

**ANNUAL OPERATING PLAN
FRYINGPAN-ARKANSAS PROJECT
WATER YEAR 2011 OPERATIONS**

I. GENERAL

This is the 42nd annual operating plan for the Fryingpan-Arkansas Project. The project, completed in 1990, imports spring snowmelt runoff from Colorado's west slope to the semi-arid Arkansas River Basin on Colorado's east slope. The project consists of federally owned dams, reservoirs, stream diversion structures, conduits, tunnels, pumping plants, a pumped-storage powerplant, electric transmission lines, substations, and recreation facilities. These features are located in the Fryingpan River and Hunter Creek watersheds of the Upper Colorado River Basin, and in the Arkansas River Basin in central and southeastern Colorado. The project provides water for irrigation, municipal, industrial use, hydroelectric power generation, recreation, and wildlife habitat. The project also provides for flood control.

The project was authorized under Public Law 87-590 on August 16, 1962. This law provides that the project will be operated under the operating principles adopted by the state of Colorado on April 30, 1959, as amended on December 30, 1959, and on December 9, 1960. These operating principles were published as House Document 130 (87th Congress, 1st Session), and are included in Appendix E.

This annual operating plan is a summary of the actual project operation in water year 2011 (October 1, 2010, through September 30, 2011).

II. PROJECT FEATURES IN OPERATION DURING WATER YEAR 2011

Ruedi Dam and Reservoir are located on the Fryingpan River, a tributary of the Roaring Fork River, on Colorado's west slope about 13 miles east of Basalt, Colorado. Ruedi Reservoir has a total capacity of 102,373 acre-feet at a water surface elevation of 7766.0 feet. The reservoir is operated on an annual cycle. Steady winter releases draft the reservoir such that it is filled with the spring runoff, while releases to the Fryingpan River are maintained below the safe channel capacity. The reservoir provides replacement water for out-of-priority depletions to the Colorado River by the project as well as water for west slope irrigation, municipal, and industrial uses on a contractual basis. The reservoir is also operated to provide for recreation, wildlife habitat, and flood control.

The west slope collection system, located upstream of Ruedi Reservoir in the upper Fryingpan River and Hunter Creek watersheds, is a series of 16 stream diversion structures and eight tunnels. The system collects spring snowmelt runoff for diversion, by gravity, to the inlet of the Charles H. Boustead Tunnel. The Boustead Tunnel conveys water collected by the west slope collection system under the continental divide and into Turquoise Lake on the east slope. The tunnel is 5 miles long and has a water conveyance capacity of 945 cubic feet per second (cfs).

Sugarloaf Dam and Turquoise Lake are located on Lake Fork Creek, a tributary of the Arkansas River, about 5 miles west of Leadville, Colorado. The lake has a total capacity of 129,398 acre-feet at a water surface elevation of 9869.4 feet. The lake is operated to provide regulation of both project and non-project water imported from the west slope. Turquoise Lake is operated on an annual cycle, as is Ruedi Reservoir. The lake is drafted through the Mt. Elbert Conduit during the winter to provide adequate space for the spring imports of west slope water. Most of the native inflow from Lake Fork Creek is impounded in the lake and returned to the Arkansas River via the Mt. Elbert Conduit, the Mt. Elbert Powerplant, and Twin Lakes. The lake is also operated to provide for recreation and wildlife habitat.

The Mt. Elbert Conduit conveys project, non-project, and native Lake Fork Creek water from Turquoise Lake to Twin Lakes. The conduit is 10.7 miles long and has a water conveyance capacity of 370 cfs. Native water from Halfmoon Creek is also added to the conduit and returned to the Arkansas River from Twin Lakes Dam. All conduit flow which reaches the Mt. Elbert Forebay is used to generate electricity at the Mt. Elbert Powerplant as it is delivered to Twin Lakes.

The Mt. Elbert Powerplant is a pumped-storage facility located on the shore of Twin Lakes. It has two 100-megawatt turbine generators, which can be reversed and used as 340,000-horsepower pumps. In addition to being used to generate energy with the Mt. Elbert Conduit flow, the plant is used to follow daily peak power loads. This load following is accomplished by pumping water to the Mt. Elbert Forebay, an 11,143-acre-foot regulating pool at the terminus of the Mt. Elbert Conduit, from Twin Lakes during off-peak load hours using surplus or low cost energy. That water is then returned to Twin Lakes through the turbines during peak load hours, along with the Mt. Elbert Conduit flow. The energy generated at the plant is transmitted and marketed by the Western Area Power Administration, with the revenues applied to the repayment of the project.

Twin Lakes Dam and Twin Lakes are located on Lake Creek, a tributary of the Arkansas River, about 13 miles south of Leadville, Colorado. Twin Lakes has a capacity of 140,855 acre-feet at a maximum water surface elevation of 9200 feet. The reservoir is operated to regulate both project and non-project water imported from the west slope. The project water stored in the reservoir is released to Lake Creek for storage in Pueblo Reservoir during the winter months, in anticipation of spring imports from the west slope. Native inflows into Turquoise Lake, native flows diverted from Halfmoon Creek, and native inflows into Twin Lakes, are all released to Lake Creek from the Twin Lakes Dam. The cities of Colorado Springs and Aurora take direct delivery of water from the reservoir through their Otero Pipeline. The operation of Twin Lakes also provides for recreation and wildlife habitat.

Pueblo Dam and Reservoir are located on the Arkansas River 6 miles west of the city of Pueblo, Colorado. The reservoir is the terminal storage facility for the Fryingpan-Arkansas Project and has a total storage capacity of 349,940 acre-feet at a water surface elevation of 4898.7 feet. The upper 26,991 acre-feet of storage space are reserved for flood control at all times, and an additional 66,000 acre-feet of space are reserved from April 15 through November 1. Non-project water may be stored in the reservoir under temporary contract. Native inflow can be

stored when the project storage right is in priority or under the winter water storage program (WWSP). Under the WWSP, irrigators are permitted to store native Arkansas River water in Pueblo Reservoir during the winter months for an additional supply of irrigation water, on the condition that the water is used before May 1 of the next water year. The majority of project water deliveries are made from the reservoir. The Fountain Valley Authority, the Pueblo West Metropolitan District, and the Pueblo Board of Water Works take direct delivery of municipal water through the south outlet works and joint-use manifold. A direct irrigation delivery is made to the Bessemer Ditch. Other project deliveries are made as releases to the Arkansas River for diversion downstream. Pueblo Reservoir is also operated to provide for recreation, wildlife habitat, and flood control.

III. HYDROLOGIC CONDITIONS AND WEATHER EVENTS IN WATER YEAR 2011

Precipitation over the upper Fryingpan watershed above Ruedi Reservoir was well above average for water year 2011. October precipitation came in at 160 percent of average for the month. Above average precipitation in the fall and early winter helped alleviate soil moisture deficiencies prior to the snow accumulation months. By the end of December, snow started to accumulate significantly, and by April 1 the snow pack was well above average. Above average conditions continued into May and early June where new precipitation added significantly to the already above average snowpack. On April 1, the snow pack in the upper Fryingpan watershed was 3 inches above average and by June 1, the snow pack was 12 inches above average. Precipitation continued throughout June and into July, with the monsoonal pattern setting in early, snow was still accumulating at the high elevation sites in the basin. At the Mormon Control House, over 5 inches of precipitation fell in the form of rain for the month of July.

Temperatures at the SNOTEL sites in the basin above Ruedi were split with half the months below average and the other above average for the winter months of November through February. For the spring months of March through May, all the sites were below average. Then for the summer months of June through August all sites reported above average temperatures.

Inflow started out slow for the spring months reflecting the below average temperatures in the basin, then started picking up in late May and remained above 800 cfs until the middle of July. Inflow was the highest for the month of July since the early 1980's.

IV. REPORT ON OPERATIONS DURING WATER YEAR 2011

A. Ruedi Reservoir

Ruedi Reservoir began water year 2011 with a storage content of 78,567 acre-feet, which is 89 percent of average. Releases were decreased by the middle of October to 75 cfs and held constant at this rate until spring. This release was made through the city of Aspen's hydroelectric powerplant.

In February, the forecast for runoff for April through July in the Fryingpan River Basin predicted high inflows for Ruedi Reservoir. After analysis of various model results of operations using the most probable and maximum reasonable forecasts it was decided to increase the outflow from

75 cfs to 100 cfs. The plan was to draft the reservoir down to 62,000 acre-feet by the middle of April in order to contain the runoff volume indicated by the forecast. By March, the forecast continued to increase and plans were redrafted. The April through July forecast increased by 3,000 acre-feet between February and March. As a result, the outflow was increased from 100 cfs to 130 cfs. The new plan was to hold the release constant until April and still draft the reservoir down to 62,000 acre-feet. As April approached and snow continued to accumulate, the April through July forecast increased by 8,000 acre-feet. As runoff started picking up in the middle of April and the reservoir started to level out, releases were increased once again to 332 cfs. The month of May had below average temperatures which caused inflow to stall and allowed the reservoir to draft to a minimum for the year of 58,332 acre-feet. The May forecast came in at 129 percent of average and it appeared that the current release and the space vacated was adequate to accommodate the runoff volume. By June, runoff started picking up significantly, with peaks over 1200 cfs calculated. The reservoir started filling quickly and by the middle of June Ruedi gained 26,400 acre-feet. By the end of June, it was certain that inflow was not going to recede below the downstream channel capacity of 850 cfs by the time the reservoir was full, so the release from the dam was increased to 926 cfs on June 30. At this point the reservoir went into internal alert as dictated by the emergency action plan (EAP), which is required if the reservoir release is equal or greater than 850 cfs, and/or the water surface elevation is above 7766 feet. All notifications required by the EAP were made and the water resources group was in constant contact with the town of Basalt. By the first week of July, the monsoonal pattern had set in and within the first week of the month precipitation gages above Ruedi Reservoir measured 4.04 inches of precipitation. Runoff was still holding well above the downstream channel capacity of 850 cfs and the reservoir had only a few feet to go before the lip of the spillway. After internal discussion and contact with the town of Basalt the release was increased to 950 cfs. About 2 days after this increase, the inflow receded below the downstream channel capacity and the reservoir reached full pool on July 10. After reaching full pool, the reservoir was then lowered to 7764 feet as directed in the Standard Operating Plan (SOP).

Storage water from Ruedi was released starting on August 19 to support the target flows in the 15-Mile Reach of the Colorado River near Grand Junction Colorado. A total of 15,246 acre-feet was released between August 19 and October 15. This total included 5,000 acre-feet of firm fish pool and 10,246 acre-feet of mitigation water. No release was made from the 4-out-of-5-year fish pool and with no river calls for Ruedi in water year 2011, there was no contract water releases.

Ruedi Reservoir is one of the participating reservoirs in the Coordinated Reservoir Operations effort of the Upper Colorado River Endangered Fish Recovery Program. The efforts are directed at augmenting peak flows in the 15-Mile Reach of the Colorado River to benefit habitat improvement and spawning for two of the endangered Colorado River fishes. The 15-Mile Reach of the Colorado River is the stretch of the river above the confluence with the Gunnison River in Grand Valley. Ruedi Reservoir did not participate in this operation during the spring runoff of 2011. Natural flows in the Colorado River were high enough to sustain peaks needed for fish recovery without the assistance of any CROS reservoirs.

Ruedi Reservoir finished water year 2011 with a storage content of 88,915 acre-feet, or 101 percent of average.

B. West Slope Collection System and Project Diversions

The import of project water through the Boustead Tunnel began on May 7, 2011, and concluded on August 23, 2011. The daily discharge record for the diversion structures is included as Appendix D. A total of 98,858 acre-feet was imported during water year 2011, which is 204 percent of average. Water year 2011 was the second largest import year in Fry Ark history. There was no Busk-Ivanhoe water imported through the Boustead Tunnel. The maximum mean daily import was 954 cfs on July 8, 2011. The most probable forecasts for the first of February, March, April, and May were 72,600 acre-feet, 61,600 acre-feet, 75,300 acre-feet, and 82,500 acre-feet, respectively.

