1.9	2.4			-	11	60	116	53	* 21	17	14
31	1.9	-			-	15	-	142	-	23	13	-
Total	82.8	65.5	76.0	86.8	133.5	262.9	1,645	3,684	3,301	990	512	514
Mean	2.67	2.18	2.45	2.8	4.76	8.48	54.8	119	110	31.9	16.5	17.1
Ac-ft	164	130	151	172	265	521	3,260	7,310	6,550	1,960	1,020	1,020

Calendar year 1964: Max 113 Min - Mean 12.4 Ac-ft 8,980  
Water year 1964-65: Max 230 Min 1.7 Mean 31.1 Ac-ft 22,520

Peak discharge (base, 120 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-23	2045	4.18	† 215	5-31	2015	4.16	188
5- 3	0500	4.23	218	6- 8	0015	4.22	205
5-21	1600	4.66	† 300	6-14	0200	4.10	172

\* Discharge measurement made on this day.

e Stage-discharge relation indefinite.

Note.--Stage-discharge relation affected by ice Nov. 20-25, 28-30, Dec. 4 to Mar. 10, Mar. 14, 15, 19-21, 24, Apr. 11 (no gage-height record Dec. 16 to Feb. 19).

† About.

## SAN JUAN RIVER BASIN

9-3615. Animas River at Durango, Colo.

Location.--Lat 37°16'45", long 107°52'47", in SW¼ sec.20, T.35 N., R.9 W., on left bank at Western Colorado Power Co.'s plant at Durango, three-quarters of a mile upstream from Lightner Creek.

Drainage area.--692 sq mi.

Records available.--June to December 1895, April 1896 to December 1898, April 1899 to December 1900, March to May 1901, April to November 1902, March to April 1902 (gage heights only, erroneously stated as discredited in WSP 1563), May to October 1903, July 1904 to December 1905, January to December 1910 (gage heights only), January to September 1911, January 1912 to September 1965. Monthly or yearly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 6,501.57 ft above mean sea level, datum of 1929. Prior to Dec. 31, 1905, staff gages at several sites three-quarters of a mile downstream at various datums. Jan. 1, 1910, to Aug. 12, 1911, staff gage at present site at different datum. Jan. 1, 1912, to Mar. 2, 1921, staff gage or water-stage recorder at present site and datum.

Average discharge.--60 years (1896-1900, 1904-5, 1910-65), 855 cfs (619,000 acre-ft per year).

Extremes.--Maximum discharge during year, 5,560 cfs June 21 (gage height, 6.24 ft); minimum daily, 140 cfs Dec. 7. 1895-1905, 1910-65: Maximum discharge, 25,000 cfs Oct. 5, 1911 (gage height, 11 ft, present site and datum), from rating curve extended above 13,000 cfs; minimum daily, 94 cfs Mar. 2, 1913. Maximum flood known, that of Oct. 5, 1911.

Remarks.--Records good except those for periods of ice effect, which are fair. Diversions for irrigation of about 4,000 acres above station. Natural regulation by many lakes and regulation for power above station.

Rating table, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 23 to June 15)

Oct. 1 to June 15				June 16 to Sept. 30			
1.8	120	3.5	1,170	2.7	530	5.0	3,440
2.2	245	4.0	1,740	3.0	790	6.1	5,310
2.5	395	5.0	3,080	4.0	1,870		
3.0	740	6.2	5,060				

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	340	166	202	b 200	175	196	335	2,410	2,640	3,560	1,950	754
2	315	163	209	b 170	190	202	375	3,280	2,590	3,980	2,300	709
3	290	181	213	b 160	178	187	360	3,540	2,790	4,150	2,190	673
4	270	184	199	184	197	193	345	3,230	3,200	3,750	1,750	655
5	245	178	178	199	193	199	330	2,650	2,870	3,590	1,510	602
6	229	184	163	209	193	209	315	2,240	2,930	3,560	1,310	763
7	225	184	140	209	190	213	320	1,850	3,420	3,610	1,150	800
8	221	178	169	217	178	213	330	1,610	4,260	3,250	1,050	763
9	209	169	178	199	190	213	340	1,370	4,420	3,240	950	880
10	213	181	187	193	196	213	345	1,250	3,620	2,910	920	840
11	209	187	184	178	b 190	213	320	1,160	3,180	2,680	890	763
12	209	190	199	202	b 170	213	305	1,260	2,920	3,580	830	719
13	209	196	184	190	b 150	209	315	1,600	3,380	3,180	* 800	673
14	202	199	151	181	b 160	205	315	1,550	4,300	2,720	830	637
15	199	190	175	190	b 160	205	325	1,460	4,930	2,560	820	586
16	199	193	187	196	b 170	213	390	1,500	5,120	* 2,310	810	554
17	196	217	184	181	b 180	217	543	1,850	4,150	2,070	950	530
18	196	225	169	172	187	217	836	2,540	4,390	2,160	1,260	840
19	193	221	190	193	187	213	990	3,240	4,660	2,300	1,220	1,280
20	184	209	181	199	187	205	1,320	4,060	* 5,240	2,190	1,060	1,290
21	178	202	172	199	187	209	* 1,960	* 4,400	5,290	2,240	920	1,150
22	178	196	193	199	181	225	2,500	4,750	4,990	1,980	920	1,050
23	184	* 184	199	184	209	225	2,850	4,440	4,240	1,780	840	1,010
24	184	199	205	172	196	* 245	3,060	3,300	* 4,440	1,740	763	1,040
25	172	199	199	181	* 190	237	2,890	2,570	4,270	2,570	682	1,080
26	169	209	184	* 190	199	229	2,410	2,040	3,300	2,640	628	1,110
27	172	193	184	b 180	205	229	1,940	1,730	2,780	2,160	* 586	1,120
28	* 175	202	209	b 180	205	245	1,480	1,500	3,100	1,790	554	* 1,130
29	178	199	184	b 190	-	250	1,380	1,510	3,590	1,790	554	1,120
30	181	187	* b 150	199	-----	250	* 1,620	1,790	* 3,950	* 1,880	890	1,030
31	175	-----	b 190	181	-----	280	-----	2,000	-----	1,840	850	-----
Total	6,499	5,765	5,711	5,877	5,173	6,772	31,144	73,680	114,960	83,660	32,737	26,150
Mean	210	192	184	190	185	218	1,038	2,377	3,832	2,699	1,056	872
Ac-ft	12,890	11,430	11,330	11,660	10,260	13,430	61,770	146,100	228,000	165,900	64,930	51,870

Calendar year 1964: Max 3,910 Min 125 Mean 489 Ac-ft 355,000  
Water year 1964-65: Max 5,290 Min 140 Mean 1,091 Ac-ft 789,600

Peak discharge (base, 4,000 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
5-22	1000	6.02	4,920	7- 3	0830	5.66	4,560
6- 9	1130	5.78	4,650	7-12	1000	5.37	4,070
6-21	1300	6.24	5,560				

\* Discharge measurement made on this day.  
b Stage-discharge relation affected by ice.

9-3635. Animas River near Cedar Hill, N. Mex.

**Location.**--Lat 37°02'15", long 107°52'25", in sec.7, T.32 N., R.9 W., on right bank three-quarters of a mile downstream from Florida River, 2.5 miles upstream from Colorado-New Mexico State line, and 8.5 miles north of Cedar Hill, N. Mex.

**Drainage area.**--1,090 sq mi, approximately.

**Records available.**--October 1933 to September 1965. Monthly discharge only for October and November 1933, published in WSP 1313.

**Gage.**--Water-stage recorder. Altitude of gage is 5,960 ft (from topographic map). Prior to Sept. 14, 1937, at datum between 1.52 and 1.36 ft higher. Sept. 15, 1937, to Sept. 30, 1946, at datum 1.36 ft higher.

**Average discharge.**--32 years, 902 cfs (653,000 acre-ft per year).

**Extremes.**--Maximum discharge during year, 6,740 cfs June 21 (gage height, 8.40 ft); minimum, 168 cfs Dec. 7.  
1933-65: Maximum discharge, 13,100 cfs June 19, 1949 (gage height, 11.45 ft); minimum, 63 cfs Jan. 21, 1935.  
Maximum flood known occurred Oct. 5 or 6, 1911.

**Remarks.**--Records good except those for periods of ice effect or no gage-height record, which are poor. Discharge measurements generally made twice a month. Diversions for irrigation of about 20,000 acres above station. During water years 1944-49, Twin Rocks Canal diverted above station for irrigation below. Possible regulation by Lemon Dam on Florida River (capacity, 40,100 acre-ft), storing started in November 1963.

**Cooperation.**--Records furnished by New Mexico district.

Rating tables, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

Oct. 1 to Jan. 29				Jan. 30 to Sept. 30			
3.2	180	3.2	200	6.0	2,530		
3.4	245	3.6	350	7.0	4,030		
3.7	380	4.0	545	8.0	5,880		
4.0	550	5.0	1,350	8.5	6,960		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	415	201	234	298	235	263	601	2,580	2,860	4,040	2,200	844
2	360	192	253	273	224	260	670	3,550	2,900	4,680	2,640	804
3	330	204	265	b 200	218	235	569	3,990	3,080	4,860	2,460	888
4	308	210	257	b 240	218	238	490	3,760	3,400	4,370	2,080	740
5	294	207	234	b 280	221	249	440	3,080	3,190	4,200	1,830	766
6	253	214	204	290	235	260	418	2,520	3,130	4,070	1,620	1,150
7	245	210	b 190	285	246	266	475	2,080	3,600	4,020	1,420	964
8	242	204	b 210	290	228	274	455	1,820	4,500	3,730	1,290	957
9	238	192	b 230	269	221	286	480	1,580	4,710	3,730	1,200	1,030
10	234	201	253	242	228	294	501	1,400	4,010	3,200	1,080	998
11	231	220	261	217	224	290	440	1,330	3,480	3,130	1,040	884
12	228	224	253	231	b 200	290	400	1,400	3,220	3,660	932	828
13	231	234	b 230	242	b 180	290	418	1,740	3,660	3,730	868	772
14	224	238	b 190	220	b 190	274	440	1,790	4,550	3,280	892	733
15	220	242	b 200	217	b 200	270	475	1,670	5,520	3,130	940	677
16	220	257	b 240	224	b 210	290	575	1,700	5,700	2,940	916	644
17	224	294	b 250	a 230	b 220	310	828	a 2,200	4,790	2,560	1,070	618
18	224	281	b 240	a 230	b 220	306	1,180	2,800	4,690	2,640	1,370	875
19	220	281	b 230	a 210	224	294	1,390	3,360	5,030	2,640	1,370	1,340
20	207	265	b 250	a 220	228	274	1,710	4,200	5,800	2,560	1,190	1,390
21	204	261	b 230	a 240	232	270	2,340	4,600	6,460	2,430	1,030	1,250
22	204	249	b 220	220	224	306	2,900	5,170	6,100	2,240	1,020	1,120
23	210	238	b 240	210	249	318	3,180	5,110	5,200	2,180	932	1,090
24	210	253	b 260	195	242	404	3,540	3,930	5,030	1,980	852	1,110
25	204	261	b 280	198	a 250	395	3,310	3,010	5,400	2,600	748	1,150
26	204	265	242	204	260	342	2,840	2,350	4,200	2,780	691	1,170
27	207	245	231	b 200	270	338	2,430	2,060	3,360	2,320	650	1,200
28	207	253	350	b 200	282	364	2,030	1,880	3,430	2,000	599	1,200
29	207	238	273	b 220	-	395	1,780	1,800	3,840	1,980	593	1,210
30	207	224	214	246	-----	408	1,900	1,980	4,170	2,070	916	1,120
31	207	-----	281	242	-----	440	-----	2,240	-----	2,040	948	-----
Total	7,419	7,058	7,495	7,283	6,379	9,493	39,205	82,680	129,010	95,790	37,387	29,522
Mean	239	235	242	235	228	306	1,307	2,667	4,300	3,090	1,206	984
Ac-ft	14,720	14,000	14,870	14,450	12,650	18,830	77,760	164,000	255,900	190,000	74,160	58,560

