# DIVISION OF WATER RESOURCES 

WATER DIVISION IV
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Hal J. Simpson, State Engineer Division of Water Resources 1313 Sherman Street, Room 818 Denver, CO 80203

Dear Mr. Simpson:
On behalf of the office and field personnel of Water Division IV, I am pleased to submit this Annual Report for 1993.

The personnel of Division IV have conducted their duties in a most professional manner during the 1993 water year. I would like to recognize their diligent efforts which have resulted in this Annual Report, and this year's diversion records.


Keith C. Kepler Division Engineer

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DIVISION IV ANNUAL REPORT

## I. THE 1993 WATER YEAR

The 1993 Water Year was notable as one of the highest snowpack years on record. In spite of the abundant snowpack there were only a few localized flooding problems since cool spring weather allowed the runoff to occur slowly.

The ample snowpack made for an exceptional water year. In most areas, there were no shortages of water and only the most water short areas had demands for the curtailment of junior rights. In the more highly administered areas, the streams went on call approximately one month later than in the average year.

The extreme snowpack caused concerns about dam safety. The concerns were our inability to control restricted reservoirs to their safe storage level, potential spillway erosion, and spillways blocked by snow. Careful monitoring and preparation on the part of the dam owners and the Water Commissioners prevented serious dam safety problems. Some of the situations which required close surveillance are reported under the Dam Safety section of this report.

## A. Uncompahgre Valley

The Uncompahgre Valley enjoyed a May 1 snowpack of $141 \%$ of average at the Idarado snotel site and $115 \%$ of average at the Red Mountain Pass snotel site.

Water District 41. Snowmelt runoff in the Uncompahgre valley provided a good water supply in spite of dry summer conditions. No measurable precipitation reported in Montrose during the month of July and June precipitation was low also. No calls were placed on the mainstem of the river, although the Uncompahgre Valley Water Users Association experienced a period of shortage and drew storage from Ridgway reservoir. During the time of shortage UVWUA asked upstream water users to not divert more water than their decree. The upstream water users cooperated and we were able to avoid curtailment of juniors.

Ridgway reservoir was operated for flood control purposes and was drawn down considerably in anticipation of spring runoff. During the summer months when shortages existed, releases were made in excess of downstream requests for storage delivery.

In Water District 68, Ouray County, the period of shortage did not result in a River call since water users in that area cooperated with UVWUA's request to not divert more than their decrees. There was a call on Horsefly Creek which originated from WD 41.

The Fairway Pines Golf Course opened on top of Log Hill Mesa on August 2. The Golf Course is irrigated from several wells of fairly low individual yield which have been completed in the Dakota - Burro Canyon aquifer. The county is experiencing considerable growth with one irrigated ranch of 800 acres reportedly selling for $\$ 4000$ per acre. There has been some reaction to the growth which has resulted in more participation in water court applications.

## B. Upper Gunnison Basin

Snowpack was excellent in the Upper Gunnison Basin this year. In the northern part of the basin, May 1 snowpack was reported as 179 \% of average at the Butte snotel (near Crested Butte), 231 \% of average at the Park Cone snotel (near Taylor Park), and $146 \%$ of average at the Schofield Pass snotel. May 1 snowpack was reported as $144 \%$ of average at the Porphyry Creek snotel near Monarch pass. In the Southern part of the upper Gunnison area, snowpack was only near average as evidenced by the $101 \%$ May 1 reporting for the Slumgullion snotel.

In Water District 59, there were no calls and water supplies far exceeded the average year. There was some concern over potential flooding, particularly in the Crested Butte area. Although some high flows were observed, there were fortunately no major flooding problems. In the Gunnison area, the Gunnison River stayed well within its banks. Water Commissioner Bob Drexel resigned early in the irrigation season.

In Water District 28, there were no calls for administration. However, there were several water court applications and several inquiries from water users about their water rights. Inspection of the Vouga reservoir revealed problems with the outlet pipe which we hope are fixed in the near future.

## C. South Slope of Grand Mesa and North Fork of the Gunnison

 RiverSouth Slope of Grand Mesa. The 1993 water year started off with a very high snowpack on Grand Mesa. May 1 snowpack was reported as 227 \% of average at Mesa Lakes. The snotel at Park Reservoir reported $159 \%$ of average with a snow - water equivalent of 47.8 inches. Snow pack was also well above average at the lower elevations. Surface Creek peaked at 625 cubic feet per second at the Cedaredge gaging station. Surface Creek then leveled off at about 400 cubic feet per second and ran very even through the spring and early summer. This runoff provided excellent water supplies for most water users. Because of the high snowpack, the cloud seeding program was not implemented in 1993.

The large snowpack created lots of work for reservoir owners and caretakers. Many spillways were filled with hard packed snow, requiring trenches cut through the snow so the reservoirs would spill. The snow was very dense and heavy. With cooperation from dam owners and DWR personnel, no dams suffered problems resulting from the snow filled spillways. On May 11, Channel 7 News from Denver shot a video about the snow removal effort which was aired later that month.

The large snowpack caused concerns about potential flooding in the spring. Damage was mostly confined to streambanks and farm ground along the rivers. Some headgates and diversion structures did suffer minor damage. The county provided sandbags to those needing them.

The apple crop in 1993 had mixed blessings. The price was good, but several hail storms caused the quality to be below average. Growers received a premium price for good apples which were not hail damaged and also received a good price for poorer quality hail damaged apples.

The Surface Creek Valley area is experiencing growth as is the rest of Division IV.

Personnel of the Division of Water Resources spent considerable time in working with the Forest Service in the development of the Travel Management Plan for Grand Mesa. Of importance to this office is access to water structures for administration and regulation and access to dams for administration, maintenance and emergency preparedness. It is important for both the personnel of this office and the water users to have reasonable access.

Overall, 1993 was an easy year for the administration of water on the south slope of Grand Mesa because of the large quantity
of water available for distribution. The number one priority on Surface Creek was not cut until the first part of October compared to the first part of July in the average year. Reservoir carryover at the end of 1993 was $55 \%$ of usable capacity, compared to 17 - $21 \%$ for the past several years. This much reservoir carryover should allow for a good irrigation water supply next year if we can get close to average snowpack.

The North Fork of the Gunnison River was the area most impacted by high flows from spring runoff. Some flooding of agricultural lands occurred along the North Fork itself, and there was some flooding of the Smith Fork in the Crawford area. On the North Fork of the Gunnison River, Water Commissioner Cliff Davis spent many nights watching the river and keeping local emergency coordinators informed of it's status. On Minnesota Creek, we were concerned about two restricted dams, Beaver and Monument. In each case, we were unable to control the water level to the restriction and we were unsure of the safety of the dam above the restricted level. This situation resulted in substantial extra time spent monitoring the dams by the Water Commissioners and the dam owners.

## D. Lower Gunnison River, Kannah Creek and East Creek

Kannah Creek drains the west end of Grand Mesa. This area shared the exceptionally high snowpack previously reported for Grand Mesa. Below average temperatures in May and June prevented flooding. The good snowpack and slow runoff made for a very good water year. No "calls" were made until August 13. This allowed the junior water users a much longer season than in prior years. East Creek went on call and was administered for the remainder of the season.

At the Redlands diversion on the Lower Gunnison River, there was some controversy about water measurement and their ferc permit for power generation. FERC took a position that the Redlands should never divert more than their water right, even for a period of a few hours. The position they took showed a lack of understanding of the variability of water flow, the level of accuracy of water measurement, and time of response needed to adjust the headgate. This position was apparently intended to protect the endangered fish. Fortunately, with the help of several local entities, including the Grand Junction office of the U. S. Fish and Wildife Service, Redlands was able to resolve this matter.

## E. San Miquel River

The San Miguel River and tributaries enjoyed good water supplies this year. The May 1 snotel reading at Lizard Head Pass was $148 \%$ of average. Thanks to cool nights during the spring months the snow melted slowly and there were no significant flooding problems. There were no calls for administration of junior rights in water district 60 this year.

The Upper San Miguel Basin is growing rapidly, with the growth centered around the Telluride ski area. There is considerable water court activity associated with this growth.

This was a good year for the farming and ranching economy in the lower parts of water district 60. Because of ample irrigation water supplies, many meadows which had degraded over the drought years were replanted with small grains, alfalfa and grass. Livestock prices were very good and spring calving and lambing were excellent. Cleanup work at the Uravan site continues ahead of schedule.