The total imports for the water year; the accumulated imports to the Arkansas River; the water used for the Twin Lakes Reservoir and Canal Company exchange; and the import water available for allocations by the Southeastern Colorado Water Conservancy District, are shown on Table 4. The 40 years of accumulated imports total 2,081,100 acre-feet, for an average of 52,028 acre-feet per year. A plot of the Boustead Tunnel imports during water year 2011 is shown on Exhibit 5.

C. Twin Lakes Reservoir and Canal Company/Fryingpan-Arkansas Project Exchange

The Bureau of Reclamation is obligated to maintain minimum stream flows in the Roaring Fork River by the authorizing legislation of the project. This is accomplished through an exchange of water with the Twin Lakes Reservoir and Canal Company. On October 1, 2010, the Company began bypassing water into the Roaring Fork River on the west slope in exchange for project water stored in Twin Lakes on the east slope. The total amount of the exchange at Twin Lakes Reservoir was 2,850 acre-feet. The operating criteria and the monthly summary of the exchange are shown in Appendix C.

D. Turquoise Lake

On September 30, 2010, there was 115,713 acre-feet of water (elevation of 9986.62 feet) stored in Turquoise Lake, 101 percent of average. Releases made to Twin Lakes through the Mt. Elbert Conduit drafted Turquoise Lake to 47,025 acre-feet (elevation 9816.30 feet), the lowest storage of the water year, by March 25, 2011. There was 123,361 acre-feet of water (elevation 9860.00 feet) in storage at the end of the water year, 101 percent of average.

Homestake Tunnel imports totaled 32,153 acre-feet during the water year, 100 percent of average. Busk-Ivanhoe imports totaled 3,534 acre-feet, 68 percent of average, and was divided between the Pueblo Board of Water Works and the city of Aurora. Project water imports through the Boustead Tunnel totaled 98,858 acre-feet, 204 percent of average.

Exhibits 8 and 9 show the precipitation and pan evaporation at Turquoise Lake. Exhibits 5, 6, and 7 show the monthly imports through the Boustead, Homestake, and Busk-Ivanhoe Tunnels, respectively. Table 5 and Exhibit 10 depict the monthly operation of Turquoise Lake during water year 2011.

E. Mt. Elbert Conduit/Halfmoon Creek Diversion

During water year 2011, 140,469 acre-feet of water released from Turquoise Lake and 5,183 acre-feet of water diverted from Halfmoon Creek, were conveyed through the Mt. Elbert Conduit to the Mt. Elbert Forebay, and subsequently to Twin Lakes through the Mt. Elbert Powerplant. An additional 3,898 acre-feet of water was released into the conduit from Turquoise Lake for use by the Leadville Federal Fish Hatchery. The water delivered to the hatchery was returned to the Arkansas River and stored in Pueblo Reservoir.

F. Twin Lakes/Mt. Elbert Forebay and Mt. Elbert Pumped-Storage Powerplant

The storage in Twin Lakes was 117,468 acre-feet of water (elevation 9190.89 feet) on September 30, 2010. The combined storage of Twin Lakes and the Mt. Elbert Forebay was 124,651 acre-feet. Twin Lakes Reservoir releases to Lake Creek were made throughout the winter to pass the entire flow of the Mt. Elbert Conduit, and to transfer project water stored in the reservoir to Pueblo Reservoir. The native inflow was stored in Twin Lakes Reservoir and Canal Company storage space from November 15 through March 15. A total of 71,116 acre-feet of project water was released to Lake Creek during this time. This water was released such that the flow in the Arkansas River at the Wellsville gage was maintained as close to the average October 15 to November 15 trout-spawning flow as possible. The combined reservoir and forebay water storage reached a low point of 87,539 acre-feet on May 30, 2011, and was at its high point of 141,016 acre-feet on July 20, 2011. A total of 20,204 acre-feet of project water was released to augment rafting flows in the Arkansas River during the period of July 1 to August 15. There was no release of project water for the Arkansas River summer augmentation.

At least one generating/pumping unit was available at the Mt. Elbert Powerplant throughout water year 2011. The capacity of one unit is greater than the capacity of the Mt. Elbert Conduit. A total of 381,135 megawatt-hours of energy was generated at the powerplant, with 1,132,004 acre-feet of water; 146,310 acre-feet came through the Mt. Elbert Conduit; and 991,269 acre-feet was first pumped to the Mt. Elbert Forebay from Twin Lakes during off-peak electric demand hours. Table 7 depicts the monthly powerplant operation for water year 2011.

G. Pueblo Reservoir

The water storage content of Pueblo Reservoir was 187,079 acre-feet (elevation 4863.50 feet) on September 30, 2010, 133 percent of average. Project water released from Turquoise Lake, through the Leadville Federal Fish Hatchery, and from Twin Lakes, was stored in Pueblo Reservoir through the winter and spring. A total of 44,555 acre-feet of native inflow was stored in the reservoir under the winter water storage program from November 15, 2010, through March 14, 2011. During the water year, 37,347 acre-feet of winter water and 8,145 acre-feet of winter water carryover were released, and 2,099 acre-feet was evaporated. The reservoir reached a high point in storage of 266,923 acre-feet (elevation 4882.63 feet) on March 27, 2011. There was 166,957 acre-feet (elevation 4857.85 feet) in storage on September 30, 2011. This is 119 percent of average and 89,992 acre-feet less than a full conservation pool.

Table 8 and Exhibit 20 depict Pueblo Reservoir monthly operations during water year 2011. The 2010-11 winter water storage is shown on Exhibit 17, and the winter water releases are shown on Exhibit 18. The pan evaporation at the reservoir is shown on Exhibit 19.

H. Storage Contracts

There were 12 contracts for storage of non-project water in project storage space on the east slope in effect in water year 2011. Six of those were permanent contracts: Twin Lakes Reservoir and Canal Company for 54,452 acre-feet; city of Colorado Springs for 17,416 acre-feet; city of Aurora for 5,000 acre-feet; Pueblo Board of Water Works for 5,000 acre-feet; Busk-Ivanhoe, Inc., for 10,000 acre-feet; and Homestake Project for 30,000 acre-feet. There were six long-term contracts: Pueblo Board of Water Works; city of Aurora; Colorado Springs; Pueblo West; Fountain; and Security. The remaining contracts were interim, 1-year contracts for "if-and-when" storage space. Under "if-and-when" contracts, non-project water may be stored in project storage space as long as that storage space is not required for project water.

I. Project Water Sales and Deliveries

There were 75,000 acre-feet of Fryingpan-Arkansas Project water made available to the Southeastern Colorado Water Conservancy District during water year 2011. The district purchased 48,207 acre-feet and called for 74,320 acre-feet of project and project carryover water during the year. Evaporation reduced the project water in storage by 10,240 acre-feet. By the end of the water year (September 30, 2011), the district had 16,928 acre-feet of 2011 allocated water and 120,212 acre-feet of carryover water remaining in storage. Of the 74,320 acre-feet of project water released, 8,770 acre-feet was for municipal and industrial use, and 65,521 acre-feet was for irrigation. The monthly release of project water from Pueblo Reservoir is shown on Exhibit 21.

J. Reservoir Storage Allocation Data

Table 9 presents the reservoir storage allocations for the five project reservoirs.

K. Reservoir Evaporation and Precipitation

Tables 11 and 12 present the monthly average evaporation and precipitation at the four weather stations near project facilities. When an evaporation pan is not in service and a reservoir is not completely ice-covered, the daily water surface evaporation is computed using seasonal evaporation factors. Those factors are listed in Table 10. The assumption is that there is no evaporation from a reservoir water surface when ice completely covers the reservoir.

L. Flood Control Benefits

The Army Corps of Engineers estimated that the operations at Ruedi Reservoir during water year 2011 prevented a total of \$3,002,000 in potential flood damages. Since impoundment, Ruedi Reservoir has prevented a total of \$18,316,400 in potential flood damages.

The snowpack in the Arkansas River Basin was average during water year 2011. A waiver was issued by the Corps of Engineers that provided a two-week extension on the use of the conservation pool at Pueblo Reservoir under certain conditions, which included: the joint use pool would not be encroached upon by more than 10,000 acre-feet; the snowpack in the Upper Arkansas Basin would not exceed 100 percent; and the conditions of the Colorado Compact would still be met. The reservoir level for Pueblo Reservoir did not reach the flood pool from May to November, and the reservoir releases were always below levels that could cause economic damage.

Therefore, the Corps of Engineers has determined that Pueblo Reservoir did not directly prevent any flooding downstream during water year 2011.

Table 13 shows the historic flood control benefits provided by Pueblo and Ruedi Dams.

Table 1

Ruedi Reservoir
Water Year 2011 Operations
Unit: 1,000 Acre-Feet

Year	Month	Inflow	Evaporation*	Outflow	End of Month Content	Water Surface Elevation (FEET)
2010	Sep				78.7	7740.21
	Oct	3.4	0.1	5.2	76.8	7737.90
	Nov	3.0	0	4.1	75.6	7736.55
	Dec	3.0	0	4.6	74.0	7734.59
2011	Jan	2.5	0	4.6	72.0	7732.05
	Feb	2.1	0	4.7	69.4	7728.73
	Mar	2.8	0	7.4	64.8	7722.67
	Apr	8.1	0	13.1	59.8	7715.82
	May	23.8	0	21.1	62.5	7719.53
	Jun	70.2	0.5	32.8	99.4	7763.01
	Jul	33.7	0.6	32.2	100.3	7763.89
	Aug	9.9	0.4	10.7	99.1	7762.65
	Sep	6.8	0.2	16.8	88.9	7751.88
Total		169.3	1.8	157.3		

FRYPAN-ARKANSAS PROJECT
 RUEDI RESERVOIR
 RELEASES FOR ENDANGERED FISH
 WATER YEAR 2011
 April-11

Table 2-1

DAY	DATE	ELEV. (FT)	STORAGE (AC-FT)	INFLOW (CFS)	EVAP. (CFS)	TOTAL RESERVOIR RELEASE (CFS)	ROCKY FORK CREEK (CFS)	FRYPAN RIVER GAGE BELOW DAM (CFS)	RUEDI CALLED OUT? (1= YES) (0= NO)	REQUIRED MIN FLOW BELOW RUEDI w/o FISH REL (CFS)	ENDANGERED FISH RELEASE (CFS)	CUMULATIVE FISH RELEASE (AC-FT)	PALISADE GAGE (CFS)
THU	4/1/2011	7,722.47	64666	63	0	140	3	143	no	39	0	0	1620
FRI	4/2/2011	7,722.31	64562	87	0	140	4	144	no	39	0	0	1830
SAT	4/3/2011	7,722.26	64510	114	0	140	5	145	no	39	0	0	2300
SUN	4/4/2011	7,722.14	64421	96	0	139	4	143	no	39	0	0	2610
MON	4/5/2011	7,722.02	64332	94	0	139	4	143	no	39	0	0	2420
TUE	4/6/2011	7,721.91	64251	98	0	149	5	154	no	39	0	0	2060
WED	4/7/2011	7,721.70	64097	72	0	182	5	187	no	39	0	0	2090
THU	4/8/2011	7,721.50	63958	112	0	186	5	191	no	39	0	0	2390
FRI	4/9/2011	7,721.26	63774	93	0	222	6	228	no	39	0	0	2590
SAT	4/10/2011	7,720.97	63562	115	0	221	6	227	no	39	0	0	3130
SUN	4/11/2011	7,720.67	63342	110	0	221	5	226	no	39	0	0	3220
MON	4/12/2011	7,720.39	63130	113	0	220	6	226	no	39	0	0	2980
TUE	4/13/2011	7,720.08	62910	110	0	220	6	226	no	39	0	0	2790
WED	4/14/2011	7,719.83	62728	129	0	220	6	226	no	39	0	0	2930
THU	4/15/2011	7,719.53	62511	111	0	219	6	225	no	39	0	0	3070
FRI	4/16/2011	7,719.22	62287	106	0	219	6	225	no	39	0	0	2920
SAT	4/17/2011	7,718.94	62085	117	0	220	6	226	no	39	0	0	2860
SUN	4/18/2011	7,718.77	61954	154	0	221	6	227	no	39	0	0	2850
MON	4/19/2011	7,718.62	61853	170	0	220	7	227	no	39	0	0	3660
TUE	4/20/2011	7,718.41	61694	140	0	219	7	226	no	39	0	0	4150
WED	4/21/2011	7,718.31	61629	187	0	221	7	228	no	39	0	0	4120
THU	4/22/2011	7,718.20	61550	181	0	219	8	227	no	39	0	0	4490
FRI	4/23/2011	7,718.10	61477	183	0	220	7	227	no	39	0	0	4650
SAT	4/24/2011	7,717.94	61369	165	0	220	7	227	no	39	0	0	4670
SUN	4/25/2011	7,717.77	61241	155	0	220	8	228	no	39	0	0	4600
MON	4/26/2011	7,717.60	61120	159	0	220	8	228	no	39	0	0	4440
TUE	4/27/2011	7,717.23	60855	87	0	248	8	256	no	39	0	0	4250
WED	4/28/2011	7,716.83	60570	104	0	290	8	298	no	39	0	0	3840
THU	4/29/2011	7,716.37	60234	121	0	321	8	329	no	39	0	0	3630
FRI	4/30/2011	7,715.82	59850	128	0	321	7	328	no	39	0	0	3750
Averages		7,719.57	62551	122	0	212	6	218			0		3230
Totals (acft)				7284	0	12611	364	12974			0		192221