Calendar year 1964: Max 3,870 Min 118 Mean 535 Ac-ft 388,800  
Water year 1964-65: Max 6,460 Min 180 Mean 1,257 Ac-ft 909,900

Peak discharge (base, 4,000 cfs)--June 21 (1500) 6,740 cfs (8.40 ft); Aug. 2 (1400) 4,040 cfs (7.00 ft).

a No gage-height record.

b Stage-discharge relation affected by ice.

## SAN JUAN RIVER BASIN

9-3655. La Plata River at Hesperus, Colo.

Location.--Lat 37°17'20", long 108°02'05", in sec.14, T.35 N., R.11 W., on right bank at Hesperus 700 ft downstream from U. S. Highway 160.

Drainage area.--37 sq mi, approximately.

Records available.--June to August 1904, May 1905 to September 1906, August to November 1910, June 1917 to September 1965. Monthly discharge only for some periods, published in WSP 1313. Records for Nov. 11 to Dec. 31, 1910, published in WSP 289, have been found to be unreliable and should not be used.

Gage.--Water-stage recorder. Datum of gage is 8,104.71 ft above mean sea level, datum of 1929. Prior to May 1, 1920, staff gage and May 1, 1920, to May 24, 1927, water-stage recorder, at several sites about 600 ft downstream at different datums. May 25, 1927, to Sept. 30, 1938, water-stage recorder at site 60 ft downstream and Oct. 1, 1938, to Sept. 30, 1941, at present site at datum 1.00 ft higher.

Average discharge.--49 years (1905-6, 1917-65), 45.7 cfs (33,090 acre-ft per year).

Extremes.--Maximum discharge during year, 535 cfs May 22; maximum gage height, 4.24 ft June 8; minimum discharge not determined. 1904-6, 1910, 1917-65: Maximum discharge, 1,880 cfs Sept. 22, 1941 (gage height, 4.30 ft, present datum), from rating curve extended above 620 cfs on basis of slope-area measurement of peak flow; minimum not determined. Maximum flood known occurred Oct. 5, 1911.

Remarks.--Records good except those for period of no gage-height record, which are fair. One diversion above station for irrigation of about 2,000 acres along Cherry Creek below station.

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19						*12	160	*205	*188	80	*33
2	14						10	208	216	212	*80	36
3	11				(*)		8.6	227	219	205	71	35
4	9.0						8.6	205	230	184	61	32
5	8.0						8.6	165	191	174	52	32
6	6.5						8.6	142	252	160	47	40
7	5.6						9.0	117	300	152	42	36
8	5.3						9.7	104	382	146	36	41
9	4.6					(*)	12	94	*312	132	*32	47
10	4.6						13	*89	219	108	32	46
11	5.0						13	85	163	108	32	41
12	5.0						13	91	156	*123	31	40
13	5.3						13	107	212	111	32	38
14	5.3						16	100	*296	*108	32	35
15	5.6						22	96	312	111	32	33
16	5.6	4	3.5	4	8	12	29	90	288	117	*51	32
17	5.0						46	*104	240	103	66	33
18	4.2						64	150	*276	129	77	40
19	3.9					(*)	*84	211	340	117	62	44
20	3.6			(*)			*200	*330	344	*91	52	43
21	2.8						238	386	340	80	45	41
22	2.5						*295	*466	*296	71	45	40
23	2.2						330	478	260	*62	40	43
24	2.0						286	350	312	63	*37	49
25	2.2						227	217	264	98	35	53
26	2.2				(*)		180	*165	205	89	33	54
27	2.0						145	160	177	82	32	53
28	2.0						130	146	188	77	30	50
29	2.2					(*)	*130	149	202	82	32	47
30	2.5						134	166	202	87	48	41
31	2.8							177		82	39	
Total	161.5	120	108.5	124	224	372	2,695.1	5,735	7,599	3,652	1,416	1,228
Mean	5.21	4	3.5	4	8	12	89.8	185	253	118	45.7	40.9
Ac-ft	320	238	215	246	444	738	5,350	11,380	15,070	7,240	2,810	2,440

Calendar year 1964: Max 305 Min - Mean 29.6 Ac-ft 21,460  
 Water year 1964-65: Max 478 Min - Mean 64.2 Ac-ft 46,490

Peak discharge (base, 230 cfs)

Date	Time	Gage height	Discharge	Date	Time	Gage height	Discharge
4-23	2100	3.03	390	6- 8	0630	4.24	520
5- 2	2300	2.94	248	6-15	0030	4.01	356
5-22	0500	3.80	535	6-20	2345	4.18	432

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 1 to Mar. 31 (stage-discharge relation affected by ice during most of period).

## 9-3665. La Plata River at Colorado-New Mexico State line

Location.--Lat 37°00'00", long 108°11'20", in sec.10, T.32 N., R.13 W., on right bank at Colorado-New Mexico State line, 3 miles north of Pendleton, N. Mex.

Drainage area.--331 sq mi.

Records available.--January 1920 to September 1965. Monthly discharge only for some periods, published in WSP 1313.

Gage.--Water-stage recorder. Datum of gage is 5,975.15 ft above mean sea level, datum of 1929. Prior to Apr. 30, 1920, staff gage at site 2 miles upstream at different datum. May 1 to June 18, 1920, staff gage and June 19, 1920, to Sept. 30, 1924, water-stage recorder, at present site at datum 1.26 ft higher. Oct. 1, 1924, to Mar. 16, 1934, water-stage recorder at present site at datum 0.26 ft higher.

Average discharge.--45 years, 33.8 cfs (24,470 acre-ft per year).

Extremes.--Maximum discharge during year, 378 cfs Apr. 24 (gage height, 3.17 ft); minimum not determined.

1920-65: Maximum discharge, 4,750 cfs Aug. 24, 1927 (gage height, 11.36 ft, present datum), from rating curve extended above 750 cfs on basis of slope-area measurement of peak flow; no flow at times in many years.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Diversions above station for irrigation of about 15,000 acres, mostly above station.

Rating tables, except periods of ice effect (gage height, in feet,  
and discharge, in cubic feet per second)  
(Shifting-control method used Apr. 2-19, 21-26)

Oct. 1 to Apr. 1

Apr. 2 to Sept. 30

0.6	1.0	1.0	10	0.4	3.0	1.2	45
.7	2.2	1.2	23	.5	5.0	2.0	138
.8	4.0	1.4	42	.6	8.0	3.0	360
				.9	22		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1.7	1.6			7.0	7.0	*35	194	*66	*40	21	*14
2	1.7	1.6			6.8	7.6	103	274	85	55	*34	14
3	1.6	1.6			*6.4	5.8	91	305	90	92	26	14
4	1.2	1.6			7.3	5.5	79	262	102	50	14	12
5	1.2	1.6			8.0	6.7	70	194	65	58	12	10
6	1.3				8.5	7.0	63	137	67	59	9.2	14
7	1.3				8.2	7.3	69	96	87	67	7.4	18
8	1.3				8.0	7.3	65	66	130	80	6.2	23
9	1.5				7.8	*7.6	74	50	120	87	*5.3	35
10	1.6				7.6	7.9	79	*38	85	70	4.8	21
11	1.6				7.0	8.2	66	33	53	*68	4.0	16
12	1.5				5.5	9.1	63	31	38	98	3.0	12
13	1.5				8.5	9.1	62	50	48	76	3.0	12
14	1.5				8.8	8.5	68	60	98	62	6.2	12
15	1.5				8.8	8.2	78	55	142	59	12	11
16	1.5		4	6	8.8	8.2	96	47	117	69	*20	10
17	1.5				9.0	7.3	131	*35	74	59	30	10
18	1.5	4			9.0	7.3	160	46	72	70	45	20
19	2.1				9.1	*7.0	*172	76	96	70	20	30
20	2.1				8.8	7.0	229	*152	110	49	11	33
21	2.0				8.8	7.6	*291	200	117	48	12	33
22	1.7				8.8	7.3	317	222	*98	38	11	27
23	1.2				8.5	7.6	327	162	80	*35	9.2	25
24	1.1				6.4	9.4	334	113	108	28	*7.1	26
25	1.2				6.7	12	308	102	135	51	5.6	28
26	1.3				*7.6	9.4	*249	87	91	100	6.5	32
27	1.5				7.6	7.9	242	74	68	55	7.4	32
28	1.7				8.2	7.0	207	54	58	47	6.2	31
29	1.6				-	*8.8	*222	42	44	46	7.4	18
30	1.5					9.1	186	38	52	51	22	16
31	1.5					16		52		26	20	
Total	47.0	108.0	124	186	221.5	251.7	4,536	3,347	2,596	1,863	408.5	609
Mean	1.52	3.60	4	6	7.91	8.12	151	108	86.5	60.1	13.2	20.3
Ac-ft	93	214	246	369	439	499	9,000	6,640	5,150	3,700	810	1,210

Calendar year 1964: Max 150 Min 0 Mean 14.8 Ac-ft 10,720  
Water year 1964-65: Max 334 Min - Mean 39.2 Ac-ft 28,370

\* Discharge measurement made on this day.