## F. Paxadox Creek and Dolores River Tributaries

Paradox Creek, Water District 61, had an excellent water year. The runoff was sufficient to supply all needs until July 15, at which time the creek was put on call. The first storage water was delivered on July 19. The Bureau of Reclamation has been test pumping their salinity control wells throughout the year.

Water District 63 had a snowpack of about $104 \%$ of normal. Stream flow remained good through the summer as a result of snow-pack and rains, and no "call" was placed on West Creek this year.

Water District 73 also had a better water supply than average, with a reported snowpack of $105 \%$ of normal. This required some increased administration over prior years since the creeks ran longer than in most years. Ranchers in this area did not have to buy hay to feed their livestock through the fall and winter months as they did in prior years.

## II. 1993 PROGRAMS AND ACTIVITIES

A few areas received a special focus during 1993. First, we were able to complete field work to define irrigated acreage. Secondly, Division IV was very active in flood watch activities and dam safety activities during the spring runoff.

Finally, activities continued in the development of the Gunnison Basin model and spreadsheet. Endangered fish and other environmental issues continue to be a major factor in water resource matters in Division IV.

## A. Flood Watch Activities

Although not an assigned duty of this agency, we provided considerable assistance to the State and local agencies which deal with flood preparedness. In this role, some of the Montrose office staff and the Water Commissioners attended meetings and provided site specific knowledge of the streams involved. This first hand geographic knowledge was quite valuable to both the state and local agencies. As the verification contact for the flood warning system incorporated in the Satellite Monitoring System, several people in this office received many phone calls to verify automatic reportings of high water.

We were fortunate not to have worse flooding problems than we did. There was certainly some localized flooding on the small creeks, but the extent of flooding was small relative to the snowpack. The largest and most damaging flooding occurred on the North Fork of the Gunnison, where flows reached a peak of 8610 cubic feet per second on May 27, 1993. These high flows on the North Fork resulted in some fairly significant bank erosion causing loss of some agricultural land. Downstream, the Gunnison River through Delta rose to a peak flow of 17,400 cubic feet per second on May 28. These high flows were of concern since the City has constructed a park and a recreation center in the delta between the Gunnison and Uncompahgre Rivers which could have received considerable damage if the flows were not controlled by the levees. The observed flows in Delta were controlled by the levees, but higher flows would have likely caused some damage. It should be noted that this flow is was considerably reduced by flood control storage in Blue Mesa Reservoir.

There was also some high water in the area west of Cedaredge as Tongue Creek and its tributaries Ward Creek and Dirty George Creek saw high flows which exceeded the capacity under county bridges due to snowmelt runoff.

## B. Dam Safety program

The Dam Safety Program was also greatly affected this year by the high snowpack. Most notable in this area were the efforts of the Water Commissioners on Grand Mesa in assisting the Grand Mesa Water Users in clearing snow from reservoir spillways atop Grand Mesa. Each year, it is necessary to remove snow from the reservoir spillways so that the water may find a route through the snow. Otherwise, there is potential
for these dams to overtop. This years snowpack was extreme, containing 47.8 inches of water at the Park Reservoir on May 1. Considerable digging was required to dig out the spillways. Particularly helpful in this process were Albert and Ken Mahannah who have helped the water users by developing power equipment for this use. Also to be mentioned are $L$. Greg Scott and Rod Hamilton who assisted the water users considerably.

The high flows of the snowmelt runoff were of concern since we would be unable to hold restricted reservoirs to the safe storage level because inflows were expected to exceeded outlet capacity. Two reservoirs which were closely monitored this spring were the Monument Reservoir on the Dry Fork of Minnesota Creek and the Beaver Reservoir on the East Fork of Minnesota Creek. Each reservoir had a condition which could be aggravated by storage in excess of the restriction level and in each case the outlet was not large enough to control the filling.

During 1993, five dams were removed from the restriction list. These dams were Thompson \#1, Thompson \#2, Thompson \#3, Hale, and Little Giant \#1. The Hale was repaired by enlargement of the spillway. For the other dams, the restriction was removed because of a partial breach and/or reclassification. Two new dams were constructed this year, Shavano Valley Flood Detention Dam and Nucla Third Avenue Reservoir. Construction to repair the outlet of Twin Lake \#2 is estimated to be $55 \%$ complete.

During the 1993 inspection season the Dam Safety Engineer, Jim Norfleet, inspected 24 Class I dams and 38 Class II dams. Due to an extra assignment to the Dam Safety Engineer this year, approximately 20 Class III dams scheduled for an engineer's inspection in 1993 were deferred to the Water Commissioners. The Water Commissioners inspected a total of 60 class III dams.

The dam safety engineer participated in Travel Management Planning for Grand Mesa being conducted by the U. S. Forest Service. This office had concerns: first, access to dams for inspection, emergency response, and for maintenance by the dam owners. second, reasonable access to water structures for administration. This process is ongoing at the time of this report.

In addition to the above duties, the dam safety engineer performed several hydrology studies to determine spillway adequacy, followed up on inspection, and provided assistance and information in trying to resolve dam safety problems.

## C. Irrigated Acreage Determination

Conclusion of the Division IV irrigated acreage project was achieved in September. Local involvement began in July, 1992 when objectives were defined, work procedures outlined, fiscal and personnel needs quantified, and quality controls implemented. Beginning August 1, 1992 two temporary employees were hired to serve in irrigated field identification. They worked in conjunction with water commissioners whenever possible.

Early in the 1993 irrigation year before spring runoff, two part-time water commissioners were allocated additional time to take advantage of local expertise. Their combined efforts were supplemented by rehiring LuAnn Beasley (one of the previous temporary employees). By September, 1993 all irrigated fields in Water Division IV were identified and their respective area boundaries checked against aerial surveys and topographical maps. The complete database counts 8,536 irrigated fields within the Gunnison, San Miguel, and Little Dolores River watersheds. Whenever possible, small contiguous fields of similar crop and irrigation type were combined for simplicity. In an attempt to further quantify the consumptive use, the inspections indicated what method of irrigation was utilized. Of 7,551 fields where irrigation type was identified, sixty-six percent was by furrow, thirtytwo percent by flood, and the balance by sprinkler and drip irrigation systems.

Type of crop irrigated was determined by visual inspection on 51\% of total irrigated fields. Pasture grass and alfalfa lead as the two most favored crops followed by corn, other small grains, orchards, beans, and vegetables.

Corrected mylar maps which are scaled to overlay published U.S.G.S. topographic maps were sent to the United States Bureau of Reclamation on a periodic basis. The Bureau intends to assimilate the new corrected field boundary information into their Geographic Information System and provide to us the actual number of acres irrigated. We received the final shipment of corrected irrigated field mylars back from the USBR in December with total acreage per map. Our final objective is to receive the acreage per field as defined in the database originally created.

Use of this information will be advantageous in future net consumptive use studies, assigning value in relation to historical records, and Water Court proceedings. Anticipated receipt of the concluding acreage information from U.S.B.R. is in early spring, 1994.

## D. Gunnison River Accounting Spreadsheet and Model

The Gunnison River Accounting Spreadsheet and Model are being developed under the direction of seven water interests operating in the Gunnison Basin. Those seven entities are: Uncompahgre Valley Water Users Association, Upper Gunnison River Water Conservancy District, Tri-County Water Conservancy District, Colorado River Water Conservation District, U. S. Bureau of Reclamation, Colorado Water Conservation Board, and Colorado Division of Water Resources. Over the past two years these groups have met to discuss administration of the Gunnison River and set criteria for development of these two desired products.

THe Gunnison River Accounting Spreadsheet is being prepared by the Bureau of Reclamation. At this point in time, they are in the final development stage and completion is expected by spring, 1994.

The Gunnison River Model is being developed by a consulting firm and is scheduled for a second 'beta' test in the February of 1994. Public release is expected sometime shortly after completion of the second beta test.

## E. Water Court activities

The number of Water Court applications is on the rise, with considerable growth throughout the division. In calendar year 1992, 216 applications were filed. In calendar year 1993, 270 applications were filed.

The primary court case of interest is the Arapahoe County proposal to divert water from Taylor park to the front range. That application is currently before the Colorado Supreme Court. Also of interest is the Telluride Company augmentation plan. This application will consolidate several prior decrees for the ski area and associated residential development.