NOTES: Releases of water to support 15-Mile Reach target flows ceased on 10/16. A total of 15,246 acre-feet were released to support Recovery Program target flows in the 15-Mile Reach.
 NOTES: The values presented in these tables were compiled from operational records.
 NOTES: These are preliminary records and open to revision.

FRYINGPAN-ARKANSAS PROJECT
 RUEDI RESERVOIR
 RELEASES FOR ENDANGERED FISH
 WATER YEAR 2011
 May-11

Table 2-2

DAY	DATE	ELEV. (FT)	STORAGE (AC-FT)	INFLOW (CFS)	EVAP. (CFS)	TOTAL RESERVOIR RELEASE (CFS)	ROCKY FORK CREEK (CFS)	FRYINGPAN RIVER GAGE BELOW DAM (CFS)	RUEDI CALLED OUT? (1= YES) (0= NO)	REQUIRED MIN FLOW BELOW RUEDI w/o FISH REL (CFS)	ENDANGERED FISH RELEASE (CFS)	CUMULATIVE FISH RELEASE (AC-FT)	PALISADE GAGE (CFS)
THU	5/1/2011	7,715.27	59454	121	0	320	7	327	no	110	0	0	3890
FRI	5/2/2011	7,714.68	59040	111	0	319	7	326	no	110	0	0	3940
SAT	5/3/2011	7,714.08	58620	107	0	318	7	325	no	110	0	0	3910
SUN	5/4/2011	7,713.50	58215	114	0	318	7	325	no	110	0	0	3850
MON	5/5/2011	7,712.99	57858	139	0	317	7	324	no	110	0	0	3880
TUE	5/6/2011	7,712.58	57582	178	0	318	7	325	no	110	0	0	4090
WED	5/7/2011	7,712.37	57436	245	0	318	7	325	no	110	0	0	4850
THU	5/8/2011	7,712.42	57471	335	0	318	8	326	no	110	0	0	6700
FRI	5/9/2011	7,712.61	57609	388	0	318	10	328	no	110	0	0	9030
SAT	5/10/2011	7,712.68	57644	335	0	318	14	332	no	110	0	0	9980
SUN	5/11/2011	7,712.80	57734	364	0	318	16	334	no	110	0	0	10100
MON	5/12/2011	7,712.70	57664	284	0	318	16	334	no	110	0	0	10400
TUE	5/13/2011	7,712.53	57547	259	0	318	15	333	no	110	0	0	9400
WED	5/14/2011	7,712.48	57512	300	0	318	14	332	no	110	0	0	8590
THU	5/15/2011	7,712.50	57526	325	0	319	14	333	no	110	0	0	9180
FRI	5/16/2011	7,712.79	57727	420	0	319	16	335	no	110	0	0	10700
SAT	5/17/2011	7,713.19	58004	459	0	318	21	339	no	110	0	0	12900
SUN	5/18/2011	7,713.51	58227	431	0	319	22	341	no	110	0	0	13600
MON	5/19/2011	7,713.71	58367	389	0	318	22	340	no	110	0	0	13100
TUE	5/20/2011	7,713.74	58395	332	0	317	21	338	no	110	0	0	12300
WED	5/21/2011	7,713.73	58381	310	0	318	19	337	no	110	0	0	11500
THU	5/22/2011	7,713.66	58332	293	0	318	18	336	no	110	0	0	10400
FRI	5/23/2011	7,713.69	58360	332	0	318	17	335	no	110	0	0	10400
SAT	5/24/2011	7,713.74	58395	335	0	318	18	336	no	110	0	0	11200
SUN	5/25/2011	7,713.78	58423	332	0	318	18	336	no	110	0	0	11900
MON	5/26/2011	7,713.99	58569	392	0	320	19	338	no	110	0	0	12000
TUE	5/27/2011	7,714.59	58990	532	0	322	22	344	no	110	0	0	13000
WED	5/28/2011	7,715.51	59645	653	0	323	29	352	no	110	0	0	14800
THU	5/29/2011	7,716.95	60668	838	0	328	39	367	no	110	0	0	16900
FRI	5/30/2011	7,718.55	61808	903	0	329	49	378	no	110	0	0	21300
SAT	5/31/2011	7,719.52	62511	683	0	329	41	370	no	110	0	0	22000
Averages		7,713.90	58507	363	0	320	18	337			0		10316
Totals (acft)				22292	0	19647	1082	20730			0		634303

NOTES: Releases of water to support 15-Mile Reach target flows ceased on 10/16. A total of 15,246 acre-feet were released to support Recovery Program target flows in the 15-Mile Reach.
 NOTES: The values presented in these tables were compiled from operational records.
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FRYINGPAN-ARKANSAS PROJECT
 RUEDI RESERVOIR
 RELEASES FOR ENDANGERED FISH
 WATER YEAR 2011
 June-11

Table 2-3

DAY	DATE	ELEV. (FT)	STORAGE (AC-FT)	INFLOW (CFS)	EVAP. (CFS)	TOTAL	ROCKY	FRYINGPAN	RUEDI	REQUIRED	ENDANGERED	CUMULATIVE	PALISADE
						RESERVOIR RELEASE (CFS)	FORK CREEK (CFS)	RIVER GAGE BELOW DAM (CFS)	CALLED OUT? (1= YES) (0= NO)	MIN FLOW BELOW RUEDI w/o FISH REL (CFS)	FISH RELEASE (CFS)	FISH RELEASE (AC-FT)	GAGE (CFS)
THU	6/1/2011	7,720.52	63,239	700	8	330	40	370	no	110	0	0	20,700
FRI	6/2/2011	7,721.86	64,229	833	8	331	45	376	no	110	0	0	21,300
SAT	6/3/2011	7,723.57	65,489	971	8	337	55	392	no	110	0	0	24,100
SUN	6/4/2011	7,725.14	66,673	937	8	338	56	394	no	110	0	0	24,800
MON	6/5/2011	7,727.03	68,106	1,065	8	340	63	402	no	110	0	0	25,200
TUE	6/6/2011	7,729.52	70,037	1,317	8	342	72	414	no	110	0	0	27,600
WED	6/7/2011	7,732.26	72,199	1,436	8	344	79	423	no	110	0	0	30,500
THU	6/8/2011	7,734.54	74,031	1,272	9	351	77	428	no	110	0	0	31,900
FRI	6/9/2011	7,736.70	75,788	1,241	9	352	78	430	no	110	0	0	30,700
SAT	6/10/2011	7,738.70	77,442	1,191	9	351	77	428	no	110	0	0	30,000
SUN	6/11/2011	7,740.61	79,045	1,164	9	351	76	427	no	110	0	0	28,800
MON	6/12/2011	7,742.66	80,790	1,236	9	347	76	423	no	110	0	0	28,400
TUE	6/13/2011	7,744.46	82,342	1,134	9	377	77	453	no	110	0	0	28,100
WED	6/14/2011	7,745.93	83,623	1,028	10	479	76	555	no	110	0	0	27,100
THU	6/15/2011	7,747.20	84,741	1,047	9	568	76	644	no	110	0	0	26,300
FRI	6/16/2011	7,748.63	86,018	1,217	9	658	78	736	no	110	0	0	26,400
SAT	6/17/2011	7,750.28	87,486	1,403	10	718	84	801	no	110	0	0	27,500
SUN	6/18/2011	7,751.39	88,480	1,223	10	719	80	799	no	110	0	0	28,700
MON	6/19/2011	7,752.29	89,298	1,136	10	720	76	796	no	110	0	0	26,800
TUE	6/20/2011	7,753.07	90,001	1,080	10	718	72	790	no	110	0	0	26,000
WED	6/21/2011	7,753.44	90,341	895	10	718	67	784	no	110	0	0	24,200
THU	6/22/2011	7,753.79	90,672	889	10	705	65	769	no	110	0	0	22,200
FRI	6/23/2011	7,754.68	91,504	1,129	10	624	68	692	no	110	0	0	22,700
SAT	6/24/2011	7,756.14	92,862	1,314	10	567	73	640	no	110	0	0	24,500
SUN	6/25/2011	7,757.80	94,424	1,360	10	569	75	644	no	110	0	0	26,500
MON	6/26/2011	7,759.22	95,764	1,249	10	631	74	705	no	110	0	0	27,500
TUE	6/27/2011	7,760.24	96,741	1,129	10	703	70	773	no	110	0	0	27,100
WED	6/28/2011	7,761.04	97,522	1,102	10	756	67	823	no	110	0	0	26,000
THU	6/29/2011	7,761.97	98,414	1,211	10	755	68	823	no	110	0	0	25,400
FRI	6/30/2011	7,762.99	99,419	1,267	10	802	72	874	no	110	0	0	25,900
Averages		7,744.92	83,224.00	1,139.19	9.24	530.04	70.23	600.27			0.00		26,430.00
Totals (acft)				67,787	550	31,540	4,179	35,719			0		1,572,717

NOTES: Releases of water to support 15-Mile Reach target flows ceased on 10/16. A total of 15,246 acre-feet were released to support Recovery Program target flows in the 15-Mile Reach.
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FRYINGPAN-ARKANSAS PROJECT
 RUEDI RESERVOIR
 RELEASES FOR ENDANGERED FISH
 WATER YEAR 2011
 July-11