Note.--No gage-height record Nov. 3 to Feb. 2, Feb. 5-9, 14-18 (stage-discharge relation affected by ice during most of periods).

## SAN JUAN RIVER BASIN

9-3710. Mancos River near Towaoc, Colo.

Location.--Lat 37°02', long 108°43', in NW¼ sec.18, T.32 N., R.17 W., on left bank 750 ft upstream from bridge on U. S. Highway 666, 6 miles upstream from Aztec Creek, and 12 miles south of Towaoc.

Drainage area.--550 sq mi, approximately.

Records available.--October 1920 to September 1943, February 1951 to September 1965. Monthly discharge only for some periods published in WSP 1313.

Gage.--Water-stage recorder at present site Oct. 13, 1941, to Sept. 30, 1943, and since Mar. 11, 1954. Datum of gage is 5,055.98 ft above mean sea level, datum of 1929. Prior to Mar. 15, 1940, staff gage or water-stage recorder 2½ miles downstream at different datum. Mar. 15, 1940, to Oct. 12, 1941, and Feb. 16, 1951, to Mar. 10, 1954, water-stage recorder at site 600 ft downstream at datum 4.95 ft lower.

Average discharge.--37 years, 52.2 cfs (37,790 acre-ft per year).

Extremes.--Maximum discharge during year, 430 cfs May 20 (gage height, 3.36 ft); minimum daily, 3.8 cfs Oct. 20-22.

1920-43, 1951-65: Maximum discharge, 5,300 cfs Oct. 14, 1941 (gage height, 7.30 ft, present site and datum), from rating curve extended above 200 cfs on basis of slope-area measurement of peak flow; no flow at times in most years.

Remarks.--Records good except those for periods of ice effect, which are poor. Diversions for irrigation of about 10,000 acres above station. One diversion above station for irrigation of about 100 acres below. Regulation for irrigation of Jackson Gulch Reservoir (capacity, 10,000 acre-ft) since March 1949.

Rating table, except periods of ice effect (gage height, in feet, and discharge, in cubic feet per second)

1.5	2.0	2.5	126
1.6	5.0	3.0	245
1.7	11	3.3	370
2.0	42		

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	6.8	14	17	79	34	85	175	126	94	52	29
2	10	7.4	15	13	41	24	148	230	128	*101	61	24
3	10	8.0	16	14	31	18	103	259	117	99	48	26
4	9.8	7.4	* 14	15	29	15	85	218	117	95	37	21
5	8.6	6.8	8	20	31	*20	76	172	106	86	25	20
6	* 8.6	5.6	9	26	37	23	59	140	94	69	* 18	25
7	6.8	5.6	9	49	40	26	56	119	* 110	49	16	32
8	6.2	5.0	10	74	36	26	59	101	122	41	10	34
9	5.6	* 5.0	9	40	28	27	58	85	128	36	8.6	32
10	5.0	4.7	11	34	24	27	62	67	130	34	7.4	48
11	6.2	4.7	10	24	20	26	66	* 58	108	34	7.4	37
12	6.2	8.6	14	28	17	27	* 61	49	113	58	7.4	36
13	5.6	8.6	13	25	14	27	64	83	134	72	4.7	35
14	5.0	7.4	12	18	11	25	58	164	159	70	5.0	26
15	4.1	8.6	4.4	18	14	25	64	190	186	52	10	21
16	4.4	18	5.5	20	19	28	77	186	172	46	6.8	19
17	5.0	27	12	21	24	35	88	172	142	46	38	* 18
18	5.0	22	15	22	27	29	101	188	134	61	30	25
19	4.7	17	17	26	24	24	104	239	146	59	43	59
20	3.8	11	16	26	25	20	155	330	157	45	27	72
21	3.8	5.5	17	26	41	17	215	* 360	155	36	20	99
22	3.8	7	15	23	52	19	* 256	355	146	41	21	55
23	4.1	12	15	20	* 50	* 22	270	304	* 130	* 34	23	43
24	4.7	13	16	16	28	26	304	224	144	30	16	42
25	5.0	11	20	* 20	20	34	266	210	183	27	9.2	42
26	5.6	13	24	9.8	25	31	181	205	144	70	6.2	41
27	5.0	14	28	16	32	31	161	179	103	50	5.0	38
28	4.7	13	* 57	20	42	61	146	153	95	49	4.4	38
29	5.6	12	64	22	-	92	124	140	92	56	5.0	37
30	6.2	12	23	25	-----	88	134	126	90	61	* 57	37
31	6.2	-----	17	66	-----	85	-----	128	-----	56	49	-----
Total	186.3	307.7	529.9	793.8	861	1,019	3,686	5,609	3,911	1,757	678.1	1,131
Mean	6.01	10.3	17.1	25.6	30.8	32.9	123	181	130	56.7	21.9	37.7
Ac-ft	370	610	1,050	1,570	1,710	2,020	7,310	11,130	7,760	3,480	1,340	2,240

Calendar year 1964: Max 176 Min 0 Mean 16.3 Ac-ft 11,840  
 Water year 1964-65: Max 360 Min 3.8 Mean 56.1 Ac-ft 40,590

Peak discharge (base, 700 cfs).--No peak above base.

\* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 20-30, Dec. 4-11, 13, 14, 16-27, Jan. 1-5, 27-29, Feb. 8-17, 24, 25, Mar. 2-5.

9-3720. McElmo Creek near Colorado-Utah State line

Location.--Lat 37°19'27", long 109°00'54", in NE¼ sec.2, T.35 N., R.20 W., on right bank 1½ miles upstream from Colorado-Utah State line, 2 miles upstream from Yellowjacket Creek, and 2 miles west of former town of McElmo.

Drainage area.--350 sq mi, approximately.

Records available.--March 1951 to September 1965.

Gage.--Water-stage recorder. Altitude of gage is 4,890 ft (from topographic map).

Average discharge.--14 years, 39.3 cfs (28,450 acre-ft per year).

Extremes.--Maximum discharge during year, 974 cfs Aug. 29 (gage height, 6.00 ft); minimum daily, 22 cfs Feb. 14.

1951-65: Maximum discharge, 1,700 cfs Aug. 29, 1951, July 27, 1957 (gage height, 7.05 ft), from rating curve extended above 320 cfs on basis of slope-area measurements at gage heights 4.78 and 7.05 ft; minimum daily, 0.1 cfs for several days in 1951, 1956.

Remarks.--Records good except those for periods of no gage-height record, which are poor. Diversions for irrigation of about 1,000 acres above station. One diversion above station for irrigation of about 60 acres below.

Rating table (gage height, in feet, and discharge,  
in cubic feet per second)  
(Shifting-control method used July 14, 18, 28, Aug. 29)

2.7	16	3.5	131
2.9	36	4.0	228
3.2	81	4.5	370

Discharge, in cubic feet per second, water year October 1964 to September 1965

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33	33	71	47	117	55	39	53	102	86	170	126
2	30	33	60	30	62	44	52	42	84	* 89	256	124
3	29	34	67	30	50	34	54	36	78	83	171	109
4	28	34	* 58	43	46	24	40	35	65	86	166	92
5	28	32	47	40	44	32	28	60	64	71	140	79
6	* 28	29	46	56	44	33	28	70	60	70	* 129	94
7	28	28	40	141	73	34	33	71	* 52	65	117	89
8	32	26	40	155	73	32	59	62	47	59	106	70
9	33	* 28	40	65	50	36	79	52	50	62	94	94
10	30	28	40	55	48	43	107	54	91	59	76	81
11	32	32	42	46	40	44	79	* 36	114	58	71	78
12	32	43	46	55	32	46	* 78	33	134	78	73	86
13	34	36	30	46	26	40	68	141	129	83	73	86
14	33	36	34	36	22	42	58	154	111	130	67	76
15	32	39	36	36	32	40	50	86	91	95	71	71
16	33	109	43	40	40	39	44	65	104	92	87	62
17	30	91	44	44	46	53	43	53	121	95	107	* 54
18	29	83	39	46	42	42	43	50	106	221	128	70
19	26	71	37	50	38	33	43	62	97	117	121	102
20	* 26	54	39	50	40	29	39	68	94	104	97	186
21	29	50	37	48	50	30	35	68	92	87	99	216
22	29	54	39	44	75	30	* 34	64	78	109	102	126
23	28	58	40	38	* 95	* 28	36	52	* 83	* 116	97	112
24	28	53	43	32	55	42	37	58	162	97	76	111
25	29	58	79	* 28	36	95	47	104	182	104	68	109
26	29	62	91	25	40	78	52	143	145	150	64	104
27	33	62	65	27	50	76	114	131	138	134	60	95
28	33	60	117	32	65	92	87	116	140	181	44	95
29	32	68	106	34	-	86	65	100	102	121	165	95
30	32	76	47	39	-----	65	60	87	81	106	* 262	102
31	30	-----	* 49	87	-----	50	-----	102	-----	159	164	-----
Total	938	1,500	1,612	1,545	1,427	1,447	1,631	2,318	2,997	3,167	3,521	2,994
Mean	30.3	50.0	52.0	49.8	51.0	46.7	54.4	74.8	99.9	102	114	99.8
Ac-ft	1,860	2,980	3,200	3,060	2,830	2,870	3,240	4,600	5,940	6,280	6,980	5,940

Calendar year 1964: Max 329 Min 1.4 Mean 34.2 Ac-ft 24,860  
 Water year 1964-65: Max 262 Min 22 Mean 68.8 Ac-ft 49,780

Peak discharge (base, 500 cfs).--July 28 (1745) 872 cfs (5.83 ft); Aug. 29 (2045) 974 cfs (6.00 ft).

\* Discharge measurement made on this day.

Note.--No gage-height record Jan. 10-25, Feb. 9 to Mar. 4.

## Transmountain diversions from Colorado River basin in Colorado

There are 22 tunnels or ditches, all of which are equipped with water-stage recorders and Parshall flumes or sharp-crested weirs. Records furnished by State engineer. The locations of these diversions are given in the following list.

9-100. Grand River ditch diverts water from tributaries of Colorado River to La Poudre Pass Creek (tributary to Cache la Poudre River) in NW $\frac{1}{4}$  sec.21, T.6 N., R.75 W., in Platte River basin. Two collection ditches beginning at headgates located in sec.28, T.5 N., R.76 W., and sec.29, T.6 N., R.75 W., intercept all tributaries upstream on each side of the Colorado River and converge at La Poudre Pass.

9-120. Eureka ditch diverts water from tributaries of Tonahutu Creek between headgate in sec.7, T.4 N., R.74 W., and Sprague Pass, in Colorado River basin, to Spruce Creek (tributary to Big Thompson River) in sec.16, T.4 N., R.74 W., in Platte River basin.