Several pending applications showed little progress during 1993, because the proponents are involved in the Aspinall Operations EIS. The EIS will set forth a new operations plan for Blue Mesa, Crystal and Morrow Point reservoirs which gives greater consideration to maintaining desirable flow patterns in the Black Canyon of the Gunnison National Monument and in the lower Gunnison River areas where there is an effort to recover endangered fish. The CWCB application for an instream flow in the Black Canyon showed little progress in 1993. Also in 1993, the National Park Service made no public announcement of the flow amounts they would be requesting for the reserved right in the Black Canyon of the Gunnison.

## F. Hydrographic and Satellite Monitoring activities

The heavy snow pack and subsequent spring runoff was probably the most significant aspect of stream gauging and measurement this year. The National Weather Service and the Denver Office Hydro branch visited Division IV to assist in preparations for the spring runoff. Preparations for the runoff included checking the DCP's and the water levels which result in a flood warning alarm being given to the N. W. S.

Also this year, modifications were made to the battery setup at field transmission sites for the satellite monitoring system. The internal batteries were removed and exchanged with field units. The battery modification allows the current from the solar panels to be regulated through the DCP to the external battery. This should prevent over-charging the gel cell batteries and resulting in longer battery service life. Three units remain to be modified. Dick Polker, the new telecommunications technician in Denver has visited twice and bolstered the grounding at the SMS stations.

The DOMSAT system in Denver has helped with the capture of data which previously would have been sent but not received. This has helped in hydrographic records and data quality since August.

Chuck David transferred to the DOW the first of February leaving Jerry Thrush as the Div. IV hydro.

Water Commissioner Steve Tuck assists in hydro work. He has put in extra time to measure streams and ditches in Dist. 40 as well as helped in other projects.

The UVWUA installed a new gage on the Ironstone Canal. The new gage will use a county road bridge as a control, giving a better cross section for measuring.

## G. Information Systems

Division IV was able to make some significant progress in 1993 in our computer systems. This progress was made with good support from the Denver office. Specific accomplishments were: installation of the LC connector box to allow printer sharing and having direct printer access for all computers in the Montrose office, the acquisition of a few new computers which allowed us to now have a PC for each engineer and technician in the Montrose office, and some computer training.

As we progress, several objectives become apparent. We would like to gain LAN capabilities to allow file sharing. We hope to be able to gain better computer communication with the

Denver office. We would like to upgrade computers in the Grand Junction and Cedaredge offices to Windows capable units and make the computers now located in those offices available for field commissioners.

In addition to the above considerations, several other areas for improvement of our information systems become apparent. Some of these projects could be accomplished in the division office, while others would require assistance from Denver. Generally, this office suggests that we attempt to make as much of our data (decrees, permits, etc) accessible by computer as possible and that we try to computerize as many of our processes as possible. Well permitting is an example of a process which could be computerized and decentralized.

## III. THE COMING WATER YEAR

The coming water year has the potential to bring many changes to Water Division IV. It is our hope to be able to respond to these changes and perform our duties in an effective manner. The following challenges are expected:

- Performing our routine duty of distributing the available water supply. At the current time, there is a low snowpack and therefore a concern that we may have less than an average runoff.
- Implementation of the Division of Water Resources long range plan will be a major effort toward achieving many goals including enhanced management and employee satisfaciton, technology support for better data management, improved records, resource allocation, improved public service and public relations.
o The spreadsheet for the Gunnison River is expected to be completed by the spring of 1994. The ability of this office to take the reins in operating the spreadsheet for mainstem accounting and management is dependent upon future staffing.
o The position of well technician is currently vacant, although we expect to fill that position in the near future. With a person whose prime objective is wells, we would hope that we could eventually move toward issuing permits for exempt wells directly from the division office. We believe this would greatly reduce paperwork, and turnaround time, and thereby increase customer satisfaction.
o Continue the training program for Division IV personnel with the effort to try to help everyone benefit from the training program.
- Further develop the quality of past and ongoing diversion records, water rights information, and streamflow data; and improve the accessibility and usability of this data to the staff and to the public.
- Complete work in the definition of irrigated acreage for the entire Division IV by including identification of water source.


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| APPENDIX A－1 |  |  |
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## APPENDIX A-3

UNCOMPAHGRE RIVER NR RIDGWAY, CO

|  |  |  |  | ACRE | FEET |  |  |  | PERCENT |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  | APR-SEP |  | EQUALLED |
| YEAR | APR | MAY | JUN | JUL | AUG | SEP | TOTAL | RANK | OR EXCEE |
| 1984 | 9610 | 47060 | 54390 | 34080 | 18150 | 9390 | 172680 | 1 | 3 |
| 1983 | 5180 | 17770 | 54250 | 52160 | 16790 | 6740 | 152890 | 2 | 6 |
| 1985 | 11200 | 25780 | 52950 | 25950 | 10410 | 7700 | 133990 | 3 | 9 |
| 1965 | 8810 | 19620 | 39250 | 38840 | 14470 | 10040 | 131030 | 4 | 12 |
| 1975 | 4040 | 15850 | 44640 | 45900 | 13040 | 5790 | 129260 | 5 | 15 |
| 1986 | 6640 | 21580 | 45800 | 29120 | 11310 | 12260 | 126710 | 6 | 18 |
| 1979 | 6540 | 23500 | 49080 | 31490 | 11160 | 4100 | 125870 |  | 21 |
| 1973 | 4020 | 20860 | 46350 | 33000 | 11790 | 6140 | 122160 | 8 | 24 |
| 1982 | 5730 | 17190 | 38620 | 29010 | 18540 | 12780 | 121870 | 9 | 26 |
| 1978 | 7170 | 16950 | 53380 | 28550 | 8430 | 4590 | 119070 | 10 | 29 |
| 1993 | 5840 | 28840 | 43050 | 21580 | 10030 | 6390 | 115730 | 11 | 32 |
| 1970 | 4750 | 27640 | 36180 | 19290 | 12100 | 14890 | 114850 | 12 | 35 |
| 1987 | 10760 | 25990 | 38390 | 18480 | 9430 | 6560 | 109610 | 13 | 38 |
| 1968 | 4380 | 16350 | 48170 | 17750 | 15870 | 4880 | 107400 | 14 | 41 |
| 1962 | 10450 | 19560 | 35480 | 23340 | 8450 | 5190 | 102470 | 15 | 44 |
| 1992 | 8660 | 23730 | 31290 | 20980 | 9400 | 5150 | 99210 | 16 | 47 |
| 1964 | 6130 | 24610 | 30620 | 16870 | 12370 | 5650 | 96250 | 17 | 50 |
| 1969 | 9240 | 23960 | 24980 | 21280 | 8380 | 7010 | 94850 | 18 | 53 |
| 1991 | 5560 | 22600 | 35480 | 16700 | 8610 | 5600 | 94550 | 19 | 56 |
| 1971 | 9050 | 13240 | 35890 | 20220 | 8530 | 7570 | 94500 | 20 | 59 |
| 1961 | 6150 | 23040 | 32190 | 10170 | 8760 | 7980 | 88290 | 21 | 62 |
| 1980 | 5120 | 13120 | 36430 | 16130 | 6900 | 3930 | 81630 | 22 | 65 |
| 1974 | 5910 | 23810 | 26580 | 14130 | 5890 | 3400 | 79720 | 23 | 68 |
| 1966 | 7260 | 24780 | 23110 | 11870 | 6270 | 3900 | 77190 | 24 | 71 |
| 1988 | 5890 | 13900 | 30310 | 11660 | 7430 | 7680 | 76870 | 25 | 74 |
| 1967 | 4320 | 17210 | 22020 | 15050 | 9680 | 4580 | 72860 | 26 | 76 |
| 1976 | 4590 | 16050 | 26690 | 13010 | 6720 | 3940 | 71000 | 27 | 79 |
| 1990 | 5070 | 14720 | 28540 | 12290 | 4820 | 4520 | 69960 | 28 | 82 |
| 1963 | 6410 | 19350 | 16920 | 10160 | 6480 | 5430 | 64750 | 29 | 85 |
| 1981 | 4650 | 8680 | 22930 | 16550 | 6130 | 4780 | 63720 | 30 | 88 |
| 1972 | 5400 | 14210 | 24020 | 8840 | 4520 | 5260 | 62250 | 31 | 91 |
| 1989 | 8310 | 13960 | 17640 | 9760 | 6870 | 3530 | 60070 | 32 | 94 |
| 1977 | 5110 | 7510 | 9990 | 5440 | 4500 | 4500 | 37050 | 33 | 97 |