Table 2-4

DAY	DATE	ELEV. (FT)	STORAGE (AC-FT)	INFLOW (CFS)	EVAP. (CFS)	TOTAL RESERVOIR RELEASE (CFS)	ROCKY FORK CREEK (CFS)	FRYINGPAN RIVER GAGE BELOW DAM (CFS)	RUEDI CALLED OUT? (1= YES) (0= NO)	REQUIRED MIN FLOW BELOW RUEDI w/o FISH REL (CFS)	ENDANGERED FISH RELEASE (CFS)	CUMULATIVE FISH RELEASE (AC-FT)	PALISADE GAGE (CFS)
THU	7/1/2011	7763.62	100027	1113	9	823	68	891	no	110	0	0	27100
FRI	7/2/2011	7764.06	100459	1046	9	822	63	885	no	110	0	0	25700
SAT	7/3/2011	7764.39	100775	986	9	818	60	878	no	110	0	0	24200
SUN	7/4/2011	7764.50	100884	878	9	816	56	872	no	110	0	0	23200
MON	7/5/2011	7764.53	100924	841	9	813	54	867	no	110	0	0	21700
TUE	7/6/2011	7764.77	101151	933	9	811	53	864	no	110	0	0	21000
WED	7/7/2011	7764.97	101348	915	9	811	50	861	no	110	0	0	21400
THU	7/8/2011	7765.38	101756	1021	9	809	51	860	no	110	0	0	21500
FRI	7/9/2011	7765.70	102084	980	10	808	52	859	no	110	0	0	22700
SAT	7/10/2011	7765.79	102154	847	10	843	48	891	no	110	0	0	22700
SUN	7/11/2011	7765.37	101746	643	9	852	43	895	no	110	0	0	21900
MON	7/12/2011	7764.79	101161	562	9	824	40	864	no	110	0	0	21300
TUE	7/13/2011	7764.21	100588	540	9	755	39	794	no	110	0	0	20200
WED	7/14/2011	7763.68	100076	502	9	631	35	666	no	110	0	0	19700
THU	7/15/2011	7763.38	99782	488	9	474	32	506	no	110	0	0	18100
FRI	7/16/2011	7763.34	99743	459	9	326	30	356	no	110	0	0	16500
SAT	7/17/2011	7763.46	99860	390	9	250	28	278	no	110	0	0	15400
SUN	7/18/2011	7763.58	99978	314	9	251	27	278	no	110	0	0	14700
MON	7/19/2011	7763.73	100135	335	9	252	26	278	no	110	0	0	14400
TUE	7/20/2011	7763.87	100262	321	9	252	24	276	no	110	0	0	13800
WED	7/21/2011	7763.90	100292	271	9	252	23	275	no	110	0	0	12800
THU	7/22/2011	7763.90	100282	252	9	248	22	270	no	110	0	0	12000
FRI	7/23/2011	7763.88	100272	248	9	230	20	250	no	110	0	0	11100
SAT	7/24/2011	7763.86	100253	225	9	231	19	250	no	110	0	0	9830
SUN	7/25/2011	7763.86	100253	235	9	220	18	238	no	110	0	0	8560
MON	7/26/2011	7763.88	100272	235	9	203	18	221	no	110	0	0	7760
TUE	7/27/2011	7763.90	100282	213	9	205	18	222	no	110	0	0	7250
WED	7/28/2011	7763.88	100272	204	9	204	17	221	no	110	0	0	6530
THU	7/29/2011	7763.87	100262	204	9	206	14	220	no	110	0	0	6120
FRI	7/30/2011	7763.87	100262	211	9	210	11	221	no	110	0	0	5650
SAT	7/31/2011	7763.89	100282	225	9	212	11	223	no	110	0	0	5370
Averages		7764.19	100577	537	9	499	34	533			0		16135
Totals (acft)				32994	578	30668	2119	32787			0		992087

NOTES: Releases of water to support 15-Mile Reach target flows ceased on 10/16. A total of 15,246 acre-feet were released to support Recovery Program target flows in the 15-Mile Reach.
 NOTES: The values presented in these tables were compiled from operational records.
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FRYINGPAN-ARKANSAS PROJECT
 RUEDI RESERVOIR
 RELEASES FOR ENDANGERED FISH
 WATER YEAR 2011
 August-11

Table 2-5

DAY	DATE	ELEV. (FT)	STORAGE (AC-FT)	INFLOW (CFS)	EVAP. (CFS)	TOTAL RESERVOIR RELEASE (CFS)	ROCKY FORK CREEK (CFS)	FRYINGPAN RIVER GAGE BELOW DAM (CFS)	RUEDI CALLED OUT? (1= YES) (0= NO)	REQUIRED MIN FLOW BELOW RUEDI w/o FISH REL (CFS)	ENDANGERED FISH RELEASE (CFS)	CUMULATIVE FISH RELEASE (AC-FT)	PALISADE GAGE (CFS)
SUN	8/1/2011	7763.83	100223	186	7	211	11	222	no	110	0	0	5230
MON	8/2/2011	7763.77	100164	185	7	212	10	222	no	110	0	0	5290
TUE	8/3/2011	7763.69	100096	180	7	207	10	217	no	110	0	0	5240
WED	8/4/2011	7763.72	100115	220	7	184	10	194	no	110	0	0	5360
THU	8/5/2011	7763.68	100086	173	7	185	9	194	no	110	0	0	5410
FRI	8/6/2011	7763.65	100047	169	7	186	8	194	no	110	0	0	4660
SAT	8/7/2011	7763.59	99988	160	7	188	6	194	no	110	0	0	4310
SUN	8/8/2011	7763.54	99949	171	7	182	6	188	no	110	0	0	4050
MON	8/9/2011	7763.53	99929	176	7	163	5	168	no	110	0	0	3760
TUE	8/10/2011	7763.49	99890	147	7	164	4	168	no	110	0	0	3440
WED	8/11/2011	7763.48	99890	167	7	163	4	167	no	110	0	0	3160
THU	8/12/2011	7763.47	99870	156	7	148	4	152	no	110	0	0	2870
FRI	8/13/2011	7763.51	99909	171	7	131	4	135	no	110	0	0	2550
SAT	8/14/2011	7763.52	99929	145	7	135	3	138	no	110	0	0	2440
SUN	8/15/2011	7763.57	99978	163	7	134	3	137	no	110	0	0	2480
MON	8/16/2011	7763.61	100007	152	7	134	3	137	no	110	0	0	2410
TUE	8/17/2011	7763.62	100010	139	7	133	3	136	no	110	0	0	2180
WED	8/18/2011	7763.63	100043	153	7	115	21	136	no	110	0	0	1980
THU	8/19/2011	7763.62	100045	119	7	136	21	156	no	110	0	0	1850
FRI	8/20/2011	7763.55	99987	110	7	170	21	190	no	110	22	45	1790
SAT	8/21/2011	7763.45	99921	140	7	169	20	189	no	110	26	97	1810
SUN	8/22/2011	7761.55	99842	132	7	170	20	190	no	110	33	163	1740
MON	8/23/2011	7763.00	99758	131	7	171	20	191	no	110	36	234	1830
TUE	8/24/2011	7763.33	99668	129	7	179	13	191	no	110	38	310	1680
WED	8/25/2011	7763.15	99582	138	7	185	6	191	no	110	37	383	1530
THU	8/26/2011	7763.22	99536	165	7	190	6	196	no	110	16	415	1530
FRI	8/27/2011	7762.94	99479	164	7	210	6	216	no	110	22	460	1570
SAT	8/28/2011	7762.76	99370	158	7	209	7	216	no	110	48	555	1710
SUN	8/29/2011	7762.97	99280	167	7	209	7	216	no	110	39	632	1740
MON	8/30/2011	7762.81	99186	165	7	208	8	216	no	110	41	712	1800
TUE	8/31/2011	7762.14	99062	149	7	208	8	216	no	110	56	823	1850
Averages		7763.34	99834	157	7	174	9	183			13		2879
Totals (acft)				9678	414	10681	571	11252			823		177027

NOTES: Releases of water to support 15-Mile Reach target flows ceased on 10/16. A total of 15,246 acre-feet were released to support Recovery Program target flows in the 15-Mile Reach.
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FRYINGPAN-ARKANSAS PROJECT
 RUEDI RESERVOIR
 RELEASES FOR ENDANGERED FISH
 WATER YEAR 2011
 September-11

Table 2-6

DAY	DATE	ELEV. (FT)	STORAGE (AC-FT)	INFLOW (CFS)	EVAP. (CFS)	TOTAL RELEASE (CFS)	ROCKY	FRYINGPAN	RUEDI	REQUIRED	ENDANGERED	CUMULATIVE	PALISADE
							FORK CREEK (CFS)	RIVER GAGE BELOW DAM (CFS)	CALLED OUT? (1= YES) (0= NO)	MIN FLOW BELOW RUEDI w/o FISH REL (CFS)	FISH RELEASE (CFS)	FISH RELEASE (AC-FT)	GAGE (CFS)
WED	9/1/2011	7,762.52	98941	149	4	208	8	216	no	110	57	936	1660
THU	9/2/2011	7,762.32	98745	112	4	228	7	235	no	110	94	1124	1540
FRI	9/3/2011	7,762.05	98482	97	4	258	7	265	no	104	129	1379	1440
SAT	9/4/2011	7,761.78	98210	123	4	261	6	267	no	110	133	1643	1440
SUN	9/5/2011	7,761.49	97939	126	4	261	6	267	no	110	133	1906	1470
MON	9/6/2011	7,761.17	97629	106	4	271	6	277	no	110	152	2208	1500
TUE	9/7/2011	7,760.85	97319	117	4	300	6	306	no	110	152	2509	1750
WED	9/8/2011	7,760.52	97001	141	4	300	6	306	no	110	156	2820	2070
THU	9/9/2011	7,760.18	96664	132	4	299	6	305	no	110	166	3149	2090
FRI	9/10/2011	7,759.80	96309	122	4	299	6	305	no	110	175	3496	2000
SAT	9/11/2011	7,759.41	95936	113	4	298	6	304	no	110	184	3861	1790
SUN	9/12/2011	7,759.04	95582	122	4	298	6	304	no	110	174	4207	1730
MON	9/13/2011	7,758.68	95240	128	4	298	6	304	no	110	169	4541	1720
TUE	9/14/2011	7,758.30	94879	118	4	298	6	304	no	110	178	4894	1700
WED	9/15/2011	7,757.88	94481	100	4	297	6	303	no	105	189	5270	1790
THU	9/16/2011	7,757.57	94179	147	4	297	6	303	no	110	148	5564	1920
FRI	9/17/2011	7,757.24	93877	147	4	297	6	303	no	110	148	5859	2170
SAT	9/18/2011	7,756.90	93547	133	4	297	6	303	no	110	162	6181	2250
SUN	9/19/2011	7,756.54	93219	134	4	297	6	303	no	110	162	6501	2170
MON	9/20/2011	7,756.15	92853	115	4	297	6	303	no	110	181	6859	2120
TUE	9/21/2011	7,755.76	92489	116	4	296	6	302	no	110	180	7216	2040
WED	9/22/2011	7,755.36	92107	106	4	297	5	302	no	110	188	7589	1880
THU	9/23/2011	7,754.95	91735	111	4	297	5	302	no	110	184	7953	1780
FRI	9/24/2011	7,754.53	91346	103	4	297	5	302	no	108	188	8326	1690
SAT	9/25/2011	7,754.10	90939	94	4	301	5	306	no	99	188	8699	1650
SUN	9/26/2011	7,753.68	90553	108	4	300	5	305	no	110	187	9071	1600
MON	9/27/2011	7,753.23	90139	94	4	300	5	305	no	98	187	9442	1530
TUE	9/28/2011	7,752.79	89736	99	4	299	5	304	no	104	187	9813	1440
WED	9/29/2011	7,752.34	89325	94	4	300	4	304	no	99	187	10184	1430
THU	9/30/2011	7,751.88	88915	95	4	300	4	304	no	99	186	10553	1490
Averages		7,757.63	94277	117	4	288	6	294			164		1762
Totals (acft)				6944	235	17155	338	17492			9729		104828

NOTES: Releases of water to support 15-Mile Reach target flows ceased on 10/16. A total of 15,246 acre-feet were released to support Recovery Program target flows in the 15-Mile Reach.
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FRYINGPAN-ARKANSAS PROJECT
 RUEDI RESERVOIR
 RELEASES FOR ENDANGERED FISH
 WATER YEAR 2011
 October-10