9-130. Alva B. Adams tunnel diverts water from Grand Lake and Shadow Mountain Lake in NW $\frac{1}{4}$  sec.9, T.3 N., R.75 W., in Colorado River basin, to Lake Estes (Big Thompson River) in sec.30, T.5 N., R.72 W., in Platte River basin. For daily discharge, see elsewhere in this report.

9-215. Berthoud Pass ditch diverts water from tributaries of Fraser River between headgate in sec.33, T.2 S., R.75 W., and Berthoud Pass, in Colorado River basin, to Hoop Creek (tributary to West Fork Clear Creek) in sec.10, T.3 S., R.75 W., in Platte River basin.

9-225. Moffat water tunnel diverts water from tributaries of Fraser River in Colorado River basin to South Boulder Creek in sec.2, T.2 S., R.74 W., in Platte River basin by means of three collection ditches extending from the right bank of St. Louis Creek in sec.20, T.2 S., R.76 W., right bank of Vasquez Creek in sec.18, T.2 S., R.75 W., right bank of Fraser River in sec.23, T.2 S., R.75 W., left bank of North Fork Ranch Creek in sec.24, T.1 S., R.75 W., and intercepting intermediate tributaries to the west portal of the tunnel. Since July 1959, water diverted by August P. Gumlick Tunnel (formerly Jones Pass tunnel) from tributaries of Williams Fork in Colorado River basin between headgates on right bank of Bobtail Creek in sec.28, T.3 S., R.76 W., and headgate on left bank of McQueary Creek in sec.16, T.3 S., R.76 W., and headgate on left bank of McQueary Creek in sec.16, T.3 S., R.76 W., has been redirected through Vasquez tunnel to Vasquez Creek in the Fraser River basin in sec.1, T.3 S., R.76 W., thence via collection ditch to the west portal of Moffat water tunnel where it is diverted to South Boulder Creek in sec.2, T.2 S., R.74 W., in Platte River basin. (See table of diversions by August P. Gumlick Tunnel published with records for Williams Fork near Leal, Colo.)

9-420. Hoosier Pass tunnel diverts water from tributaries of Blue River in Colorado River basin to Montgomery Reservoir (Middle Fork South Platte River) in sec.14, T.8 S., R.78 W., in Platte River basin; this water is again diverted to South Catamount Creek (tributary to Catamount Creek) in SE $\frac{1}{4}$  sec.14, T.13 S., R.69 W., in the Arkansas River basin. Collection conduits extending from the right bank of Crystal Creek (tributary to Spruce Creek) in sec.14, T.7 S., R.78 W., right bank of Spruce Creek in sec.23, T.7 S., R.78 W., right bank of McCullough Gulch in sec.26, T.7 S., R.78 W., right bank of Monte Cristo Creek in SW $\frac{1}{4}$ NE $\frac{1}{4}$  sec.2, T.8 S., R.78 W., left bank of Bemrose Creek in SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec.6, T.8 S., R.77 W., and intercepting intermediate tributaries, transport diversions to north portal of the tunnel.

9-460. Boreas Pass ditch diverts water from tributaries of Blue River between headgate in sec.26, T.7 S., R.77 W., and Boreas Pass, in Colorado River basin, to Tarryall Creek in sec.26, T.7 S., R.77 W., in Platte River basin.

9-485. Fremont Pass ditch diverts water from tributaries of Tenmile Creek in secs.2 and 3, T.8 S., R.79 W., in Blue River basin, to East Fork Arkansas River in sec.11, T.8 S., R.79 W., in Arkansas River basin.

9-505.9. Harold D. Roberts tunnel diverts water from Dillon Reservoir (Blue River) in sec.18, T.5 S., R.77 W., in Blue River basin, to North Fork South Platte River (tributary to South Platte River), in SW $\frac{1}{4}$ SW $\frac{1}{4}$  sec.4, T.7 S., R.74 W., in Platte River basin. Figures include a small amount of ground-water inflow between Dillon Reservoir and east portal of tunnel.

9-615. Columbine ditch diverts water from tributaries of Eagle River in sec.5, T.8 S., R.79 W., in Colorado River basin, to Chalk Creek (tributary to East Fork Arkansas River) in NW $\frac{1}{4}$  sec.9, T.8 S., R.79 W., in Arkansas River basin.

9-620. Ewing ditch diverts water from Piney Creek in sec.11, T.8 S., R.80 W., in Eagle River basin, to Thayer Gulch (tributary to Tennessee Creek) in sec.11, T.8 S., R.80 W., in Arkansas River basin.

9-625. Wurtz ditch diverts water from tributaries of Eagle River between headgate in sec.32, T.7 S., R.80 W., and Tennessee Pass, in Colorado River basin, to West Tennessee Creek (tributary to Tennessee Creek) in sec.17, T.8 S., R.80 W., in Arkansas River basin.

9-730. Twin Lakes tunnel diverts water from tributaries of Roaring Fork River between headgates (in sec.21, T.11 S., R.83 W., and sec.11, T.11 S., R.82 W.), and west portal of Twin Lakes tunnel (in sec.24, T.11 S., R.83 W.), in Colorado River basin, to North Fork Lake Creek in sec.22, T.11 S., R.82 W., in Arkansas River basin.

9-775. Busk-Ivanhoe tunnel diverts water from Ivanhoe Lake (Ivanhoe Creek), tributary to Fryingpan River in sec.13, T.9 S., R.82 W., in Roaring Fork River basin, to Busk Creek (tributary to Lake Fork) in sec.20, T.9 S., R.81 W., in Arkansas River basin.

9-1150. Larkspur ditch diverts water from tributaries of Tomichi Creek between headgates (in sec.11, T.48 N., R.6 E., and sec.1, T.47 N., R.6 E.), and Marshall Pass, in Gunnison River basin, to Poncha Creek (tributary to South Arkansas River) in SE $\frac{1}{4}$  sec.24, T.48 N., R.6 E., in Arkansas River basin.



## Transmountain diversions from Colorado River basin in Colorado--Continued

9-1182. Tarbell ditch diverts water from Lake Fork Cochetopa Creek (tributary to Cochetopa Creek), in NW $\frac{1}{4}$  sec.18, T.43 N., R.2 E., in Gunnison River basin, to Lake Fork Saguache Creek (tributary to Middle Fork Saguache Creek) in NE $\frac{1}{4}$  sec.18, T.43 N., R.2 E., in Rio Grande basin. All records available prior to October 1960 published in WSP 1733.

9-1210. Tabor ditch diverts water from tributaries of Cebolla Creek in secs.29 and 36, T.43 N., R.3 W., in Gunnison River basin, to Big Spring Creek, tributary to North Clear Creek in sec.35, T.43 N., R.3 W., in Rio Grande basin.

9-3410. Treasure Pass ditch diverts water from tributaries of Wolf Creek between headgates (in sec.31, T.38 N., R.2 E., and sec.6, T.37 N., R.2 E.), and Wolf Creek Pass, in San Juan River basin, to tributary of South Fork Rio Grande in sec.31, T.38 N., R.2 E., in Rio Grande basin.

9-3470. Piedra Pass ditch (Harley Fuchs ditches 1 and 2) diverts water from tributaries of Piedra River between headgates (in NW $\frac{1}{4}$  sec.4, T.38 N., R.1 W., and SW $\frac{1}{4}$  sec.33, T.39 N., R.1 W.), and Piedra Pass, in San Juan River basin, to South River in sec.4, T.38 N., R.1 W., in Rio Grande basin.

9-3480. Squaw Pass ditch diverts water from Williams Creek (tributary to Piedra River) in sec.13, T.39 N., R.3 W., in San Juan River basin, to Squaw Creek in sec.10, T.39 N., R.3 W., in Rio Grande basin.

9-3510. Fuchs ditch diverts water from North Fork Los Pinos River (tributary to Los Pinos River) in sec.4, T.39 N., R.4 W., in San Juan River basin, to Weminuche Creek in sec.33, T.40 N., R.4 W., in Rio Grande basin.

9-3515. Raber-Loehr ditch diverts water from left bank of Rincon la Vaca Creek (tributary to Los Pinos River) in sec.5, T.39 N., R.4 W., in San Juan River basin, to Weminuche Creek in sec.33, T.40 N., R.4 W., in Rio Grande basin.

## TRANSMOUNTAIN DIVERSIONS

Transmountain diversions from Colorado River basin in Colorado

Divisions, in acre-feet, water year October 1964 to September 1965

Diversion	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Water year
<b>TO PLATTE RIVER BASIN</b>													
Grand River ditch.....	0	0	0	0	0	0	0	0	2,860	10,710	2,460	342	16,370
Eureka ditch.....	0	0	0	0	0	0	0	0	13	113	47	17	190
Alva B. Adams tunnel.....	22,560	25,600	27,700	25,600	23,170	28,420	12,300	19,670	2,890	1,520	9,680	11,910	211,000
Berthoud Pass ditch.....	0	0	0	0	0	0	0	0	304	660	205	23	1,190
Moffat water tunnel.....	1,920	1,420	1,410	1,180	853	805	948	8,650	26,430	22,840	6,080	4,760	77,300
Boreas Pass ditch.....	0	0	0	0	0	0	0	0	0	13	39	0	52
Harold D. Roberts tunnel.....	4,680	6,580	3,360	3,290	807	307	3,280	2,020	0	0	906	5,060	30,290
Total.....	29,160	33,600	32,470	30,070	24,830	29,530	16,530	30,340	32,500	35,860	19,420	22,110	336,400
<b>TO ARKANSAS RIVER BASIN</b>													
Hoosier Pass tunnel.....	0	0	0	0	0	0	0	612	4,820	683	1,070	851	8,040
Fremont Pass ditch.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Columbine ditch.....	0	0	0	0	0	0	0	0	1,200	271	186	32	1,690
Ewing ditch.....	0	0	0	0	0	0	0	200	796	203	139	38	1,380
Wurtz ditch.....	0	0	0	0	0	0	0	488	2,040	573	276	33	3,410
Twin Lakes tunnel.....	361	238	190	309	251	174	342	4,160	20,390	10,670	5,890	2,740	45,720
Busk-Ivanhoe tunnel.....	180	0	0	0	0	0	0	430	3,500	974	648	142	5,870
Larkspur ditch.....	0	0	0	0	0	0	0	0	267	83	0	0	350
Total.....	541	238	190	309	251	174	342	5,890	33,010	13,460	8,210	3,840	66,460
<b>TO RIO GRANDE BASIN</b>													
Tarbell ditch.....	30	0	0	0	0	0	0	0	0	0	0	0	30
Tabor ditch.....	0	0	0	0	0	0	0	94	588	315	144	0	1,140
Treasure Pass ditch.....	0	0	0	0	0	0	0	13	230	336	13	0	592
Piedra Pass ditch.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Squaw Pass ditch.....	0	0	0	0	0	0	0	0	0	0	75	0	75
Fuchs ditch.....	0	0	0	0	0	0	0	0	218	286	72	0	576
Reber-Lohr ditch.....	0	0	0	0	0	0	0	0	976	1,350	647	249	3,220
Total.....	30	0	0	0	0	0	0	107	2,010	2,290	951	249	5,630
Grand total.....	29,730	33,840	32,660	30,380	25,080	29,710	16,870	36,340	67,520	51,600	28,580	26,200	408,500

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or flood-flow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at partial-record stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage stations. Discharge measurements made at miscellaneous sites for both low flow and high flow are given in a third table.