TOTAL 3270310
AVERAGE 99100

# Uncomphagre River near Ridgway 

 Flow Duration Curve (1961-1993)

## GUNNISON RIVER NEAR GUNNISON

 1961-1993ACRE - FEET

| YEAR | APR | MAY | JUN | JUL | AUG |
| :--- | ---: | ---: | ---: | ---: | :--- |
|  |  |  |  |  |  |
| 1984 | 41530 | 208000 | 249900 | 154400 | 75270 |
| 1965 | 64630 | 137800 | 202500 | 184100 | 70900 |
| 1986 | 63000 | 138600 | 197500 | 125500 | 68570 |
| 1962 | 82180 | 171400 | 183900 | 103500 | 55010 |
| 1993 | 35190 | 170400 | 195200 | 112400 | 60370 |
| 1985 | 71120 | 176500 | 172400 | 88500 | 45110 |
| 1979 | 39130 | 156800 | 177100 | 112400 | 41860 |
| 1980 | 59070 | 140400 | 192000 | 80040 | 42150 |
| 1970 | 58370 | 180400 | 151700 | 78490 | 36160 |
| 1983 | 30150 | 70220 | 181700 | 106100 | 66890 |
| 1978 | 32970 | 83630 | 183900 | 83750 | 38830 |
| 1971 | 56740 | 87710 | 137500 | 84510 | 56150 |
| 1987 | 67680 | 128300 | 116700 | 55300 | 42480 |
| 1969 | 50830 | 132900 | 97090 | 79440 | 42450 |
| 1982 | 36870 | 91480 | 141200 | 71810 | 45350 |
| 1968 | 19380 | 86110 | 151200 | 50810 | 68320 |
| 1975 | 20010 | 59640 | 144500 | 114900 | 45420 |
| 1973 | 15800 | 87110 | 127800 | 100600 | 42960 |
| 1991 | 28860 | 99360 | 120800 | 64740 | 41940 |
| 1972 | 31660 | 59800 | 120400 | 36990 | 43600 |
| 1967 | 26800 | 69350 | 105100 | 55100 | 35810 |
| 1974 | 25340 | 109400 | 85730 | 39950 | 34360 |
| 1976 | 31400 | 67480 | 82430 | 53190 | 40880 |
| 1988 | 31150 | 72450 | 91280 | 45230 | 31320 |
| 1964 | 12710 | 72090 | 78100 | 44670 | 43420 |
| 1992 | 34860 | 75150 | 66890 | 45280 | 37230 |
| 1966 | 35860 | 77800 | 80630 | 33200 | 34170 |
| 1963 | 31890 | 61420 | 54850 | 48910 | 47960 |
| 1989 | 47530 | 64000 | 64650 | 32260 | 31770 |
| 1961 | 15360 | 61970 | 59650 | 47320 | 45030 |
| 1990 | 15870 | 29230 | 83910 | 41090 | 62050 |
| 1981 | 14880 | 26350 | 56080 | 30330 | 25470 |
| 1977 | 16660 | 17370 | 25290 | 17710 | 19520 |

SEP

| 44050 | 773150 | 1 | 3 |
| ---: | ---: | ---: | ---: |
| 50180 | 710110 | 2 | 6 |
| 52970 | 646140 | 3 | 9 |
| 45000 | 640990 | 4 | 12 |
| 36090 | 609650 | 5 | 15 |
| 54030 | 607660 | 6 | 18 |
| 31790 | 559080 | 7 | 21 |
| 44460 | 558120 | 8 | 24 |
| 48400 | 553520 | 9 | 26 |
| 37970 | 493030 | 10 | 29 |
| 25480 | 448560 | 11 | 32 |
| 25260 | 447870 | 12 | 35 |
| 32840 | 443300 | 13 | 38 |
| 28810 | 431520 | 14 | 41 |
| 39950 | 426660 | 15 | 44 |
| 37570 | 413390 | 16 | 47 |
| 23230 | 407700 | 17 | 50 |
| 24610 | 398880 | 18 | 53 |
| 23610 | 379310 | 19 | 56 |
| 45340 | 337790 | 20 | 59 |
| 28110 | 320270 | 21 | 62 |
| 18710 | 313490 | 22 | 65 |
| 33040 | 308420 | 23 | 68 |
| 21900 | 293330 | 24 | 71 |
| 36940 | 287930 | 25 | 74 |
| 25220 | 284630 | 26 | 76 |
| 21640 | 283300 | 27 | 79 |
| 21810 | 266840 | 28 | 82 |
| 17150 | 257360 | 29 | 85 |
| 23870 | 253200 | 30 | 88 |
| 18940 | 251090 | 31 | 91 |
| 22850 | 175960 | 32 | 94 |
| 14810 | 111360 | 33 | 97 |

## Gunnison River near Gunnison

Flow Duration Curve (1961-1993)


SAN MIGUEL RIVER NEAR PLACERVILLE 1961-1993

ACRE - FEET


## San Miguel River near Placerville

Flow Duration Curve (1961-1993)


SURFACE CREEK NEAR CEDAREDGE 1961-1993

ACRE - FEET

|  |  | MAY | JUN | JUL | AUG | APR-SEP |  |  | EQUALLED OR EXCEED |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| YEAR | APR | MAY | JUN | JUL | AUG | SEP |  | RANK |  |
| 1983 | 1410 | 7180 | 20400 | 11720 | 5740 | 3900 | 50350 | 1 | 3 |
| 1986 | 3650 | 13010 | 15630 | 6570 | 4650 | 2970 | 46480 | 2 | 6 |
| 1993 | 1470 | 11710 | 13480 | 7970 | 4990 | 3240 | 42860 | 3 | 9 |
| 1984 | 1140 | 14500 | 12430 | 5810 | 4730 | 2450 | 41060 | 4 | 12 |
| 1973 | 849 | 11490 | 14530 | 6390 | 4240 | 2520 | 40019 | 5 | 15 |
| 1985 | 3240 | 11870 | 11130 | 5350 | 4890 | 2530 | 39010 | 6 | 18 |
| 1980 | 1400 | 8480 | 15260 | 6140 | 4300 | 2470 | 38050 | 7 | 21 |
| 1982 | 2530 | 8340 | 11110 | 6880 | 4330 | 3500 | 36690 | 8 | 24 |
| 1987 | 4540 | 11170 | 9230 | 4990 | 3480 | 2260 | 35670 | 9 | 26 |
| 1969 | 4080 | 12330 | 8280 | 4520 | 4720 | 1620 | 35550 | 10 | 29 |
| 1979 | 1470 | 8640 | 11600 | 5390 | 4210 | 2530 | 33840 | 11 | 32 |
| 1962 | 3850 | 7700 | 10330 | 5220 | 3870 | 1970 | 32940 | 12 | 35 |
| 1975 | 616 | 5820 | 11120 | 6920 | 5140 | 2930 | 32546 | 13 | 38 |
| 1978 | 1170 | 8050 | 12250 | 5020 | 3530 | 2450 | 32470 | 14 | 41 |
| 1965 | 1110 | 7470 | 9440 | 5650 | 4090 | 2490 | 30250 | 15 | 44 |
| 1970 | 709 | 8190 | 7750 | 4190 | 4010 | 2140 | 26989 | 16 | 47 |
| 1971 | 2780 | 5560 | 8100 | 4330 | 3350 | 1970 | 26090 | 17 | 50 |
| 1966 | 3020 | 8250 | 4930 | 4150 | 3020 | 1540 | 24910 | 18 | 53 |
| 1968 | 608 | 6510 | 7960 | 4130 | 2600 | 2880 | 24688 | 19 | 56 |
| 1991 | 715 | 6620 | 6250 | 4030 | 4140 | 1870 | 23625 | 20 | 59 |
| 1967 | 1200 | 6340 | 5930 | 3890 | 3550 | 2570 | 23480 | 21 | 62 |
| 1988 | 2200 | 6390 | 6240 | 4110 | 3460 | 982 | 23382 | 22 | 65 |
| 1974 | 2040 | 8480 | 4870 | 3190 | 2500 | 1540 | 22620 | 23 | 68 |
| 1972 | 2700 | 6470 | 4790 | 3240 | 2720 | 1250 | 21170 | 24 | 71 |
| 1992 | 3350 | 6450 | 3750 | 3120 | 3060 | 1240 | 20970 | 25 | 74 |
| 1989 | 3490 | 5240 | 4470 | 3550 | 2040 | 1170 | 19960 | 26 | 76 |
| 1976 | 823 | 6000 | 5560 | 3500 | 2380 | 1590 | 19853 | 27 | 79 |
| 1964 | 543 | 5790 | 4460 | 4000 | 2990 | 2030 | 19813 | 28 | 82 |
| 1961 | 790 | 5170 | 5000 | 3400 | 2820 | 1490 | 18670 | 29 | 85 |
| 1981 | 2010 | 4520 | 3530 | 2710 | 1910 | 1460 | 16140 | 30 | 88 |
| 1990 | 2500 | 3190 | 4090 | 2418 | 2307 | 1170 | 15675 | 31 | 91 |
| 1963 | 1730 | 5130 | 2530 | 2560 | 2050 | 1470 | 15470 | 32 | 94 |
| 1977 | 1060 | 1750 | 525 | 366 | 539 | 238 | 4478 | 33 | 97 |
|  |  |  |  |  |  | TAL | 935768 |  |  |
|  |  |  |  |  |  | ERAG | 28357 |  |  |