Table 2-7

DAY	DATE	ELEV. (FT)	STORAGE (AC-FT)	INFLOW (CFS)	EVAP. (CFS)	TOTAL	ROCKY	FRYINGPAN	RUEDI	REQUIRED	ENDANGERED	CUMULATIVE	PALISADE
						RESERVOIR RELEASE (CFS)	FORK CREEK (CFS)	RIVER GAGE BELOW DAM (CFS)	CALLED OUT? (1= YES) (0= NO)	MIN FLOW BELOW RUEDI w/o FISH REL (CFS)	FISH RELEASE (CFS)	FISH RELEASE (AC-FT)	PALISADE GAGE (CFS)
FRI	10/1/2011	7,751.43	88,507	95	1	300	4	304	no	99	186	10,921	1,540
SAT	10/2/2011	7,750.98	88,090	90	1	300	4	304	no	94	0	11,290	1,550
SUN	10/3/2011	7,750.54	87,703	105	1	299	4	303	no	109	0	11,656	1,560
MON	10/4/2011	7,750.08	87,279	86	1	300	4	304	no	90	186	12,026	1,580
TUE	10/5/2011	7,749.64	86,885	102	1	300	4	304	no	106	186	12,395	1,710
WED	10/6/2011	7,749.24	86,536	125	1	300	4	304	no	110	175	12,741	1,910
THU	10/7/2011	7,748.81	86,152	107	1	299	4	303	no	110	184	13,106	2,240
FRI	10/8/2011	7,748.37	85,760	102	1	299	4	303	no	106	184	13,471	2,110
SAT	10/9/2011	7,747.93	85,360	98	1	300	4	304	no	102	186	13,840	2,040
SUN	10/10/2011	7,747.49	84,971	104	1	300	4	304	no	108	186	14,208	2,020
MON	10/11/2011	7,747.06	84,590	109	1	300	4	304	no	110	186	14,576	1,980
TUE	10/12/2011	7,746.60	84,194	101	1	278	4	282	no	105	162	14,897	1,970
WED	10/13/2011	7,746.33	83,957	159	1	222	4	226	no	110	106	15,106	1,960
THU	10/14/2011	7,746.14	83,790	138	1	182	4	186	no	110	66	15,238	1,830
FRI	10/15/2011	7,746.11	83,764	169	1	116	4	120	no	110	4	15,246	1,670
SAT	10/16/2011	7,746.04	83,711	90	1	98	5	103	no	95	0	15,246	1,530
SUN	10/17/2011	7,746.04	83,702	94	1	91	6	97	no	99	0	15,246	1,500
MON	10/18/2011	7,746.04	83,702	92	1	85	5	90	no	98	0	15,246	1,530
TUE	10/19/2011	7,746.01	83,676	72	1	81	9	90	no	81	0	15,246	1,560
WED	10/20/2011	7,746.00	83,667	77	1	84	6	90	no	83	0	15,246	1,510
THU	10/21/2011	7,745.97	83,641	71	1	85	4	89	no	75	0	15,246	1,470
FRI	10/22/2011	7,745.95	83,623	77	1	85	4	89	no	81	0	15,246	1,460
SAT	10/23/2011	7,745.92	83,597	72	1	84	4	88	no	76	0	15,246	1,450
SUN	10/24/2011	7,745.88	83,553	63	1	84	4	88	no	67	0	15,246	1,420
MON	10/25/2011	7,745.94	83,615	116	1	84	4	88	no	110	0	15,246	1,470
TUE	10/26/2011	7,745.96	83,632	93	1	84	4	88	no	98	0	15,246	2,100
WED	10/27/2011	7,745.94	83,615	76	1	83	4	87	no	80	0	15,246	2,090
THU	10/28/2011	7,745.90	83,580	66	1	83	4	87	no	70	0	15,246	2,070
FRI	10/29/2011	7,745.86	83,553	70	1	82	4	86	no	74	0	15,246	2,030
SAT	10/30/2011	7,745.84	83,527	69	1	82	4	86	no	73	0	15,246	1,950
SUN	10/31/2011	7,745.82	83,510	74	1	82	4	86	no	78	0	15,246	2,270
Averages		7,747.16	84692	96	1	176	4	180			64		1777
Totals (acft)				5875	85	10807	275	11082			3958		109251

NOTES: Releases of water to support 15-Mile Reach target flows ceased on 10/16. A total of 15,246 acre-feet were released to support Recovery Program target flows in the 15-Mile Reach.
 NOTES: The values presented in these tables were compiled from operational records.
 NOTES: These are preliminary records and open to revision.

Table 3

Fryingpan-Arkansas Project
Transmountain Diversions
Water Year 2011
Unit: Acre-Feet

<u>Diversion</u>	<u>Apr</u>	<u>May</u>	<u>Jun</u>	<u>Jul</u>	<u>Aug</u>	<u>Sep</u>	<u>Total</u>
No Name		159	2872	676			3707
Hunter		232	3874	2811	25		6942
Sawyer				1792	367		2159
Midway		138	3527	2188	28		5881
Chapman ¹		546	6498	3537	151		10732
South Fork		573	7700	6742	841		15856
Subtotal		1648	24471	17746	1412		45277
Carter		299	2394	1954	257		4904
North Fork		10	535	678	12		1235
Mormon		247	2750	1728	36		4761
N. Cunningham		219	1540	956			2715
M. Cunningham ²		87	1967	1259	13		3326
Ivanhoe		779	6616	4176	92		11663
Lily Pad		9	1177	413			1599
Granite		140	1891	1097	131		3259
Fryingpan		991	11882	9464	658		22995
Subtotal		2781	30752	21725	1199		56457
Total		4429	55223	39471	2611		101734
Boustead Tunnel ³	467 ⁴	4510	52729	38277	2808	68	98859

¹ Does not include No Name, Hunter, Sawyer and Midway

² Includes South Cunningham

³ The difference between total diversion and Charles H. Boustead Tunnel results from the accuracy limitations of the measurement.

⁴ Includes minimal flow from October 2010 through March 2011.

Table 4

Fryingpan-Arkansas Project Imports
Charles H. Boustead Tunnel Outlet
Unit: 1,000 Acre-feet

<u>Year</u>	<u>Accumulated Imports</u>	<u>Twin Lakes Imports</u>	<u>Available for Exchange</u>	<u>Allocations</u>
1972	32.0	32.0	0	0.0
1973	36.8	68.8	0	16.0
1974	34.1	102.9	0	18.6
1975	37.2	140.1	0	25.0
1976	26.9	167.0	0	24.0
1977	11.4	178.4	0	25.0
1978	49.2	227.6	0	25.0
1979	53.7	281.3	0	25.6
1980	55.7	337.0	0	70.0
1981	34.6	371.6	0	25.0
1982	75.2	446.8	2.7	68.0
1983	90.8 ⁴	537.6	0.3	125.0
1984	110.1	647.7	1.9	210.0
1985	70.2	717.9	1.7	289.9
1986	30.3	748.2	1.5	300.3
1987	2.2	750.4	1.1	288.0
1988	13.4	763.8	2.0	247.8
1989	36.2	800.0	1.7	197.6
1990	46.6	846.6	1.7	142.1
1991	59.1	905.7	1.5	58.7
1992	54.8	960.5	1.2	32.9
1993	86.6	1,047.1	2.3	70.1
1994	52.2	1,099.3	1.3	51.7
1995	90.5	1,189.8	2.3	55.0
1996	36.9	1,226.7	1.8	110.0
1997	78.6	1,305.3	1.8	116.0
1998	51.3	1,356.6	2.6	102.0
1999	40.8	1,397.4	2.1	127.5
2000	44.8	1,442.2	1.7	171.6
2001	45.3	1,487.5	2.1	67.5
2002	13.2	1,500.7	1.5	8.5
2003	54.9	1,555.6	2.4	37.5
2004	27.4	1,583.0	1.3	15.3
2005	54.6	1,637.6	3.0	40.8
2006	61.2	1,698.8	3.0	49.2
2007	54.2	1,753.0	3.0	40.4
2008	90.0	1,843.0	3.0	83.0
2009	82.7	1,925.7	3.0	78.0
2010	56.5	1,982.2	3.0	44.0
2011	98.9	2,081.1	2.9	75.0

Restriction: Not to exceed 120,000 acre-feet in 1 year but not to exceed 2,352,800 acre-feet in 34 consecutive years.

⁴ Includes 3,120 acre-feet imported through Twin Lakes Tunnel

Table 5

Turquoise Lake
Water Year 2011 Operations
Unit: 1,000 Acre-Feet

		Inflow										
Surface Elevation (FEET)	Year	Month	Busk-Ivanhoe	Homestake	Project	Native	Total		Total	End of Month	Water	
			Imports	Imports	Imports	Inflow	Inflow	Evap	Outflow	Content		
		Through Carlton	Through Boustead									
	2010	Sep								115.7	9861.62	
		Oct	0.1	0	0	0.1	0.2	0.4	0.3	1.1	114.7	9861.04
		Nov	0.1	0	0	0.1	0.9	1.1	0.2	15.2	100.4	9852.61
		Dec	0.1	0	0	0.1	1.4	1.6	0	15.8	86.2	9843.86
	2011	Jan	0	0	0	0	1.4	1.4	0	18.9	68.7	9832.44
		Feb	0	0	1.9	0	1.3	3.2	0	19.9	52.1	9820.33
		Mar	0	0	12.4	0.1	1.3	13.8	0	18.5	47.5	9816.71
		Apr	0.1	0	10.3	0.1	1.2	11.7	0	6.6	52.6	9820.66
		May	0.2	0	0	4.5	4.1	8.8	0	7.8	53.5	9821.39
		Jun	2.2	0	0	52.7	21.8	76.7	0.7	33.5	95.9	9849.88
		Jul	0.5	0	4.6	38.3	13.7	57.1	0.7	31.5	120.8	9864.53
		Aug	0.1	0	3.0	2.8	2.5	8.4	0.6	4.3	124.3	9866.53
		Sep	0.1	0	0	0.1	0.5	0.7	0.5	1.2	123.4	9866.00
	Subtotal		3.5	0								
	Total		3.5	32.2	98.9	50.3	184.9	3.0	174.3			

Table 6

Twin Lakes/Mt. Elbert Forebay
Water Year 2011 Operations
Unit: 1,000 Acre-Feet

Year	Month	Inflow					Evap	Total Outflow	End of Month Content ⁵	Water Surface Elevation ⁶ (FEET)	
		Twin Lakes Canal Company		Mt. Elbert	Conduit	Native Inflow					Total Inflow
		Imports	Other	Halfmoon	Project Water						
2010	Sep							124.7	9190.89		
	Oct	0.8	0.1	0	0.6	1.8	3.3	0.5	10.5	117.0	9187.55
	Nov	0.6	0.8	0	14.7	1.1	17.2	0.2	15.0	117.5	9187.53
	Dec	0.5	1.1	0	15.3	1.2	18.1	0.1	15.6	118.0	9187.20
2011	Jan	0.3	1.1	0	18.3	0.8	20.5	0	20.0	116.5	9186.96
	Feb	0.3	1.0	0	19.4	0.6	21.3	0	26.5	109.2	9183.27
	Mar	0.3	0.4	0	17.9	0.6	19.2	0	23.9	103.2	9180.90
	Apr	0.4	0	0	6.1	1.2	7.7	0.2	8.7	102.1	9180.44
	May	3.4	0.1	0.7	6.8	4.6	15.6	0.8	29.3	87.6	9172.60
	Jun	31.3	2.7	0.4	21.1	38.2	93.7	1.4	53.5	126.5	9191.67
	Jul	23.2	0.2	1.6	16.9	29.7	71.6	1.2	58.6	138.2	9196.27
	Aug	3.5	0	2.1	2.9	6.4	14.9	1.0	24.6	127.5	9191.55
	Sep	<u>0.6</u>	<u>0</u>	<u>0.4</u>	<u>0.5</u>	3.4	4.9	0.8	5.1	126.5	9191.14
Subtotal		65.2	7.5	5.2	140.5						
Total		72.7		145.7		89.6	308.0	6.2	291.3		

⁵ Contents of both Twin Lakes and Mt. Elbert Forebay

⁶ Elevation of Twin Lakes

Table 7

Mt. Elbert Pumped-Storage Powerplant Operations
Water Year 2011

Year	Month	Mt. Elbert Conduit Inflow to Mt. Elbert Forebay (acre-ft)	Water Pumped from Twin Lakes to Mt. Elbert Forebay (acre-ft)	Water through Generator (acre-ft)	Megawatt- Hours Net Generation* (mWh)
2010	Oct	554	102,573	103,001	34,457
	Nov	14,728	66,451	80,556	27,484
	Dec	15,413	56,023	69,823	21,814
2011	Jan	18,491	83,886	101,779	34,023
	Feb	19,592	51,337	70,264	23,598
	Mar	18,111	67,157	86,594	29,305
	Apr	6,000	100,658	106,446	35,917
	May	7,681	97,186	103,892	35,366
	Jun	21,593	79,018	101,170	34,292
	Jul	18,289	109,025	125,709	43,198
	Aug	4,988	98,069	101,958	34,705
	Sep	870	79,886	80,812	26,976
Total		146,310	991,269	1,132,004	381,135

*Net Generation is gross plant generation less station service.