## Low-flow partial-record stations

Measurements of streamflow in the area covered by this report made at low-flow, partial-record stations are given in the following table. Most of these measurements were made during periods of base flow when streamflow is primarily from ground-water storage. These measurements, when correlated with the simultaneous discharge of a nearby stream where continuous records are available, will give a picture of the low-flow potentiality of the stream. The column headed "Period of record" shows the water years in which measurements were made at the same, or practically the same, site.

Discharge measurements made at low-flow partial-record stations during water year 1965

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (cfs)
Piney River basin						
9-589	Moniger Creek near Minturn, Colo.	Lat 39°43'37", long 106°28'50", 1½ miles upstream from mouth and 7½ miles north of Minturn.	0.76	1965	10- 8-64	0.02
					11- 5-64	0
					6- 9-65	7.88
					6-22-65	4.96
					7-21-65	.43
					8- 5-65	.30
	9- 1-65	.12				
Eagle River basin						
9-661.5	Pitkin Creek near Minturn, Colo.	Lat 39°38'35", long 106°18'10", near crossing of U. S. Highway 6, 900 ft above mouth, and 8 miles northeast of Minturn.	5.39	1964-65	10- 8-64	1.75
					11- 4-64	1.49
					12- 2-64	.96
					1- 6-65	.83
					2- 3-65	1.84
					3- 3-65	1.36
					4- 1-65	.90
					4-21-65	2.02
					5- 6-65	9.49
					5-19-65	11.3
					6- 8-65	35.3
					6-24-65	73.6
					7-15-65	34.8
					8- 3-65	24.1
9- 1-65	6.00					

## DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

## Crest-stage partial-record stations

The following table contains annual maximum discharges for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained but is not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

## Annual maximum at crest-stage partial-record stations

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Dis-charge (cfs)
Piney River basin							
9-589	Moniger Creek near Minturn, Colo.	Lat 39°43'37", long 106°28'50", on left bank 1½ miles upstream from mouth and 7½ miles north of Minturn.	0.76	1965	6-15-65	1.48	23
Eagle River basin							
9-661.5	Pitkin Creek near Minturn, Colo.	Lat 39°38'35", long 106°18'10", near crossing of U. S. Highway 6, 900 ft above mouth and 8 miles northeast of Minturn.	5.39	1965	6-16-65	2.20	83

## Measurements at miscellaneous sites

Measurements of streamflow at points other than gaging stations or partial-record stations are given in the following table. Those that are measurements of base flow are designated by an asterisk (\*); measurements of peak flow by a dagger (†).

Discharge measurements made at miscellaneous sites during water year 1965

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Platte River basin						
West Plum Creek....	South Platte River.....	NW¼ sec.12, T.7 S., R.68 W., 4.2 miles above confluence with East Plum Creek, 4.4 miles south of Sedalia, Colo.	125		6-16-65	†36,800
East Plum Creek....	West Plum Creek.	Sec.34, T.7 S., R.67 W., 2.2 miles north of Castle Rock, Colo., and 5.8 miles above confluence with West Plum Creek.	108		6-16-65	†126,000
Piney Creek.....	Cherry Creek....	NW¼NW¼ sec.20, T.5 S., R.66 W., at bridge on State Highway 83, 0.7 mile above mouth and 1.3 miles southeast of Melvin, Colo.	21.9		6-16-65	†14,100
Sand Creek.....	South Platte River.....	SE¼ sec.30, T.3 S., R.66 W., at bridge on Sable Avenue at northeast city limits of Aurora, Colo., and 1.0 mile above mouth.	113	1957	6-16-65	†13,400
Toll Gate Creek....	Sand Creek.....	On line between secs.6 and 7, T.4 S., R.66 W., at East 6th Avenue, at south city limits of Aurora, Colo., ¼ mile below confluence of East Toll Gate and West Toll Gate Creeks, and 3½ miles above mouth.	35.8	1957, 1963	6-16-65	†16,000
Sand Creek.....	South Platte River.....	NW¼ sec.27, T.3 S., R.67 W., at northeast city limits of Denver, Colo., 1,000 ft above railroad bridge, 1.8 miles below Toll Gate Creek, and 4 miles above mouth.	187	1957, 1963	6-16-65	†18,900
South Platte River.	North Platte River.....	NW¼ sec.6, T.1 N., R.66 W., at Fort Lupton, Colo., 50 ft below bridge on State Highway 52 and 1 mile below Dry Creek.	5,010	1906†, 1929-57†	6-17-65	†36,800
Lonetree Creek....	South Platte River.....	NE¼ sec.8, T.9 N., R.66 W., 200 ft above bridge on U. S. Highway 85, 4½ miles north of Nunn, Colo.	199	1951-57†	6-14-65	†5,810
Crow Creek.....	....do.....	Sec.29, T.9 N., R.61 W., just below Jackson Draw 9 miles west of Keota, Colo.	a633		6-15-65	†b4,000
Coal Creek.....	Crow Creek.....	SW¼ sec.24, T.8 N., R.64 W., at bridge on State Highway 14, 8.8 miles west of Briggsdale, Colo.	c73.1		6-15-65	†5,340
Kiowa Creek sub-watershed No. J-33.....	Kiowa Creek....	NW¼SE¼ sec.9, T.11 S., R.64 W., at dam 0.8 mile above mouth, 3 miles north of Eastonville, Colo.	1.12		6-17-65	†2,600
Kiowa Creek sub-watershed No. R-3.....	....do.....	NW¼NE¼ sec.26, T.10 S., R.64 W., at dam 0.9 mile above mouth, 4.6 miles south of Elbert, Colo.	2.82		6-17-65	†2,010
Kiowa Creek sub-watershed No. Q-51.....	....do.....	SW¼NE¼ sec.23, T.10 S., R.64 W., at dam 0.9 mile above mouth, 3.8 miles south of Elbert, Colo.	.59		6-17-65	†1,270
Kiowa Creek.....	South Platte River.....	NW¼ sec.35, T.3 S., R.63 W., 350 ft above bridge on old U. S. Highways 36, 40, and 287, and 1 mile southeast of Bennett, Colo.	236	1960-64†	6-18-65	†24,900
East Bijou Creek...	....do.....	Sec.13, T.5 S., R.60 W., at Deer Trail, Colo.	302	1935	6-17-65	†274,000
Middle Bijou Creek.	East Bijou Creek	Sec.28, T.4 S., R.60 W., just below bridge on U. S. Highways 40 and 287, 5 miles northwest of Deer Trail, Colo.	190	1935	6-17-65	†145,000
West Bijou Creek...	....do.....	Sec.16, T.9 S., R.62 W., half a mile below unnamed tributary, 2 miles above State Highway 86, and 9 miles southeast of Kiowa, Colo.	85.7		6-17-65	†67,200
Do.....	....do.....	Sec.8, T.4 S., R.61 W., at bridge on U. S. Highways 36, 40, and 287, half a mile north of Byers, Colo.	277		6-17-65	†75,500
Bijou Creek.....	South Platte River.....	SW¼SW¼ sec.6, T.3 N., R.59 W., at bridge on U. S. Highways 6 and 34, 2 miles northeast of Wiggins, Colo., and 5.7 miles below Antelope Creek.	1,314	1935, 1950-56†	6-18-65	†d466,000

† Peak flow.

‡ Operated as a continuous-record gaging station.

a 106 sq mi is probably noncontributing.

b About.

c 5.6 sq mi is probably noncontributing.

d Slope-area measurement at site 5.6 miles downstream.

## DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1965--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Platte River basin--Continued						
South Platte River.	North Platte River.....	Sec.31, T.4 N., R.57 W., at bridge on State Highway 52, half a mile north of Fort Morgan, Colo., and 3½ miles below Bijou Creek.	14,810	1935, 1944-58†	6-18-65	(e)
Beaver Creek.....	South Platte River.....	Sec.13, T.2 N., R.56 W., at bridge on State Highway 71, 7 miles south of Brush, Colo., and 13 miles upstream from mouth.	946		6-18-65	†24,300
North Pawnee Creek.	....do.....	Sec.18, T.9 N., R.57 W., just above Igo Creek 7 miles above confluence with South Pawnee Creek and 11½ miles north of New Raymer, Colo.	82.3		6-14-65	†6,280
Pawnee Creek.....	....do.....	Sec.5, T.8 N., R.56 W., 2 miles below confluence of North Pawnee and South Pawnee Creeks, 6 miles north of Stoneham, Colo.	387		6-15-65	†26,700
Do.....	....do.....	NE¼ sec.31, T.8 N., R.54 W., at bridge on State Highway 14, 3 miles below Raymer Creek and 13 miles west of Sterling, Colo.	629		6-15-65	†35,200
Arkansas River basin						
Jimmy Camp Creek...	Fountain Creek..	Sec.22, T.15 S., R.65 W., 4 miles north-east of Fountain, Colo., and 4½ miles above mouth.	54.3		6-17-65	†124,000
Black Squirrel Creek.....	Chico Creek.....	Sec.11, T.12 S., R.64 W., at bridge on State Highway 217, 3 miles west of Peyton, Colo.	16.3		6-17-65	†10,400
Do.....	....do.....	Sec.36, T.15 S., R.63 W., 1 mile north of Squirrel Creek Road, 10 miles south of Ellicott, Colo.	353		6-17-65	†141,000
Chico Creek.....	Arkansas River..	NE¼ sec.31, T.20 S., R.62 W., 1 mile above mouth, 1½ miles west of North Avondale, Colo.	864	1921, 1941-46†	6-18-65	†52,200
Arkansas River.....	Mississippi River.....	SW¼ sec.4, T.21 S., R.62 W., at U. S. 50 Bypass 1.2 miles below Chico Creek, and 1.2 miles south of North Avondale, Colo.	7,157		6-18-65	†104,000
Timpas Creek.....	Arkansas River..	Sec.26, T.23 S., R.56 W., 1 mile west of Swink, Colo., and 1½ miles above mouth.	481	1903, 1922-25†	6-17-65	†21,400
Crooked Arroyo.....	....do.....	Sec.32, T.23 S., R.55 W., half a mile above mouth, 3 miles west of La Junta, Colo.	87	1903, 1922-25†, 1953	6-17-65	†5,610
Horse Creek.....	....do.....	SE¼SW¼ sec.33, T.22 S., R.53 W., 2½ miles above mouth, 12 miles northeast of La Junta, Colo.	1,300	1903, 1908	6-18-65	†5,070
Adobe Creek.....	....do.....	Sec.35, T.22 S., R.53 W., at railroad bridge half a mile above State Highway 194, 1 mile above mouth, and 6 miles west of Las Animas, Colo.	589	1903	6-18-65	†8,600
North Fork Purgatoire River.	....do.....	Sec.36, T.33 S., R.67 W., at Weston, Colo., just below bridge above Wet Canyon.	216		6-16-65	†1,920
South Fork Purgatoire River.	Purgatoire River	Sec.36, T.33 S., R.67 W., at railroad bridge just above confluence with North Fork at Weston, Colo.	101		6-16-65	†1,340
Zarcillo Canyon....	....do.....	Sec.34, T.33 S., R.66 W., just above bridge on State Highway 12, 2 miles west of Segundo, Colo.	36.4	1955	6-17-65	†1,630
Purgatoire River...	Arkansas River..	NW¼ sec.1, T.34 S., R.66 W., at railroad bridge at Segundo, Colo., 2 miles below Zarcillo Canyon.	485	1955	6-16-65	†8,500
Burrow Canyon.....	Purgatoire River	SW¼ sec.35, T.33 S., R.65 W., at bridge on State Highway 12, 0.4 mile west of Madrid, Colo.	28.3	1955	6-17-65	†3,120
Reilly Canyon.....	....do.....	NW¼ sec.31, T.33 S., R.64 W., 350 ft above State Highway 12, 1 mile south-west of Cokedale, Colo.	36.7	1955	6-16-65	†3,410
Long Canyon.....	....do.....	SE¼ sec.31, T.33 S., R.64 W., 1 mile above mouth, 2½ miles southwest of Sopris, Colo.	104	1955	6-17-65	†4,480
Raton Creek.....	....do.....	Sec.9, T.35 S., R.63 W., just above U. S. Highways 85 and 87, 4 miles southeast of Morley, Colo.	5.27	1955	6-16-65	†4,660

\* Operated as a continuous-record gaging station.

e Gage height, 18.2 ft (discharge not determined).

† Peak flow.

Discharge measurements made at miscellaneous sites during water year 1965--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Arkansas River basin--Continued						
Joe Creek.....	Raton Creek.....	Sec.6, T.35 S., R.63 W., at old U. S. Highways 85 and 87 crossing 3 miles southeast of Morley, Colo.	4.54	1955	6-17-65	†760
Raton Creek tributary.....	....do.....	SW¼ sec.13, T.34 S., R.64 W., 600 ft above mouth, 2 miles south of Starkville, Colo.	8.1		6-17-65	†1,660
Raton Creek.....	Purgatoire River	NW¼ sec.1, T.34 S., R.64 W., at bridge on U. S. Highways 85 and 87 in Starkville, Colo.	60.5	1942, 1955	6-17-65	†12,900
Grasmack Arroyo....	....do.....	N½ sec.25, T.33 S., R.64 W., at bridge on old U. S. Highways 85 and 87, 1.5 miles south of city hall in Trinidad, Colo.	3.6	1955	6-17-65	†1,090
Gray Creek.....	....do.....	NW¼ sec.4, T.33 S., R.63 W., half a mile above mouth, 3 miles northeast of Trinidad, Colo.	16.0	1955	6-17-65	†3,540
Purgatoire River...	Arkansas River..	NW¼ sec.2, T.32 S., R.62 W., at bridge on U. S. Highway 350, 1 mile below Chicosa Creek, 3 miles east of Hoehne, Colo.	1,015	1955	6-17-65	†20,900
San Isedro Creek...	San Francisco Creek.....	SE¼ sec.2, T.35 S., R.61 W., 8 miles west of Trinchera, Colo.	32.1		6-17-65	†7,960
Trinchera Creek....	Purgatoire River	Sec.33, T.33 S., R.59 W., at U. S. Highway 160, 6 miles northeast of Trinchera, Colo.	129	1954-55	6-17-65	†4,500
Alkali Arroyo.....	....do.....	Sec.18, T.33 S., R.58 W., 500 ft above bridge on U. S. Highway 160, 10 miles northeast of Trinchera, Colo.	34.5	1954-55	6-18-65	†2,600
Purgatoire River...	Arkansas River..	Sec.10, T.31 S., R.58 W., at gas line crossing and county road bridge, 18 miles southeast of Thatcher, Colo.	1,935	1954-55	6-18-65	†47,700
Chacuaco Creek.....	Purgatoire River	Sec.12, T.29 S., R.56 W., 2 miles above mouth, 32 miles south of La Junta, Colo.	387	1955	6-17-65	†38,900
Smith Canyon.....	....do.....	NE¼ sec.14, T.27 S., R.54 W., at concrete ford on county road, 4½ miles above mouth and 11 miles northwest of Nina-view, Colo.	291	1955	6-18-65	†84,000
Rule Creek.....	Arkansas River..	Sec.6, T.26 S., R.51 W., just below Muddy Creek, 3½ miles north of Toonerville, Colo.	363		6-17-65	†276,000
Caddoa Creek.....	....do.....	Sec.9, T.23 S., R.49 W., 0.3 mile east of Caddoa, Colo., 1 mile east of John Martin Reservoir, and 2 miles above mouth.	131	1903, 1942-46†, 1949, 1956	6-18-65	†37,600
Mud Creek.....	....do.....	SW¼ sec.24, T.23 S., R.49 W., 4 miles southeast of Caddoa, Colo., 6 miles above mouth.	186	1903, 1942-43†, 1944-45, 1949, 1956	6-18-65	†53,400
Dry Creek.....	....do.....	NW¼ sec.16, T.23 S., R.47 W., 1 mile south of Lamar, Colo., 2½ miles above mouth.	73.0		6-18-65	†28,300
Willow Creek.....	....do.....	Sec.19, T.23 S., R.46 W., 2,000 ft above U. S. Highway 287, 3½ miles south of Lamar, Colo.	40.5		6-18-65	†24,300
Clay Creek.....	....do.....	Sec.27, T.23 S., R.46 W., 6 miles southeast of Lamar, Colo., 6½ miles above mouth.	213		6-18-65	†158,000
Big Sandy Creek....	....do.....	Sec.13, T.11 S., R.62 W., just below unnamed tributary 1 mile below bridge on county road, 4 miles north of Calhan, Colo.	49.0		6-17-65	†60,700
South Rush Creek...	North Rush Creek	Sec.3, T.14 S., R.55 W., just above State Highway 94, 8 miles north of Karval, Colo.	188		6-17-65	†3,710
Big Sandy Creek....	Arkansas River..	Sec.21, T.22 S., R.45 W., half a mile above State Highway 196, 1 mile above mouth, and 8 miles northeast of Lamar, Colo.	2,840		6-17-65	†3,600
Smith Arroyo.....	....do.....	Sec.2, T.23 S., R.45 W., 1½ miles above mouth, 7 miles northwest of Granada, Colo.	29.1		6-17-65	†10,600
Wolf Creek.....	....do.....	SE¼ sec.13, T.24 S., R.45 W., just above bridge on State Highway 117, 9½ miles southwest of Granada, Colo.	62.5		6-17-65	†35,300

† Peak flow.

\* Operated as a continuous-record gaging station.

## DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1965--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Arkansas River basin--Continued						
Granada Creek.....	Arkansas River..	Sec.26, T.24 S., R.44 W., 2½ miles above State Highway 51, 10 miles south of Granada, Colo.	17.7		6-17-65	†12,600
Two Butte Creek....	....do.....	NE¼ sec.6, T.28 S., R.46 W., at bridge on U. S. Highways 287 and 385, 16 miles north of Springfield, Colo.	453		6-17-65	†82,600
Do.....	....do.....	SE¼ sec.21, T.23 S., R.42 W., 1 mile above mouth, 2 miles southwest of Holly, Colo.	817	1903, 1909, 1942-46†	6-17-65	†182,000
Wild Horse Creek...	....do.....	Sec.14, T.23 S., R.42 W., at bridge on State Highway 89 a quarter of a mile southeast of Holly, Colo., half a mile above mouth.	272	1903, 1923-35†, 1939-50†, 1951-52	6-17-65	†10,600
Lone Rock Draw.....	Sand Arroyo.....	Sec.28, T.31 S., R.46 W., just above railroad bridge, 5 miles south of Springfield, Colo.	106		6-17-65	†7,330
Bear Creek.....	Horse Creek.....	Sec.17, T.30 S., R.64 W., at bridge on U. S. Highways 287 and 385, 2 miles north of Springfield, Colo.	113		6-17-65	†13,200
Roaring Fork River basin						
Rocky Fork Creek...	Fryingpan River.	NW¼ sec.18, T.8 S., R.84 W., at mouth near private bridge, 1½ miles west of Ruedi, Colo.	†13	1959-64	11- 3-64 12- 1-64 1- 5-65 2- 2-65 3- 2-65 3-30-65 4-21-65 5- 5-65 5-20-65 6- 2-65 7-13-65 8- 4-65 9- 9-65	*2.26 *1.99 *2.20 *1.97 *2.17 *2.53 5.68 26.9 39.2 43.8 8.28 *4.89 *3.10
Colorado River Main Stem						
Colorado River.....	Gulf of California....	Sec.10, T.6 S., R.91 W., at county road bridge half a mile southeast of Silt, Colo.	†6,600		1-20-65 4-26-65 5-14-65 6-18-65 9- 9-65	1,310 4,370 5,620 23,400 3,210
Do.....	....do.....	Sec.27, T.8 S., R.97 W., at county road bridge at east edge of De Beque, Colo.	†7,400		1-21-65 4-27-65 5-17-65 6-18-65 9- 9-65	1,170 3,970 5,370 21,600 3,430
Do.....	....do.....	Sec.23, T.1 S., R.1 E., Ute Meridian, at county road bridge 2 miles south of Clifton, Colo.	†8,800		2- 9-65 3-11-65 4-27-65 5-24-65 6-29-65 9- 7-65	833 1,370 3,410 13,700 11,400 2,490
Gunnison River basin						
Gunnison River.....	Colorado River..	Sec.13, T.15 S., R.96 W., at U. S. Highway 50 bridge at north side of Delta, Colo.	†5,620	1919-20	5-24-65	10,500
Uncompahgre River..	Gunnison River..	Sec.31, T.44 N., R.7 W., at 7th Avenue bridge below Oak Creek in Ouray, Colo.	†72		1-27-65 4- 7-65 4-28-65 6- 4-65 6-28-65 7-22-65 8- 5-65 9-10-65	20.8 30.1 116 397 518 396 240 103

† Peak flow.