## Surface Creek near Cedaredge

Flow Duration Curve (1961-1993)

A. TRANSMOUNTAIN DIVERSION SUMMARY--INFLOWS
RESERVOIR STORAGE SUMMARY
IRRIGATI ON YEAR - 1993

RESERVOIR STORAGE SUMMARY
IRRIGATION YEAR - 1993

RESERVOIR STORAGE SUMMARY
IRRI GATION YEAR - 1993

| AMOUNT OF STORAGE (AF) |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| MI NI MUM MAXI MUM |  |  |  |  |  |  |  |  |
| WD | ID | RESERVOIR NAME | SOURCE STREAM | AF DATE |  | AF | DATE | D YR |
| 40 | 3435 | Hanson R \#2 | Leroux Cr | 230.0 | 11/01/92 | 225.0 | 05/18/93 | 0.0 |
| 40 | 3436 | Holy Terror R | Terror Cr | 0.0 | 11/01/92 | 146.0 | 05/27/93 | 0.0 |
| 40 | 3438 | Luck Find Res | Leroux Cr | 0.0 | 11/01/92 | 66.0 | 05/20/93 | 0.0 |
| 40 | 3439 | Miller Res | Leroux Cr | 0.0 | 11/01/92 | 20.4 | 05/27/93 | 20.4 |
| 40 | 3440 | Owens Res | Leroux Cr | 0.0 | 11/01/92 | 92.0 | 05/24/93 | 0.0 |
| 40 | 3441 | Patterson \#1 | Leroux Cr | 0.0 | 11/01/92 | 78.0 | 05/18/93 | 0.0 |
| 40 | 3442 | Patterson \#2 | Leroux Cr | 151.0 | 11/01/92 | 151.0 | 05/15/93 | 151.0 |
| 40 | 3443 | Pine Cone | Leroux Cr | 0.0 | 11/01/92 | 37.0 | 05/27/92 | 0.0 |
| 40 | 3445 | Rex Res | Terror Cr | 0.0 | 11/01/92 | 24.0 | 05/27/93 | 0.0 |
| 40 | 3444 | Reynolds Res | Leroux Cr | 0.0 | 11/01/92 | 176.0 | 05/20/93 | 88.0 |
| 40 | 3446 | Skim Milk | Leroux Cr | 0.0 | 11/01/92 | 90.0 | 05/20/93 | 43.0 |
| 40 | 3447 | Wash Tub | Leroux Cr | 0.0 | 11/01/92 | 25.0 | 05/24/93 | 0.0 |
| 40 | 3448 | Water Bug Res | Leroux Cr | 0.0 | 11/01/92 | 48.0 | 06/01/93 | 48.0 |
| 40 | 3449 | Willow Res | Leroux Cr | 128.0 | 11/01/92 | 128.0 | 05/01/93 | 128.0 |
| 40 | 3391 | Bald Mt Res | Crystal Cr | 0.0 | 11/01/92 | 88.8 | 06/29/93 | 0.0 |
| 40 | 3392 | Bottle Stomp Res | Iron Cr | 0.0 | 11/01/92 | 17.0 | 05/24/93 | 0.0 |

RESERVOIR STORAGE SUMMARY
IRRIGATION YEAR - 1993

| AMOUNT OF STORAGE (AF) |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | MI NI MUM |  | MAXI MUM |  |  |
| WD | ID | RESERVOIR NAME | SOURCE STREAM | AF | DATE | AF | DATE | END YR |
| 40 | 3553 | Crawford Res | Iron Cr | 4771. | 11/01/92 | 14383. | 05/28/93 | 7835. |
| 40 | 3395 | Fruitland Res | Crystal Cr | 0.0 | 11/01/92 | 9004. | 06/28/93 | 266. 8 |
| 40 | 3394 | Don Meek \#1 | Crystal Cr | 0.0 | 11/01/92 | 45.0 | 06/29/93 | 0.0 |
| 40 | 3397 | Meek Res | Iron Cr | 0.0 | 11/01/92 | 29.0 | 06/29/93 | 0.0 |
| 40 | 3400 | Poison Spr R | Gunnison River | 50.0 | 11/01/92 | 123.0 | 05/28/93 | 50.0 |
| 40 | 3401 | Rockwell R 1 | Iron Cr | 0.0 | 11/01/92 | 50.8 | 05/24/93 | 25.0 |
| 40 | 3300 | Alexander Lk | Ward Cr | 85.0 | 10/31/92 | 157.0 | 07/06/93 | 157.0 |
| 40 | 3302 | Barren Lk | Kiser Cr | 109.7 | 10/31/92 | 800.0 | 07/06/93 | 800.0 |
| 40 | 3450 | Basin \#1 | Dirty George C | 4. 62 | 10/31/92 | 257. 5 | 07/06/93 | 31.81 |
| 40 | 3451 | Basin \#2 | Dirty George C | 11.35 | 10/31/92 | 40.6 | 07/06/93 | 0.0 |
| 40 | 3452 | Battlement \#1 | Dirty George C | 87.4 | 10/31/92 | 87.4 | 07/06/93 | 87.4 |
| 40 | 3453 | Battlement \#2 | Dirty George C | 45.9 | 10/30/92 | 597.14 | 07/06/93 | 86.7 |
| 40 | 3341 | Bonita | Surface Cr | 67.45 | 10/31/92 | 277.97 | 07/06/93 | 277.97 |
| 40 | 3304 | Bull Finch \#1 | Kiser Cr | 0.0 | 10/31/92 | 72.4 | 07/06/93 | 56.59 |
| 40 | 3305 | Bull Finch \#2 | Kiser Cr | 12. 34 | 10/31/92 | 39. 4 | 07/06/93 | 17.21 |
| 40 | 3303 | Boulder Lake | Ward Cr | 0.0 | 10/31/92 | 0.0 | 07/06/93 | 0.0 |