Table 8

Pueblo Reservoir
Water Year 2011 Operations
Unit: 1,000 Acre-Feet

Year	Month	Inflow			Total Inflow	Evapo- ration	Outflow	End of month content	Water surface elevation (FEET)
		Project Water	Other	Native					
2010	Sep						187.1	4863.50	
	Oct	2.3	2.4	14.5	19.2	1.5	21.1	183.7	4862.59
	Nov	4.0	2.4	17.7	24.1	0.6	13.6	193.7	4865.27
	Dec	4.6	3.0	17.6	25.2	0.5	8.7	209.7	4869.40
2011	Jan	7.9	1.5	16.6	26.0	0.5	7.8	227.4	4873.76
	Feb	14.1	1.0	16.5	31.6	0.5	7.3	251.1	4879.21
	Mar	14.5	2.5	16.7	33.7	1.9	16.5	266.4	4882.52
	Apr	3.3	2.0	10.4	15.7	2.5	36.1	243.5	4877.51
	May	16.1	4.2	23.3	43.6	2.7	56.0	228.3	4873.98
	Jun	1.4	6.9	171.4	179.7	3.7	182.4	220.0	4872.46
	Jul	2.6	14.9	142.7	160.2	3.2	164.6	214.5	4870.62
	Aug	0.3	12.1	30.8	43.2	2.8	77.1	177.8	4860.96
	Sep	<u>0.3</u>	<u>5.8</u>	<u>14.9</u>	21.0	1.8	30.0	167.0	4857.85
Subtotal		71.4	58.7	493.1					
Total					623.2	22.2	621.2		

Table 9

Fryingpan-Arkansas Project
Reservoir Storage Allocation Data
Unit: Acre-Feet

Reservoir	Dead	Inactive	Active conservation	Joint use	Flood control	Total capacity storage
Ruedi	63	1,095	101,278	0	0	102,373 ¹
Turquoise	2,810	8,920	120,478	0	0	129,398 ¹
Pueblo	2,329	28,121	228,828	66,000	26,991	349,940 ²
Twin Lakes	63,324	72,938	67,917	0	0	140,855
Mt. Elbert Forebay	561	3,825	7,318	0	0	11,143 ¹

¹ New area-capacity tables (1984)

² New area-capacity table (1994)

Note: Inactive includes dead storage

Table 10

Fryingpan-Arkansas Project
Monthly Evaporation Factors

Meredith		Sugar Loaf	Twin Lakes	Pueblo
Month	Factor	Factor	Factor	Factor
Oct	<u>1/</u>	.220	.220	.247
Nov		.100	.100	.155
Dec		.030	.030	.133
Jan		.050	.050	.128
Feb		.080	.080	.173
Mar		.140	.140	.280
Apr		.233	.233	.308
May		.363	.363	-
Jun		.448	.448	-
Jul		.405	.405	-
Aug		.318	.318	-
Sep		.290	.290	-

Note: Factor is used when pan is not in operation. Factor divided by number of days in the month times reservoir area not covered by ice equals daily water surface evaporation in acre-feet.

1/ Factors have not been determined for Meredith. Factors from Twin Lakes are used for Meredith.

Table 11

Fryingpan-Arkansas Project
 Monthly Average vs. Current Water Year Evaporation
 (Unit = Inches)

Month	Meredith		Sugar Loaf		Twin Lakes		Pueblo	
	Ave Pan (In.)	WY 11	Ave Pan (In.)	WY 11	Ave Pan (In.)	WY 11	Ave Pan (In.)	WY 11
Oct	0.84	1.64	2.44	3.22	2.86	3.23	5.38	6.81
Nov	0	0	1.55	1.70	1.70	1.76	2.65	2.66
Dec	0	0	0.32	0.53	0.39	0.53	2.28	2.28
Jan	0.18	0	0.04	0.85	0.40	0.85	2.19	2.19
Feb	0	0	0.06	1.39	0.70	1.39	2.98	2.97
Mar	0	0	0.56	2.39	0.82	2.53	4.87	6.99
Apr	0.18	0	1.04	4.01	2.18	4.01	6.55	9.64
May	2.43	4.56	2.26	6.26	4.93	6.21	8.95	11.11
Jun	7.69	10.82	5.54	8.27	7.44	10.24	10.47	15.36
Jul	7.28	10.06	5.19	6.06	6.60	6.81	11.15	13.46
Aug	5.77	7.23	4.07	4.81	5.52	5.33	9.12	12.70
Sep	3.73	4.26	3.47	3.75	4.87	4.85	7.50	9.04

Table 12

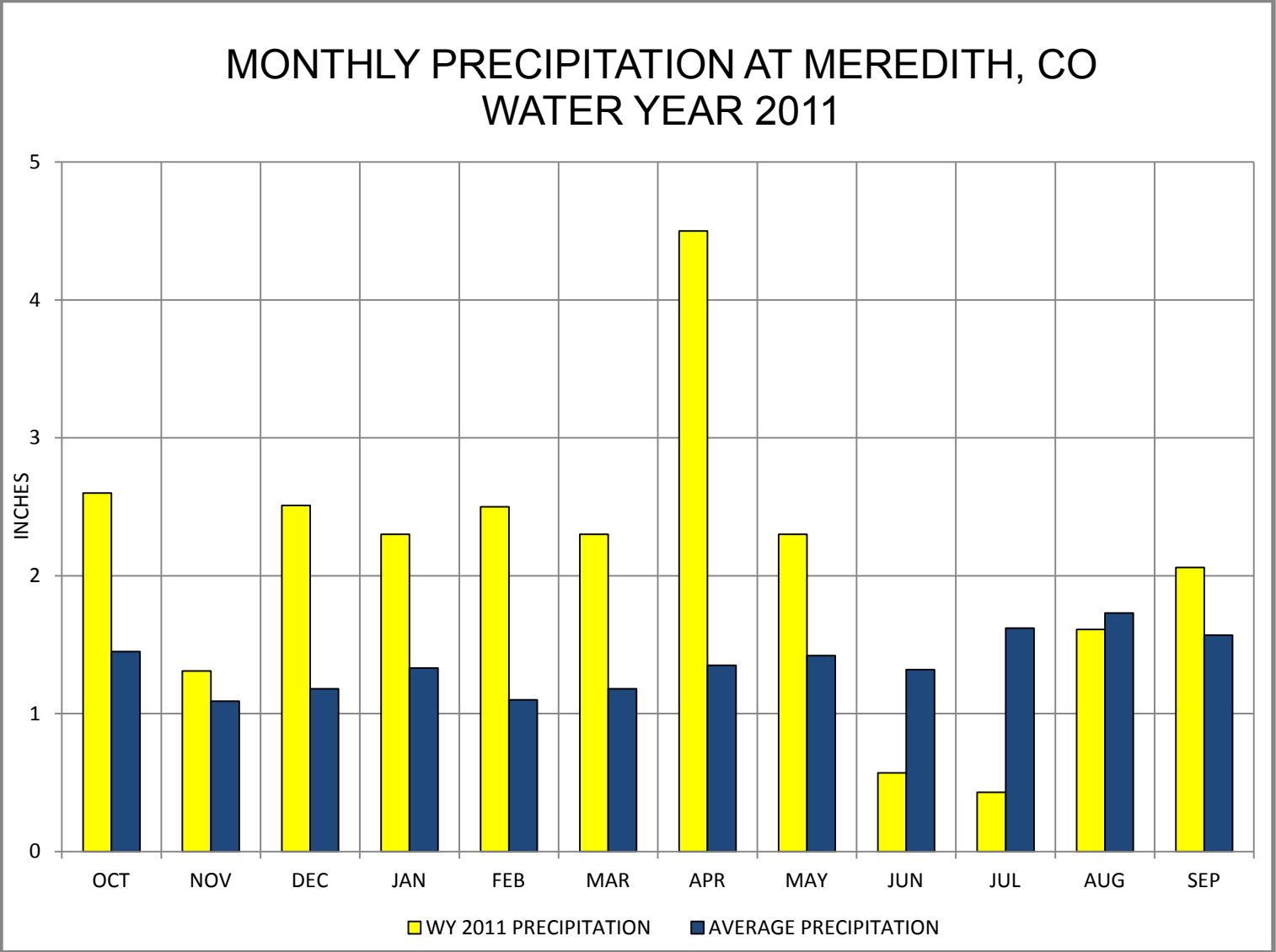
Fryingpan-Arkansas Project
 Monthly Average Vs. Current Water Year Precipitation
 (Unit = Inches)

Month	Meredith		Sugar Loaf		Twin Lakes		Pueblo		Rocky Ford	
	Avg.	WY 11	Avg.	WY 11	Avg.	WY 11	Avg.	WY 11	Avg.	WY 11
Oct	1.45	2.60	1.02	1.58	0.72	1.14	0.74	0.06	0.78	0.04
Nov	1.09	1.31	1.30	1.35	0.52	0.25	0.50	0.14	0.46	0.09
Dec	1.18	2.51	1.28	1.95	0.50	0.59	0.39	0.07	0.32	0.30
Jan	1.33	2.30	1.51	1.48	0.41	0.46	0.29	0.17	0.26	0.12
Feb	1.10	2.50	1.27	1.65	0.49	0.29	0.26	0.60	0.29	0.24
Mar	1.18	2.30	1.45	1.84	0.69	0.47	0.84	0.24	0.68	0.48
Apr	1.35	4.50	1.42	2.68	0.73	0.81	1.37	0.78	1.32	0.35
May	1.42	2.30	1.29	1.64	0.91	0.84	1.56	0.53	1.83	0.40
Jun	1.32	0.57	1.12	0.58	0.85	0.35	1.30	0.41	1.40	1.58
Jul	1.62	0.43	1.96	1.20	1.58	1.55	1.96	1.01	1.97	1.65
Aug	1.73	1.61	1.98	2.10	1.52	1.97	2.05	0.94	1.54	1.06
Sep	1.57	2.06	1.36	0.95	0.99	0.81	0.91	0.92	0.90	0.59
Total	16.34	24.99	16.96	19.00	9.91	9.53	12.17	5.87	11.75	6.90
Max. Annual	26.70	(1984)	25.95	(1957)	17.27	(1952)	20.32	(2007)	22.75	(1999)