‡ Operated as a continuous-record gaging station.

f Approximately.

\* Base flow.



Discharge measurements made at miscellaneous sites during water year 1965--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (cfs)
Gunnison River basin--Continued						
Gunnison River.....	Colorado River..	Sec.9, T.15 S., R.97 W., at county road bridge 10 miles west of Delta, Colo.	f7,100		5-24-65 6-15-65	13,300 13,200
Dolores River basin						
Dolores River.....	Colorado River..	SW $\frac{1}{4}$ sec.20, T.47 N., R.18 W., at highway bridge 2,000 ft southeast of Bedrock,	f1,910	1918-22 $\frac{1}{2}$ , 1958	1-25-65 4- 6-65 4-27-65 6- 2-65 6-29-65 7-20-65 9- 8-65	38.5 166 3,370 1,330 1,190 302 18.5
San Miguel River...	Dolores River...	SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec.2, T.47 N., R.17 W., 20 ft below bridge on State Highway 141, 1 $\frac{1}{4}$ miles southeast of Uravan, Colo.	f1,550	1954-62	1-26-65 4- 6-65 4-27-65 6- 2-65 6-28-65 7-20-65 9- 8-65	*62.4 132 1,540 843 919 993 249
Dolores River.....	Colorado River..	Sec.11, T.48 N., R.18 W., at highway bridge 4 $\frac{1}{2}$ miles below San Miguel River, 6 $\frac{1}{2}$ miles northeast of Uravan, Colo.	3,497	1956, 1962	1-26-65 4- 6-65 4-27-65 6- 2-65 6-28-65 7-20-65 9- 8-65	102 309 5,090 2,250 1,990 1,220 284
Green River basin						
Yampa River.....	Green River.....	S $\frac{1}{2}$ sec.1, T.6 N., R.91 W., at bridge on State Highway 13, 0.9 mile south of Craig, Colo.	f1,730	1898, 1901-2 $\frac{1}{2}$ , 1903, 1904-7 $\frac{1}{2}$ , 1910-17 $\frac{1}{2}$ , 1958	1-27-65 4- 8-65 5- 3-65 5-17-65 6-24-65 9-30-65	191 1,040 8,110 6,170 5,610 928
Long Park Creek....	Lost Creek.....	SE $\frac{1}{2}$ sec.15, T.1 N., R.90 W., at mouth 9 $\frac{1}{2}$ miles northeast of Buford, Colo.	f10		5-20-65 6-10-65	66.0 22.4

f Approximately.

# Operated as a continuous-record gaging station.

\* Base flow.



# INDEX

	Page		Page
Alamosa Creek above Terrace Reservoir.....	127	Clear Creek (Platte River basin), at mouth, near Derby.....	32
Alkali Creek near Wolcott.....	201	near Golden.....	31
Alva B. Adams tunnel at east portal, near Estes Park.....	146	near Lawson.....	30
diversion by.....	358,360	Clear Fork ditch, diversion by.....	230
Animas River, at Durango.....	352	Coal Creek (Green River basin) near Meeker.....	327
at Howardsville.....	348	Coal Creek (Platte River basin) near Plainview.....	40
near Cedar Hill, N. Mex.....	353	Colorado River, at Glenwood Springs.....	205
Antelope Creek near Kremmling.....	168	at Hot Sulphur Springs.....	158
Apishapa River near Fowler.....	95	below Baker Gulch, near Grand Lake.....	144
Arapaho Creek at Monarch Lake Outlet.....	148	below Lake Granby.....	150
Arkansas River, at Buena Vista.....	75	near Cameo.....	237
at Canon City.....	82	near Colorado-Utah State line.....	293
at Catlin Dam, near Fowler.....	96	near Dotsero.....	204
at Granite.....	73	near Granby.....	151
at La Junta.....	97	near Grand Lake.....	145
at Lamar.....	108	near Kremmling.....	183
at Las Animas.....	98	Columbine ditch at Deadman Hill, diversion by.....	53
at Parkdale.....	80	Columbine ditch near Fremont Pass, diversion by.....	358,360
at Salida.....	78	Conejos River, below Platoro Reservoir.....	135
below John Martin Reservoir.....	107	near La Sauses.....	140
near Avondale.....	90	near Mogote.....	136
near Coolidge, Kans.....	110	Cottonwood Creek (Arkansas River basin) below Hot Springs,	
near Malta.....	71	near Buena Vista.....	76
near Nathrop.....	77	Cottonwood Creek (Gunnison River basin) near Grand Mesa.....	277
near Nepesta.....	94	Cow Creek (tributary to Leroux Creek) near Cedaredge.....	272
near Portland.....	83	Cow Creek (tributary to Uncompahgre River) near Ridgway.....	288
near Pueblo.....	84	Crest-stage partial-record stations.....	362
near Wellsville.....	79	Crystal Creek near Maher.....	262
August P. Gumlick Tunnel, diversion by.....	160	Crystal River, above Avalanche Creek, near Redstone.....	223
		at Placita.....	222
Battlement Creek near Grand Valley.....	234	Cucharas River at Boyd Ranch, near La Veta.....	92
Bear Creek, at Morrison.....	23	Culebra Creek at San Luis.....	141
at mouth, at Sheridan.....	24	Cunningham Creek near Norrie.....	216
Beaver Creek (tributary to Colorado River) near Rifle.....	233	Curecanti Creek near Sapinero.....	259
Beaver Creek (tributary to East Fork Dallas Creek) near			
Ridgway.....	285	Dallas Creek, near Ridgway.....	287
Beaver Creek (tributary to San Miguel River) near Norwood...	290	East Fork, near Ridgway.....	284
Bemrose-Hoosier diversion near Hoosier Pass.....	172	West Fork, near Ridgway.....	283
Berthoud Pass ditch at Berthoud Pass, diversion by.....	358,360	Dickson Creek near Minturn.....	185
Big Alkali Creek near Burns.....	190	Dillon Reservoir at Dillon.....	178
Big Thompson River, at Estes Park.....	42	Disappointment Creek near Dove Creek.....	296
at mouth, near La Salle.....	47	Dolores River, at Dolores.....	295
at mouth of canyon, near Drake.....	44	below Rico.....	294
near Estes Park.....	43		
Bighorn Creek near Minturn.....	197	Eagle River, at Red Cliff.....	191
Black Gore Creek near Minturn.....	196	below Gypsum.....	203
Blue River, above Green Mountain Reservoir.....	180	East Divide Creek near Silt.....	232
below Dillon.....	179	East Meadow Creek near Minturn.....	187
below Green Mountain Reservoir.....	182	East River, at Almont.....	248
near Dillon.....	174	below Cement Creek, near Crested Butte.....	247
Bob Creek ditch near Glendevy, diversion by.....	53	Elevenmile Canyon Reservoir near Lake George, contents of...	45,46
Bonny Reservoir near Hale.....	67	Elk River at Clark.....	306
Booth Creek near Minturn.....	198	Elkhead Creek, near Clark.....	309
Boreas Pass ditch at Boreas Pass, diversion by.....	358,360	near Elkhead.....	310
Boulder Creek near Orodell.....	38	North Fork, near Elkhead.....	311
Brush Creek (Eagle River basin) near Eagle.....	202	Eureka ditch near Flattop Mountain, diversion by.....	358,360
Brush Creek (Plateau Creek basin) near Collbran.....	242	Ewing ditch at Tennessee Pass, diversion by.....	358,360
Busk-Ivanhoe tunnel at east portal, near Malta, diversion			
by.....	358,360	Fall Creek near Rustic.....	49
Buzzard Creek, below Owens Creek, near Heiberger.....	240	Falls Creek near Durango.....	350
near Collbran.....	241	Fish Creek near Milner.....	307
		Fountain Creek, at Pueblo.....	89
Cache la Poudre River, at mouth of canyon, near Fort Collins		at Security.....	88
near Greeley.....	55	near Colorado Springs.....	85
near Rustic.....	48	Fourmile Creek near Glenwood Springs.....	228
North Fork, near Livermore.....	54	Fraser River near Winter Park.....	154
South Fork, near Rustic.....	52	Freeman Creek near Minturn.....	186
Cameron Pass ditch at Cameron Pass, diversion by.....	53	Fremont Pass ditch at Fremont Pass, diversion by.....	358,360
Carnero Creek near La Garita.....	125	Frijole Creek near Alfalfa.....	101
Carter Lake near Berthoud, contents of.....	45,46	Frontier ditch near Coolidge, Kans.....	109
Cattle Creek near Carbondale.....	227	Fryingpan River, at Norrie.....	214
Cheesman Lake near Deckers, contents of.....	45,46	near Ivanhoe Lake.....	208
Cherry Creek, at Denver.....	28	near Norrie.....	209
below Cherry Creek Reservoir.....	27	near Ruedi.....	220
near Franktown.....	25	North Fork, above Cunningham Creek, near Norrie.....	215
near Melvin.....	26	North Fork, below Cunningham Creek, near Norrie.....	217
Cimarron Creek, at Cimarron.....	261	North Fork, near Norrie.....	218
near Cimarron.....	260	South Fork, at upper station, near Norrie.....	211
Cimarron ditch, diversion by.....	260	South Fork, near Norrie.....	212,213
Clear Creek (Arkansas River basin) above Clear Creek		Fuchs ditch at Weminuche Pass, diversion by.....	359,360
Reservoir.....	74		