RESERVOIR STORAGE SUMMARY
IRRIGATION YEAR - 1993

| AMOUNT OF STORAGE (AF) |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| MINI MUM MAXIMUM |  |  |  |  |  |  |  |  |
| WD | ID | RESERVOIR NAME | SOURCE STREAM | AF DATE |  | AF | DATE | END YR |
| 40 | 3342 | Cabin Lake | Surface Cr | 0.0 | 10/31/92 | 27.7 | 07/06/93 | 0.0 |
| 40 | 3378 | Calumet | Surface Cr | 0.0 | 10/30/92 | 16.8 | 07/06/93 | 0.0 |
| 40 | 3366 | Carbonat Cm3 | Surface Cr | 0.0 | 10/31/92 | 15. 5 | 07/06/93 | 0.0 |
| 40 | 3306 | Carbonat Cm6 | Youngs Cr | 0.0 | 10/31/92 | 129.6 | 07/06/93 | 56.72 |
| 40 | 3307 | Carbonat Cm7 | Youngs Cr | 15.16 | 10/31/92 | 107.6 | 07/06/93 | 0.0 |
| 40 | 3343 | Cedar Mesa | Surface Cr | 118.7 | 10/31/92 | 919.0 | 07/06/93 | 263.76 |
| 40 | 3379 | Cole \#1 | Surface Cr | 0.0 | 10/31/92 | 26.70 | 07/06/93 | 0.0 |
| 40 | 3380 | Cole \#2 | Surface Cr | 0.0 | 10/31/92 | 50.0 | 07/06/93 | 0.0 |
| 40 | 3381 | Cole \#3 | Surface Cr | 0.0 | 10/31/92 | 70.15 | 07/06/93 | 0.0 |
| 40 | 3344 | Cole \#4 | Surface Cr | 0.0 | 10/31/92 | 18.0 | 07/06/93 | 0.0 |
| 40 | 3345 | Cole \#5 | Surface Cr | 0.0 | 10/31/92 | 116.2 | 07/06/93 | 0.0 |
| 40 | 3308 | Dan Slou Res | Kiser Cr | 17.8 | 10/31/92 | 228.0 | 07/06/93 | 0.0 |
| 40 | 3309 | Deep Slough | Ward Cr | 59.8 | 10/31/92 | 498. 4 | 07/06/93 | 56.0 |
| 40 | 3310 | Deep Ward | Ward Cr | 351.3 | 10/31/92 | 1700.0 | 07/06/93 | 1700.0 |
| 40 | 3346 | Deserted Pk | Surface Cr | 0.0 | 10/31/92 | 35.89 | 07/06/93 | 0.0 |
| 40 | 3311 | Donnely Slou | Kiser Cr | 70.14 | 10/31/92 | 276. 9 | 07/06/93 | 139.18 |

RESERVOIR STORAGE SUMMARY
IRRIGATION YEAR - 1993

| AMOUNT OF STORAGE (AF) |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| MINI MUM MAXIMUM |  |  |  |  |  |  |  |  |
| WD | ID | RESERVOIR NAME | SOURCE STREAM | AF DATE |  | AF | DATE | END YR |
| 40 | 3382 | Doughty \#1 | Surfice Cr | 0.0 | 10/31/92 | 48. 2 | 07/06/93 | 0.0 |
| 40 | 3383 | Doughty \#2 | Surface Cr | 0.0 | 10/31/92 | 18.4 | 07/06/93 | 0.0 |
| 40 | 3347 | Dreyfus | Surface Cr | 0.0 | 10/31/92 | 42.5 | 07/06/93 | 0.0 |
| 40 | 3312 | Eggleston Lk | Kiser Cr | 304.5 | 10/31/92 | 2705.0 | 07/06/93 | 2528.0 |
| 40 | 3348 | Elk Park | Surface Cr | 46.73 | 10/31/92 | 96.8 | 07/06/93 | 96.83 |
| 40 | 3349 | Eureka \#2 | Surface Cr | 0.0 | 10/31/92 | 53.5 | 07/06/93 | 0.0 |
| 40 | 3350 | Trout Lk | Surface Cr | 0.0 | 10/31/92 | 76.9 | 07/06/93 | 21.66 |
| 40 | 3313 | Forrest | Ward Cr | 0.0 | 10/31/92 | 132.9 | 07/06/93 | 0.0 |
| 40 | 3314 | Goodenough | Youngs Cr | 49.78 | 10/31/92 | 152.0 | 07/06/93 | 42.62 |
| 40 | 3455 | Granby \#6 | Dirty George | 0.0 | 10/31/92 | 46.0 | 07/06/93 | 45.98 |
| 40 | 3456 | Granby \#7 | Dirty George | 34.0 | 10/31/92 | 76.1 | 07/06/93 | 51.3 |
| 40 | 3457 | Granby \#8 | Dirty George | 0.0 | 10/31/92 | 13.3 | 07/06/93 | 0.0 |
| 40 | 3458 | Granby \# 9 | Dirty George | 0.0 | 10/31/92 | 72.0 | 07/06/93 | 66.31 |
| 40 | 3454 | Granby \#11 | Dirty George | 233.1 | 10/31/92 | 775.0 | 07/06/93 | 454.2 |
| 40 | 3459 | Granby \#12 | Dirty George | 170.9 | 10/31/92 | 523.0 | 07/06/93 | 358. 3 |
| 40 | 3351 | Greenwood | Surface Cr | 0.0 | 10/31/92 | 61.43 | 07/06/93 | 0.0 |

RESERVOIR STORAGE SUMMARY
IRRI GATION YEAR - 1993

RESERVOIR STORAGE SUMMARY
IRRIGATION YEAR - 1993

| AMOUNT OF STORAGE (AF) |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| MI NI MUM MAXI MUM |  |  |  |  |  |  |  |  |
| WD | ID | RESERVOIR NAME | SOURCE STREAM | AF DATE |  | AF | DATE | END YR |
| 40 | 3323 | McKoon | Youngs Cr | 99.4 | 10/31/92 | 147.9 | 07/06/93 | 125.77 |
| 40 | 3354 | Military | Surface Cr | 0.0 | 10/31/92 | 236.6 | 07/06/93 | 0.0 |
| 40 | 3355 | Park | Surface Cr | 768.3 | 10/31/92 | 3383.4 | 07/06/93 | 1868.2 |
| 40 | 3324 | PC\&G \# 1 | Kiser Cr | 0.0 | 10/31/93 | 19.4 | 07/06/93 | 19.44 |
| 40 | 3325 | Pedro | Youngs Cr | 0.0 | 10/31/92 | 194.9 | 07/06/93 | 108.78 |
| 40 | 3326 | Pine | Youngs Cr | 0.0 | 10/31/92 | 17.1 | 07/06/93 | 4. 22 |
| 40 | 3327 | Prebble | Youngs Cr | 65.4 | 10/31/92 | 193.1 | 07/06/93 | 122.45 |
| 40 | 3328 | Rim Rock Lk | Ward Cr | 107.9 | 10/31/92 | 107.9 | 07/06/93 | 107.9 |
| 40 | 3329 | Rockland | Ward Cr | 12.45 | 10/31/92 | 12.45 | 07/06/93 | 0.0 |
| 40 | 3356 | Round Lk | Surface Cr | 0.0 | 10/31/92 | 20.0 | 07/06/93 | 0.0 |
| 40 | 3330 | Ryan | Youngs Cr | 40.3 | 10/31/93 | 40.3 | 07/06/93 | 40.3 |
| 40 | 3357 | Sackett | Surface Cr | 69.2 | 10/31/92 | 108.0 | 07/06/93 | 69. 84 |
| 40 | 3331 | Safety 1\&2 | Kiser Cr | 0.0 | 10/31/92 | 15.0 | 07/06/93 | 0.0 |
| 40 | 3332 | Scotland Peak | Ward Cr | 0.0 | 10/31/92 | 163.8 | 07/06/93 | 120.5 |
| 40 | 3333 | Sheep Lk | Ward Cr | 33.56 | 10/31/92 | 154.0 | 07/06/93 | 82.0 |
| 40 | 3358 | Stell | Surface Cr | 25. 38 | 10/31/92 | 65.0 | 07/06/93 | 49.48 |

RESERVOIR STORAGE SUMMARY
IRRIGATION YEAR - 1993 AMOUNT OF STORAGE (AF) MI NI MUM

| AMOUNT OF STORAGE (AF) |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | MI NI MUM |  | MAXI MUM |  | END YR |
| WD | ID | RESERVOIR NAME | SOURCE STREAM | AF | DATE | AF | DATE |  |
| 40 | 3389 | Trickle | Surface Cr | 0.0 | 10/31/92 | 32.7 | 07/06/93 | 0.0 |
| 40 | 3359 | Trio | Surface Cr | 61.9 | 10/31/92 | 164.3 | 07/06/93 | 62.9 |
| 40 | 3360 | Twin Lake \#1 | Surface Cr | 0.0 | 10/31/92 | 100. 4 | 07/06/93 | 0.0 |
| 40 | 3361 | Twin Lake \#2 | Surface Cr | 0.0 | 10/31/92 | 126.0 | 07/06/93 | 0.0 |
| 40 | 3334 | Upper Hotel L | Ward Cr | 76.2 | 10/31/92 | 105.96 | 07/06/93 | 99.68 |
| 40 | 3362 | Vela | Surface Cr | 61.6 | 10/31/92 | 436.6 | 07/06/93 | 227. 26 |
| 40 | 3335 | Ward Cr | Ward Cr | 53.67 | 10/31/92 | 284.4 | 07/06/93 | 153.6 |
| 40 | 3363 | Weir-Johnson2 | Surface Cr | 140.6 | 10/31/92 | 603.1 | 07/06/93 | 473.64 |
| 40 | 3336 | Womack \#1 | Ward Cr | 0.0 | 10/31/92 | 202. 4 | 07/06/93 | 40.74 |
| 40 | 3337 | Womack 2 \& 3 | Kiser Cr | 0.0 | 10/31/92 | 101.5 | 07/06/93 | 101.71 |
| 40 | 3340 | Womack \#5 | Kiser Cr | 0.0 | 10/31/92 | 23.0 | 07/06/93 | 0.0 |
| 40 | 3338 | Young Cr 1,2 | Youngs Cr | 118.3 | 10/31/92 | 796.9 | 07/06/93 | 238.8 |
| 40 | 3339 | Young Cr \#3 | Youngs Cr | 14.56 | 10/31/92 | 200.6 | 07/06/93 | 200.62 |
| 40 | 3390 | Y \& S | Surface Cr | 28.89 | 10/31/92 | 201. 58 | 07/06/93 | 91.58 |
| 40 | 3365 | Fruitgrowers | Alfalfa Run | 2775. | 10/31/92 | 4452. | 07/06/93 | 2456.0 |
| 40 | 3370 | Clark Res | Oak Cr | 32.4 | 10/31/92 | 39.13 | 07/06/93 | 19.65 |