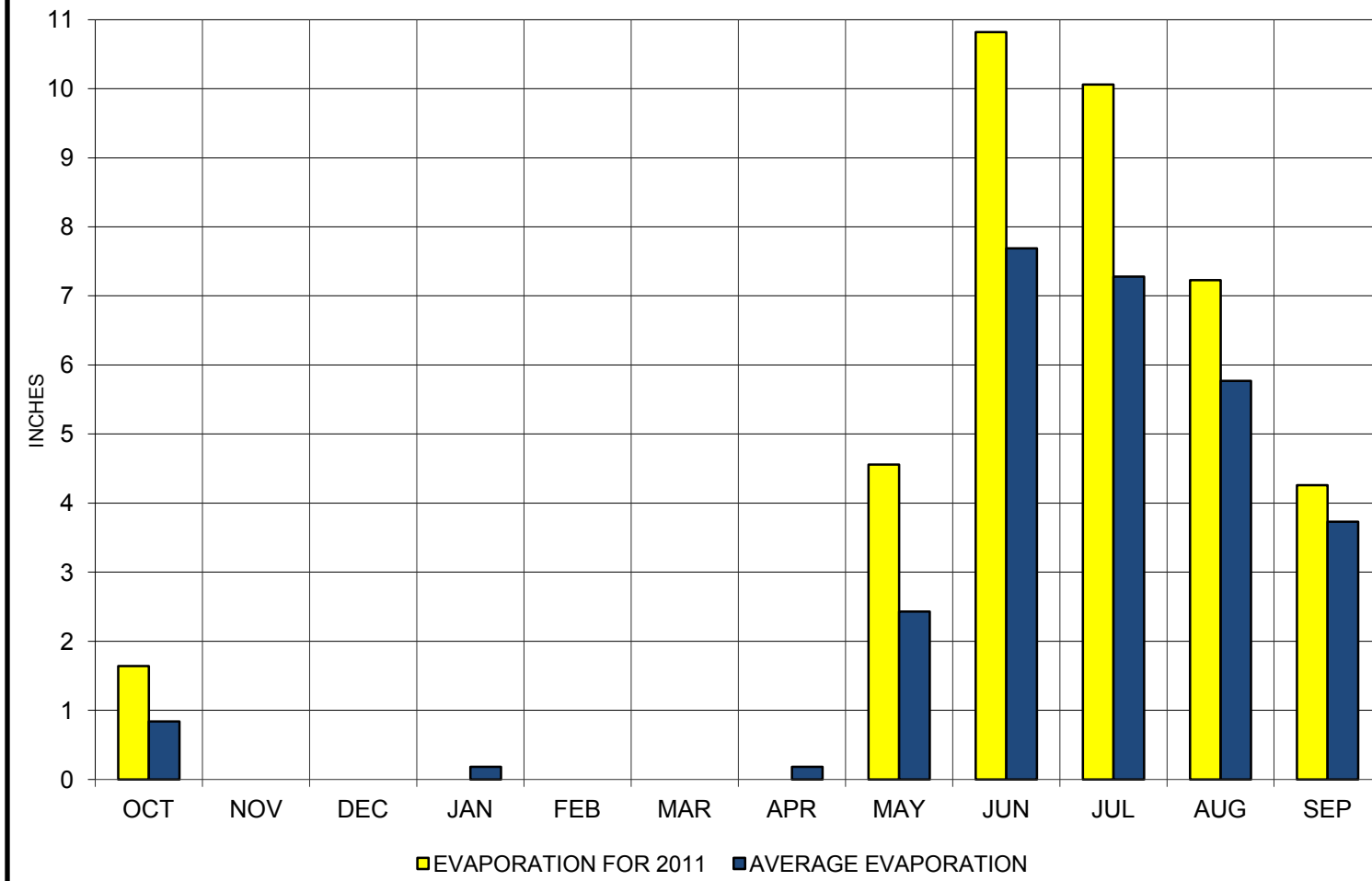
Table 13

Fryingpan-Arkansas Project
Flood Control Benefits in Dollars

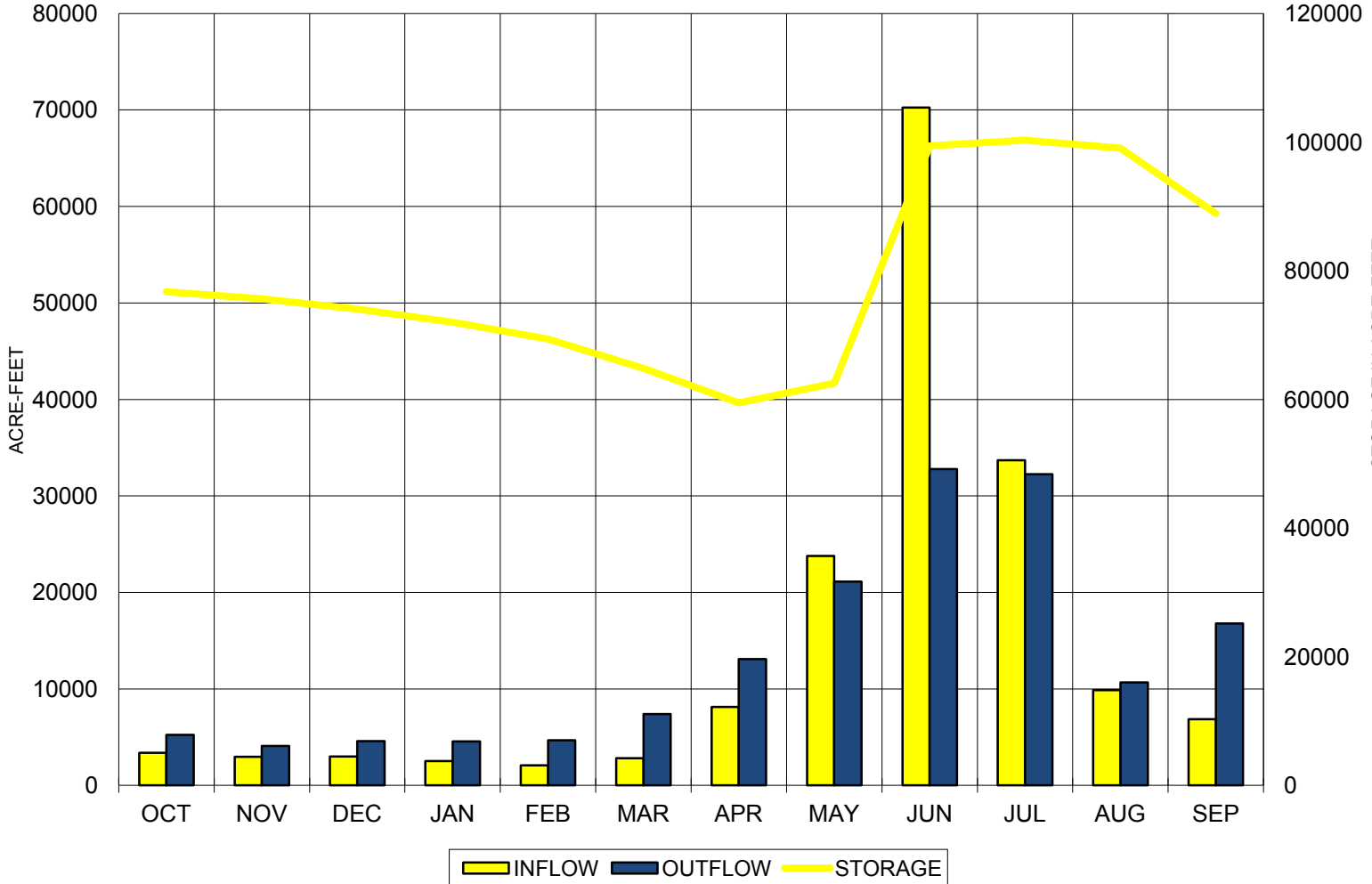
	<u>Ruedi Reservoir</u>		<u>Pueblo Reservoir</u>	
	<u>Benefits</u>	<u>Accumulated Benefits</u>	<u>Benefits</u>	<u>Accumulated Benefits</u>
1976			320,000	320,000
1979			90,000	410,000
1980			86,000	496,000
1981			111,000	607,000
1982			836,000	1,443,000
1983	80,000	80,000	47,000	1,490,000
1984	330,000	410,000	1,039,000	2,529,000
1985	91,000	501,000	234,000	2,763,000
1986	70,000	571,000	0	2,763,000
1987	0	571,000	90,000	2,853,000
1988	0	571,000	0	2,853,000
1989	0	571,000	0	2,853,000
1990	0	571,000	0	2,853,000
1991	0	571,000	482,000	3,335,000
1992	0	571,000	266,000	3,601,000
1993	4,000	575,000	496,000	4,097,000
1994	280,000	855,000	290,000	4,387,000
1995	1,770,000	2,625,000	832,000	5,219,000
1996	1,550,000	4,175,000	0	5,219,000
1997	1,207,000	5,382,000	320,200	6,539,200
1998	0	5,382,000	0	6,539,200
1999	116,000	5,498,000	4,778,000	11,317,200
2000	1,061,000	6,559,000	0	11,317,200
2001	0	6,559,000	0	11,317,200
2002	0	6,559,000	0	11,317,200
2003	1,515,100	8,074,100	0	11,317,200
2004	0	8,074,100	0	11,317,200
2005	970,200	9,044,300	0	11,317,200
2006	799,000	9,843,300	20,159,000	31,476,200
2007	103,000	9,946,300	0	31,476,200
2008	1,635,000	11,581,300	0	31,476,200
2009	740,100	12,321,400	0	31,476,200
2010	2,993,000	15,314,400	0	31,476,200
2011	3,002,000	18,316,400	0	31,476,200