	Page		Page
George Creek near Grand Mesa.....	274	Navajo River, above Chromo.....	337
Goose Creek (Platte River basin) above Cheesman Lake.....	15	at Banded Peak Ranch, near Chromo.....	336
Goose Creek (Rio Grande basin) at Wagonwheel Gap.....	115	at Edith.....	338
Gore Creek at upper station, near Minturn.....	195	North Clear Creek below Continental Reservoir.....	112
Grand River ditch at La Poudre Pass, diversion by.....	358,360	North Crestone Creek near Crestone.....	124
Grape Creek near Westcliffe.....	81	North Platte River near Northgate.....	11
Grassy Creek near Mount Harris.....	308	North Thompson Creek near Carbondale.....	224
Green Mountain Reservoir near Kremmling.....	181		
Gunnison River, below Blue Mesa Dam.....	258	Ohio Creek, at Baldwin.....	249
below Gunnison tunnel.....	263	near Baldwin.....	250
near Grand Junction.....	292	Owens Creek ditch, diversion by.....	231
near Gunnison.....	251		
near Lazear.....	273	Paonia Reservoir, contents of.....	267
North Fork, near Somerset.....	267	Pass Creek near Kremmling.....	170
Gunnison tunnel, diversion by.....	263	Piceance Creek below Ryan Gulch, near Rio Blanco.....	330
		Piedra Pass ditch at Piedra Pass, diversion by.....	359,360
Halfmoon Creek near Malta.....	70	Piedra River, near Arboles.....	341
Harold D. Roberts tunnel at Grant, diversion by.....	358,360	near Piedra.....	340
Hermosa Creek near Hermosa.....	349	Piney River, below Piney Lake, near Minturn.....	184
Homestake Creek near Red Cliff.....	194	near State Bridge.....	188
Hoosier Pass tunnel at Hoosier Pass, diversion by.....	358,360	Pinos Creek near Del Norte.....	118,119
Horsetooth Reservoir near Fort Collins, contents of.....	45,46	Plateau Creek, near Cameo.....	243
Hubbard Creek near Paonia.....	268	near Collbran.....	239
Hubbard ditch, diversion by.....	301	Platoro Reservoir at Platoro.....	134
Huerfano River, at Manzanares Crossing, near Redwing.....	91	Pleasant Valley Creek near Noel.....	286
below Huerfano Valley Dam, near Undercliffe.....	93	Plum Creek near Louviers.....	21
Hunter Creek above Midway Creek, near Aspen.....	207	Prince Creek near Carbondale.....	226
		Purgatoire River, at Ninemile Dam, near Higbee.....	104
Ivanhoe Creek near Norrie.....	210	at Trinidad.....	99
		near Alfalfa.....	103
John Martin Reservoir at Caddoa.....	106	near Hoehne.....	100
Jones Pass tunnel (see August P. Gumlick Tunnel)		near Las Animas.....	105
Junction Creek near Durango.....	351		
		Quartz Creek near Ohio City.....	254
Kannah Creek near Whitewater.....	291		
Kerber Creek at Ashley Ranch, near Villa Grove.....	122	Raber-Lohr ditch at Weminuche Pass, diversion by.....	359,360
Keystone Gulch near Dillon.....	176	Ranch Creek near Fraser.....	157
Kiowa Creek, at Elbert.....	59	Red Dirt Creek near Kremmling.....	169
at K-79 Reservoir, near Eastonville.....	58	Red Sandstone Creek near Minturn.....	200
at Kiowa.....	61	Republican River, South Fork, near Hale.....	68
Kiser Creek near Grand Mesa.....	276	South Fork, near Idalia.....	65
		Rio Blanco near Pagosa Springs.....	335
La Garita Creek near La Garita.....	126	Rio Grande, above mouth of Trinchera Creek, near La Sauses..	129
La Jara Creek at Gallegos Ranch, near Capulin.....	128	at Alamosa.....	121
La Plata River, at Colorado-New Mexico State Line.....	355	at Colorado-New Mexico State line.....	143
at Hesperus.....	354	at Thirtymile Bridge, near Creede.....	111
Lake Creek above Twin Lakes Reservoir.....	72	at Wagonwheel Gap.....	114
Lake Fork (Arkansas River basin) above Sugar Loaf Reservoir.....	69	near Del Norte.....	117
Lake Fork (Gunnison River basin) at Gateview.....	257	near Lobatos.....	142
Lake Granby near Granby.....	149	near Monte Vista.....	120
Landsman Creek near Hale.....	66	South Fork, at South Fork.....	116
Laramie River near Glendevey.....	12	Roan Creek, above Clear Creek, near De Beque.....	235
Laramie-Poudre tunnel near Chambers Lake, diversion by.....	53	near De Beque.....	236
Larkspur ditch at Marshall Pass, diversion by.....	358,360	Roaring Fork River, at Glenwood Springs.....	229
Leroux Creek near Cedaredge.....	271	near Aspen.....	206
Lime Creek near Troutville.....	219	Rock Creek near Toponas.....	189
Little Beaver Creek, near Idylwilde.....	50		
near Rustic.....	51	Saguache Creek near Saguache.....	123
Little Muddy Creek near Parshall.....	159	St. Louis Creek near Fraser.....	156
Little Snake River, near Baggs, Wyo.....	319	St. Vrain Creek, at Lyons.....	35
near Lily.....	320	at mouth, near Platteville.....	41
near Slater.....	316	near Longmont.....	36
Los Pinos River (Rio Grande basin) near Ortiz.....	138	San Antonio River, at mouth, near Manassa.....	139
Los Pinos River (San Juan River basin), at La Boca.....	346	at Ortiz.....	137
near Bayfield.....	345	San Francisco Creek near Alfalfa.....	102
Lost Creek near Buford.....	322	San Juan River, at Pagosa Springs.....	334
Low-flow partial-record stations, discharge measurements at.....	361	at Rosa, N. Mex.....	342
		East Fork, above Sand Creek, near Pagosa Springs.....	332
McCullough-Spruce-Crystal diversion near Hoosier Pass.....	173	East Fork, near Pagosa Springs.....	333
McElmo Creek near Colorado-Utah State line.....	357	near Carracas.....	339
Mancos River near Towaoc.....	356	San Miguel River, at Naturita.....	300
Michigan ditch at Cameron Pass, diversion by.....	53	near Placerville.....	298
Michigan River, North Fork, near Gould.....	10	near Telluride.....	297
Middle Boulder Creek at Nederland.....	37	Sangre de Cristo Creek near Fort Garland.....	131
Middle Creek near Minturn.....	199	Shadow Mountain Lake near Grand Lake.....	147
Middle Hubbard Creek near Paonia.....	269	Skylark Creek near Parshall.....	161
Milk Creek near Thornburg.....	314	Skyline ditch at Chambers Lake, diversion by.....	53
Miscellaneous sites, discharge measurements at.....	363-367	Slater Fork near Slater.....	317
Moffat water tunnel at east portal, diversion by.....	358,360	Smith Fork near Crawford.....	264
Monte Cristo diversion near Hoosier Pass.....	171	Snake River near Montezuma.....	175
Muddy Creek near Kremmling.....	167	Soap Creek near Sapinero.....	256

	Page		Page
South Boulder Creek near Eldorado Springs.....	39	Uncompahgre River, at Delta.....	290
South Platte River, above Elevenmile Canyon Reservoir, near Hartsel.....	13	near Ridgway.....	282
at Balzac.....	63	Ute Creek near Fort Garland.....	132
at Denver.....	29	Vallecito Creek near Bayfield.....	343
at Henderson.....	33	Vallecito Reservoir near Bayfield.....	344
at Julesburg.....	64	Vasquez Creek near Winter Park.....	155
at Littleton.....	22	Vega Reservoir near Colbran.....	238
at South Platte.....	19		
at Waterton.....	20	Ward Creek near Grand Mesa.....	275
below Cheesman Lake.....	16	Wearyman Creek near Red Cliff.....	192
near Kersey.....	57	West Divide Creek, below Willow Creek, near Raven.....	230
near Lake George.....	14	near Raven.....	231
near Weldona.....	62	West Hubbard Creek near Paonia.....	270
North Fork, at South Platte.....	18	West Kiowa Creek at Elbert.....	59
North Fork, below Geneva Creek, at Grant.....	17	West Monument Creek near Pikeview.....	86
South St. Vrain Creek near Ward.....	34	West Muddy Creek, near Ragged Mountain.....	265
Spring Creek at La Boca.....	347	near Somerset.....	266
Squaw Pass ditch at Squaw Pass, diversion by.....	359,360	West Sopris Creek near Basalt.....	221
Surface Creek, at Cedaredge.....	280	White River, above Coal Creek, near Meeker.....	326
near Cedaredge.....	279	at Buford.....	324
		below Meeker.....	329
Tabor ditch at Spring Creek Pass, diversion by.....	359,360	below Trapper's Lake.....	321
Tarbell ditch near Cochetopa Pass, diversion by.....	359,360	near Buford.....	323
Taylor Creek near Gateway.....	301,302	near Meeker.....	328
Taylor Park Reservoir at Taylor Park.....	244	near Watson, Utah.....	331
Taylor River, at Almont.....	246	South Fork, at Buford.....	325
below Taylor Park Reservoir.....	245	Williams Fork (tributary to Colorado River), below Williams Fork Reservoir.....	164
Templeton Gap Floodway at Colorado Springs.....	87	near Leal.....	160
Tenmile Creek below North Fork, at Frisco.....	177	near Parshall.....	162
Thompson Creek feeder ditch, diversion by.....	224,230	Williams Fork (tributary to Yampa River), East Fork of, above Willow Creek.....	312
Thompson Creek near Carbondale.....	225	East Fork of, near Pagoda.....	313
Tomichi Creek, at Gunnison.....	255	Williams Fork Reservoir near Parshall.....	163
at Parlin.....	253	Willow Creek (tributary to Colorado River) below Willow Creek Reservoir.....	153
at Sargents.....	252	Willow Creek (tributary to Little Snake River) near Dixon, Wyo.....	318
Tongue Creek at Cory.....	281	Willow Creek (tributary to Rio Grande) at Creede.....	113
Transbasin diversions from North Platte River basin to Cache la Poudre River basin in Colorado.....	53	Willow Creek Pump Canal, diversion by.....	153
Transmountain diversions from Colorado River basin in Colorado.....	358-360	Willow Creek Reservoir near Granby.....	152
Treasure Pass ditch at Wolf Creek Pass, diversion by.....	359,360	Wilson supply ditch near Eaton Reservoir, diversion by.....	53
Trinchera Creek, above Turners Ranch, near Fort Garland.....	130	Wurtz ditch near Tennessee Pass, diversion by.....	358,360
below Smith Reservoir, near Blanca.....	133		
Troublesome Creek, East Fork, near Troublesome.....	166	Yampa River, at Steamboat Springs.....	305
near Pearmont.....	165	near Maybell.....	315
Turkey Creek near Red Cliff.....	193	near Oak Creek.....	304
Twin Lakes tunnel at east portal, near Twin Lakes, diversion by.....	358,360	near Toponas.....	303
Uncompahgre River, at Colona.....	289	Youngs Creek near Grand Mesa.....	278