RESERVOIR STORAGE SUMMARY
IRRI GATION YEAR - 1993

| AMOUNT OF STORAGE (AF) |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | MI NI MUM |  | MAXI MUM |  | END YR |
| WD | ID | RESERVOIR NAME | SOURCE STREAM | AF | DATE | AF | DATE |  |
| 40 | 3373 | Dugger Res | Oak Cr | 205.3 | 10/31/92 | 212. 1 | 07/06/93 | 201.8 |
| 40 | 3374 | Morris Res 2 | Oak Cr | 16.33 | 10/31/92 | 16. 33 | 07/06/93 | 16.33 |
| 40 | 3375 | Pitcairn Res | Doughspoon Cr | 43.2 | 10/31/92 | 76.0 | 07/06/93 | 59.0 |
| 40 | 3376 | Porter 1 Res | Oak Cr | 170.2 | 10/31/92 | 201.76 | 07/06/93 | 201. 76 |
| 40 | 3377 | Porter 4 Res | Oak Cr | 38.0 | 10/31/92 | 38.0 | 07/06/93 | 38.0 |
| 40 | 3368 | Beaver Dam R | Escalante Cr | 0.0 | 10/31/92 | 396.5 | 07/06/93 | 86.5 |
| 40 | 3402 | Todd Res | McDonald Cr | 15.0 | 11/01/92 | 100.0 | 05/26/93 | 60.0 |
| 40 | 3403 | Tyler Res | Iron Cr | 20.0 | 11/01/92 | 169.3 | 05/27/93 | 70.0 |
| 40 | 3406 | Beaver res | Minnesota Cr | 0.0 | 11/01/92 | 1527.0 | 06/04/93 | 18.0 |
| 40 | 3437 | Hunt Res | Leroux Cr | 10.0 | 11/01/92 | 124.0 | 05/26/93 | 10.0 |
| 40 | 3407 | Lone Cabin | Minnesota Cr | 0.0 | 11/01/92 | 163.0 | 05/26/93 | 0.0 |
| 40 | 3714 | Lucas Cline R | North Fork | 0.0 | 11/01/92 | 9.0 | 06/01/93 | 0.0 |
| 40 | 3364 | Weir Park | Surface Cr | 0.0 | 11/01/92 | 40.7 | 07/06/93 | 0.0 |
| 42 | 3600 | Anderson R 1 | Kannah Cr | 0.0 | 05/01/93 | 486.0 | 06/30/93 | 301.0 |
| 42 | 3601 | Anderson R 2 | Kannah Cr | 260.0 | 10/31/92 | 595.0 | 06/30/93 | 260.0 |
| 42 | 3602 | Bolen AJ R2 | Kannah Cr | 0.0 | 05/01/93 | 240.0 | 06/30/93 | 0.0 |

##  <br> IRRIGATION YEAR - 1993

| AMOUNT OF STORAGE (AF) |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| MI NI MUM MAXI MUM |  |  |  |  |  |  |  |  |
| WD | ID | RESERVOIR NAME | SOURCE STREAM | AF DATE |  | AF | DATE | END YR |
| 40 | 3373 | Dugger Res | Oak Cr | 205. 3 | 10/31/92 | 212.1 | 07/06/93 | 201.8 |
| 40 | 3374 | Morris Res 2 | Oak Cr | 16.33 | 10/31/92 | 16.33 | 07/06/93 | 16.33 |
| 40 | 3375 | Pitcairn Res | Doughspoon Cr | 43.2 | 10/31/92 | 76.0 | 07/06/93 | 59.0 |
| 40 | 3376 | Porter 1 Res | Oak Cr | 170.2 | 10/31/92 | 201.76 | 07/06/93 | 201. 76 |
| 40 | 3377 | Porter 4 Res | Oak Cr | 38.0 | 10/31/92 | 38.0 | 07/06/93 | 38.0 |
| 40 | 3368 | Beaver Dam R | Escalante Cr | 0.0 | 10/31/92 | 396.5 | 07/06/93 | 86.5 |
| 40 | 3402 | Todd Res | McDonald Cr | 15.0 | 11/01/92 | 100.0 | 05/26/93 | 60.0 |
| 40 | 3403 | Tyler Res | Iron Cr | 20.0 | 11/01/92 | 169.3 | 05/27/93 | 70.0 |
| 40 | 3406 | Beaver res | Minnesota Cr | 0.0 | 11/01/92 | 1527.0 | 06/04/93 | 18.0 |
| 40 | 3437 | Hunt Res | Leroux Cr | 10.0 | 11/01/92 | 124.0 | 05/26/93 | 10.0 |
| 40 | 3407 | Lone Cabin | Minnesota Cr | 0.0 | 11/01/92 | 163.0 | 05/26/93 | 0.0 |
| 40 | 3714 | Lucas Cline R | North Fork | 0.0 | 11/01/92 | 9.0 | 06/01/93 | 0.0 |
| 40 | 3364 | Weir Park | Surface Cr | 0.0 | 11/01/92 | 40.7 | 07/06/93 | 0.0 |
| 42 | 3600 | Anderson R l | Kannah Cr | 0.0 | 05/01/93 | 486.0 | 06/30/93 | 301.0 |
| 42 | 3601 | Anderson R 2 | Kannah Cr | 260.0 | 10/31/92 | 595.0 | 06/30/93 | 260.0 |
| 42 | 3602 | Bolen AJ R2 | Kannah Cr | 0.0 | 05/01/93 | 240.0 | 06/30/93 | 0.0 |

IRRIGATION YEAR - 1993

| AMOUNT OF STORAGE (AF) |  |  |  |  |  |  |  |  |
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| MI NI MUM MAXI MUM |  |  |  |  |  |  |  |  |
| WD | ID | RESERVOIR NAME | SOURCE STREAM | AF DATE |  | AF | DATE | END YR |
| 42 | 3603 | Bolen Res | Kannah Cr | 0.0 | 05/01/93 | 521.0 | 06/30/93 | 32.0 |
| 42 | 3604 | Carson Lake | Kannah Cr | 637.0 | 01/31/93 | 681.0 | 07/31/93 | 681.0 |
| 42 | 3606 | Deep Cr R2 | Kannah Cr | 0.0 | 05/01/93 | 371.0 | 06/30/93 | 0.0 |
| 42 | 3607 | Dry Cr R Sup | Kannah or | 0.0 | 05/01/93 | 236.0 | 06/30/93 | 0.0 |
| 42 | 3608 | Flowing Pk R | Kannah Cr | 0.0 | 05/01/93 | 772.0 | 06/30/93 | 320.0 |
| 42 | 3609 | Fruita Res 1 | East Cr | 0.0 | 04/30/93 | 140.0 | 05/31/93 | 80.0 |
| 42 | 3614 | Grand Mesa 1 | Kannah Cr | 204.0 | 04/30/93 | 560.0 | 06/30/93 | 158.0 |
| 42 | 3615 | Grand Mesa 6 | Kannah cr | 0.0 | 05/01/93 | 232.0 | 06/30/93 | 0.0 |
| 42 | 3616 | Grand Mesa 3 | Kannah Cr | 0.0 | 05/01/93 | 426.0 | 06/30/93 | 0.0 |
| 42 | 3617 | Grand Mesa R9 | Kannah Cr | 0.0 | 05/01/93 | 153.0 | 06/30/93 | 0.0 |
| 42 | 3618 | Hallenbeck R1 | Kannah Cr | 480.0 | 01/31/93 | 639.0 | 04/01/93 | 554.0 |
| 42 | 3619 | Hallenbeck R2 | Kannah Cr | 101.0 | 04/30/93 | 503.0 | 06/30/93 | 0.0 |
| 42 | 3620 | Juniata Res | Kannah Cr | 5291. | 12/01/92 | 6803. | 06/30/93 | 5901. |
| 42 | 3625 | Somerville R1 | Whitewater Cr | 0.0 | 05/01/93 | 973.0 | 06/30/93 | 0.0 |
| 42 | 3630 | Anderson R6 | Kannah Cr | 0.0 | 05/01/93 | 118.0 | 06/30/93 | 0.0 |
| 59 | 3666 | Taylor Pk Res | Taylor River | 50400 | 03/30/93 | 96700 | 07/14/93 | 72300 |

IRRIGATION YEAR - 1993


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| YEAF | FEAK <br> STOFAGE <br> AC FT | $\begin{aligned} & \% \text { DF } \\ & \text { TOTAL } \\ & \text { CAFACITY } \end{aligned}$ | CAFFRY <br> QVER <br> AC FT | $\%$ OF <br> THIS YEAF STOFAGE | $\begin{aligned} & \text { \% OF } \\ & \text { TOTAL } \\ & \text { CAFACITY } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1995 | 26067 | 95.5 | 15815 | 59 | 55 |
| 1.992 | 22866 | 80.2 | 4702 | 21 | 17 |
| 1.971 | 21890 | 78. | 4882 | 22 | 17 |
| 1990 | 16718 | 60.0 | 8853 | 23 | 1. |
| 1989 | 23089 | 82.9 | 3979 | 17 | 14 |
| 1988 | 25057 | 89.8 | 8490 | 54 | O |
| 1987 | 26963 | 96.6 | 10020 | 58 | उ6 |
| 1986 | 27279 | 97.8 | 21794 | 80 | 78 |
| 1985 | 27.349 | 98.1 | 15701. | 58 | 56 |
| 1784 | 27292 | 87.9 | 15964 | 5 S | 57 |
| 1988 | 27876 | 100.0 | 164.42 | 59 | 59 |
| 1982 | 25587 | 71.8 | 17.45 | 68 | 62 |
| 1981 | 20279 | 72.7 | 6865 | 34 | 25 |
| 1.980 | 27489 | 98.4 | 10292 | 37 | 37 |
| 1979 | 27480 | 78. 6 | 94 S | 34 | 34 |
| 1778 | 25.96 | 91.11 | 7858 | 31 | 20 |
| 1977 | 88 C | 31.7 | 2304 | 26 | 8 |
| 1.976 | 24861 | 89.2 | 3658 | 15 | 13 |
| 1975 | 26445 | 74.9 | 7864 | 30 | 28 |
| 1774 | 2456 | 87. 4 | 5076 | 21 | 18 |
| 1773 | 25185 | 70.4 | 1202 O | 4 e | 43 |

## GRAND MESA RESERVOIR STORAGE - D40 ANNUAL PEAK STORAGE - ACRE FEET


WATER DIVERSION SUMMARIES

WATER DIVERSION SUMMARIES TO VARIOUS USES
$\left.\begin{array}{|c|r|r|r|r|r|r|r|r|r||}\hline \text { WD } & \begin{array}{c}\text { TRANS- } \\ \text { MOUNTAIN } \\ \text { OUTFLOW }\end{array} & \begin{array}{c}\text { TRANS- } \\ \text { BASIN } \\ \text { OUTFLOW }\end{array} & \begin{array}{c}\text { MUNIC- } \\ \text { IPAL }\end{array} & \begin{array}{l}\text { COMMER- } \\ \text { CIAL }\end{array} & \begin{array}{l}\text { INDUS- } \\ \text { TRIAL }\end{array} & \begin{array}{l}\text { RECRE- } \\ \text { ATION }\end{array} & \begin{array}{l}\text { FISH- } \\ \text { ERY }\end{array} & \begin{array}{l}\text { DOMES/ } \\ \text { HOUSE- } \\ \text { HOLD }\end{array} & \text { STOCK }\end{array}\right]$
WATER DIVERSION SUMMARIES TO VARIOUS USES, continued
$\left.\begin{array}{|c|c|c|c|c|c|c|c|c|c||}\hline \text { WD } & \begin{array}{c}\text { AUGMEN- } \\ \text { TATION }\end{array} & \begin{array}{c}\text { EVAPO- } \\ \text { RATI ON }\end{array} & \begin{array}{c}\text { GEO- } \\ \text { THER- } \\ \text { MAL }\end{array} & \begin{array}{c}\text { SNOW- } \\ \text { MAKING }\end{array} & \begin{array}{c}\text { MIN. } \\ \text { STREAM } \\ \text { FLOW }\end{array} & \begin{array}{c}\text { POWER } \\ \text { GENERA- } \\ \text { TION }\end{array} & \begin{array}{c}\text { WILD- } \\ \text { LIFE }\end{array} & \begin{array}{c}\text { RE- } \\ \text { CHARG- } \\ \text { ES }\end{array} & \text { OTHER }\end{array}\right]$


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Muddy Creek
Muddy Creek
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No Calls

Water District 68
Water District 73


## APPENDIX F

## WATER COURT ACTIVITIES

Applications for Decrees ..... 270
Consultations with Referee ..... 237
Decrees Issued by Water Court ..... 241
Dismissals ..... 10
Complaints ..... 0
\# Cases \# Struc.
New Cond. \& Dil. on Cond. Rights ..... 100 ..... 200
Cancellations of Cond. Rights ..... 27 ..... 34
Conditional Rights Made Absolute ..... 38 ..... 78
Underground Water Rights Adjudicated ..... 26 ..... 66
Surface Water Rights Adjudicated ..... 185 ..... 327
Water Storage Rights Adjudicated ..... 49 ..... 77
Plans for Augmentation Adjudicated ..... 13 ..... 13
Change of Water Rights/Location ..... 9 ..... 9
Change of Water Rights/Use Adj. ..... 4 ..... 4
Instream Flow Rights Adjudicated ..... 4 ..... 4
Total ..... 455 ..... 812

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    V. TABLE OF ORGANI ZATION - PERSONNEL
    IRRIGATION DIVISION NO. 4
    Division Engineer - Keith C. Kepler
    Assistant Division Engineer - Kenneth W. Knox
            Secretary - Jean Kurtz
        Typist B - Bonnie Trujillo
Resident Dam Safety Engineer - James G. Norfleet
        Hydrographei - Jerry Thrush
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| Water District 28 | Water District 40 | Water District 41 |
| :---: | :---: | :---: |
| WATER COMMISSIONER Wesley Robinson | PR. WATER COMMISSIONER Jimmie Boyd | WATER COMMISSIONER <br> *Crandall Howard |
|  | SR. WATER COMMISSIONER <br> *Robert H. Starr |  |
| Water District 42 | WATER COMMISSIONERS Gail Brooks | Water District 59 |
|  | **Cliff Davis |  |
| SR. WATER COMMISSIONER <br> *Richard Belden | Merritt Denison | WATER COMMI SSIONER |
|  | **Rod Hamilton | ***Robert Drexel |
|  | Henry Levalley |  |
| WATER COMMISSIONER Jack Carter | Albert Mahannah |  |
|  | Kenneth Mahannah |  |
|  | John L. McHugh |  |
|  | L. Gregg Scott |  |
|  | Charles Stein |  |
|  | Stephen Tuck |  |
| Water District 60 | Water District 61 | Water District 62 |
| SR. WATER COMMI SSIONER Lyman Campbell | WATER COMMISSIONER | WATER COMMISSIONER |
|  | Clinton L. Oliver | Crandall Howard <br> **Ed Hofmann |
| Water District 63 | Water District 68 | Water District 73 |
| SR. WATER COMMISSIONER | WATER COMMI SSI ONER | SR. WATER COMMISSIONER |
| Richard Belden | H. Roger Noble | Richard Belden |

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*Annual
**Temporary
***Retired 7/l/93
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