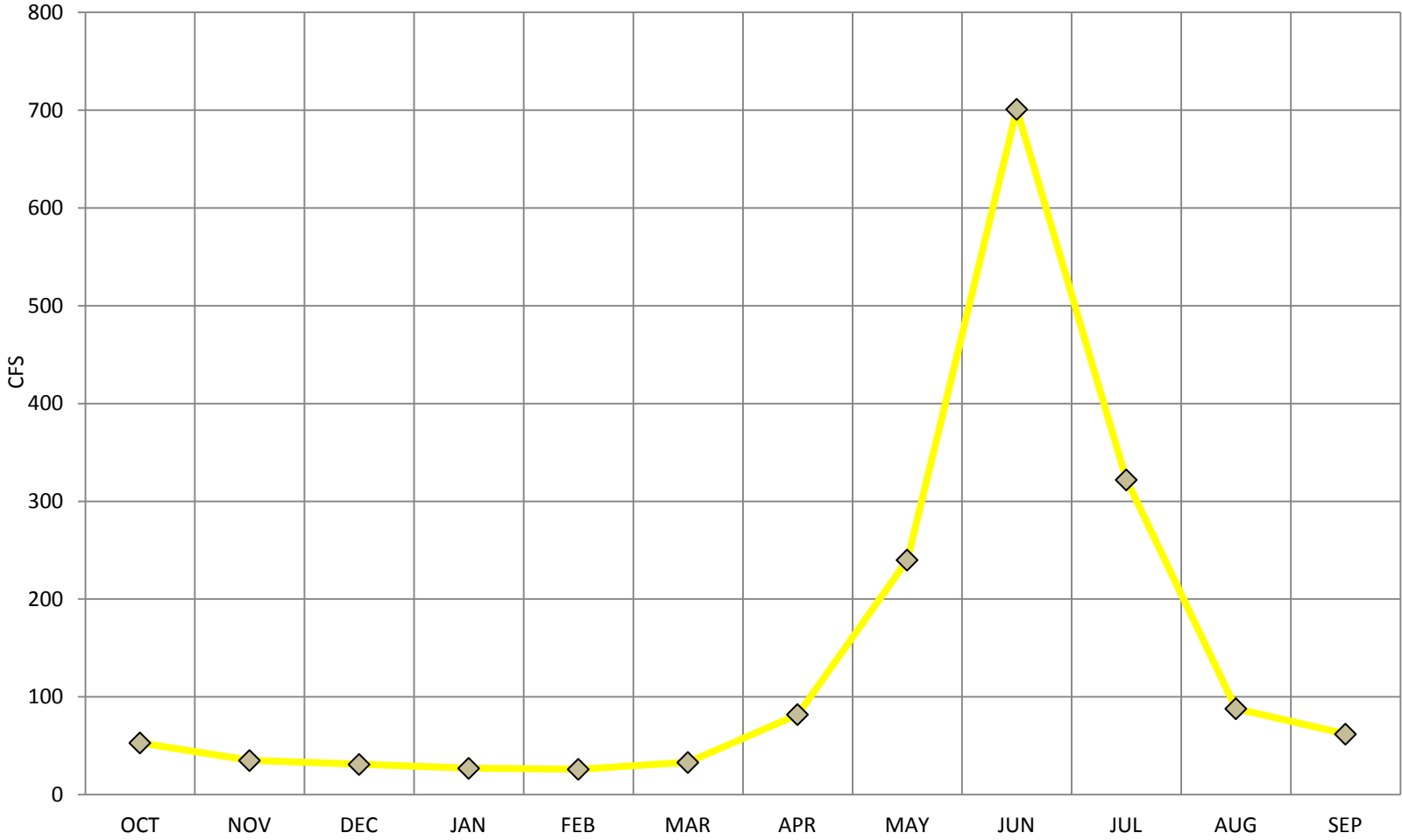
MONTHLY EVAPORATION AT MEREDITH, CO WATER YEAR 2011



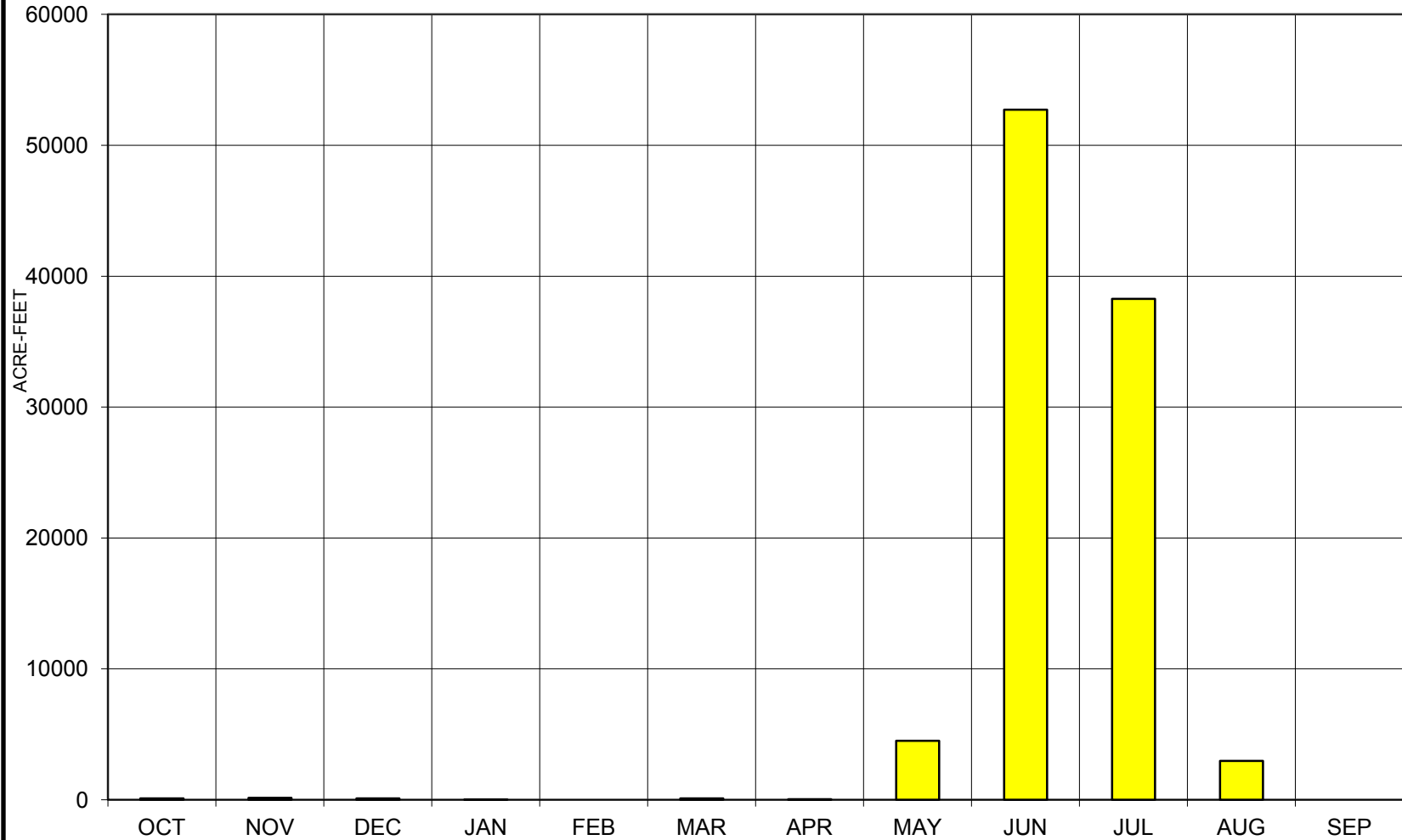
RUEDI RESERVOIR ACTUAL OPERATIONS WATER YEAR 2011

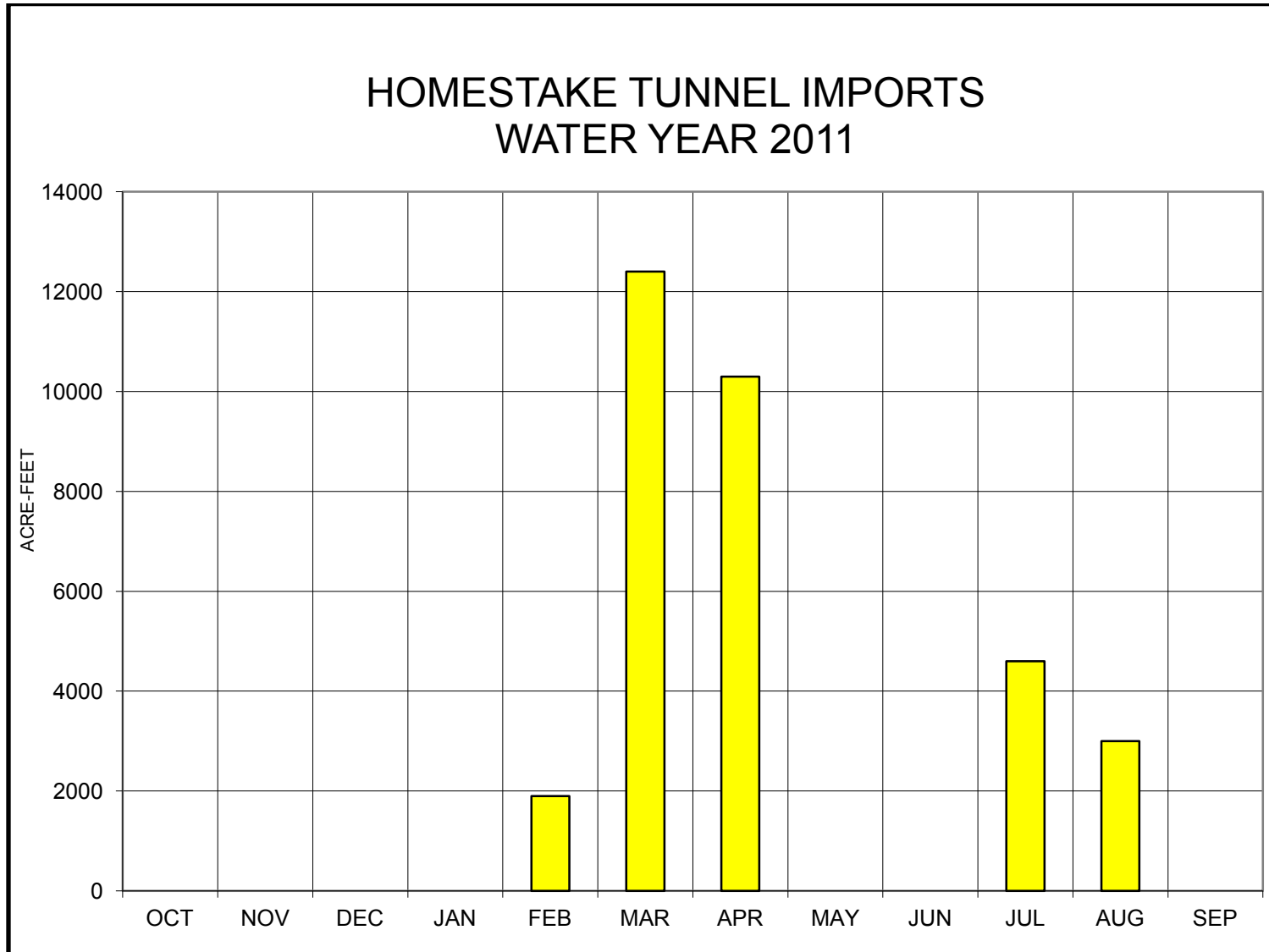


FRYINGPAN RIVER NEAR THOMASVILLE WATER YEAR 2011

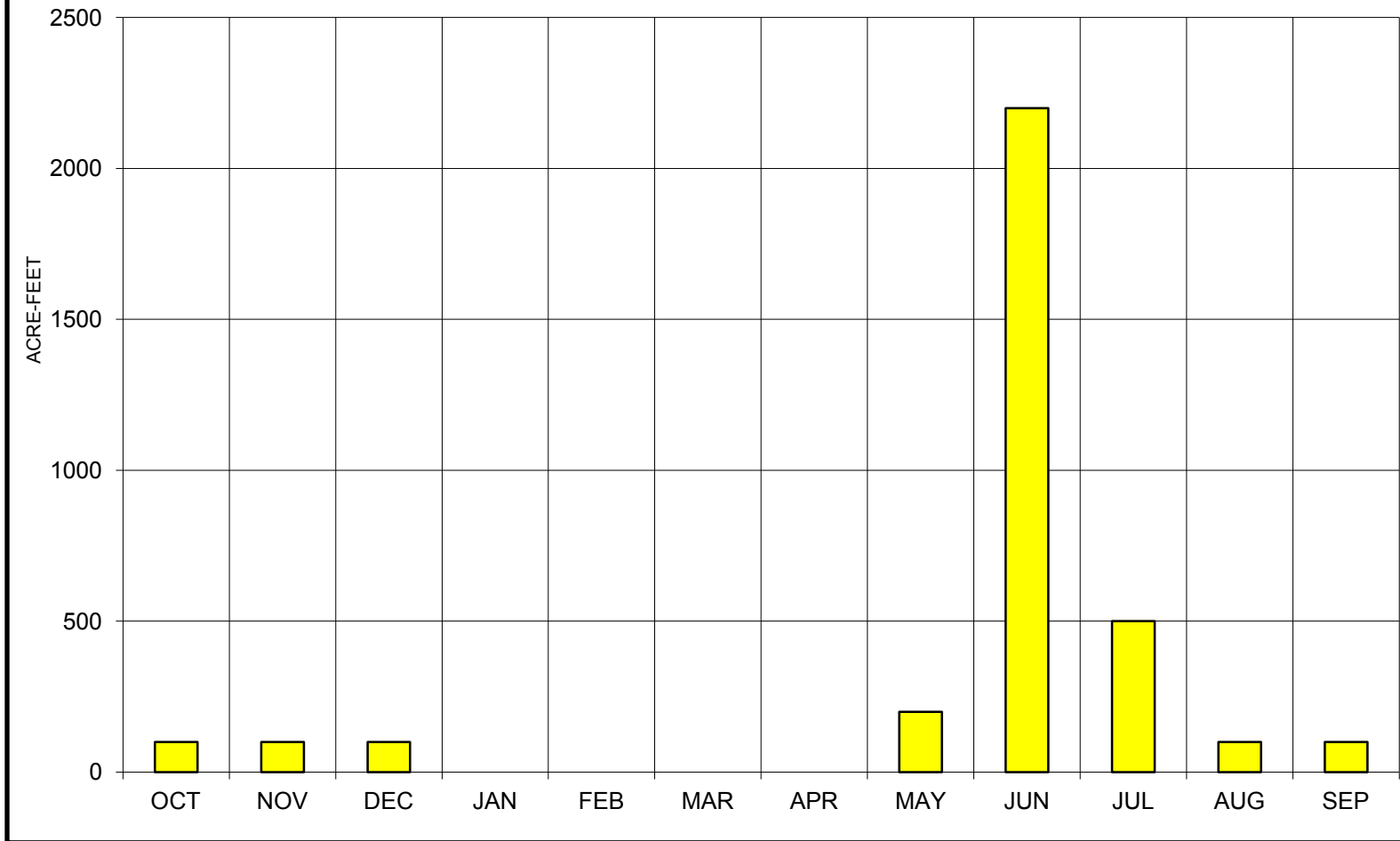


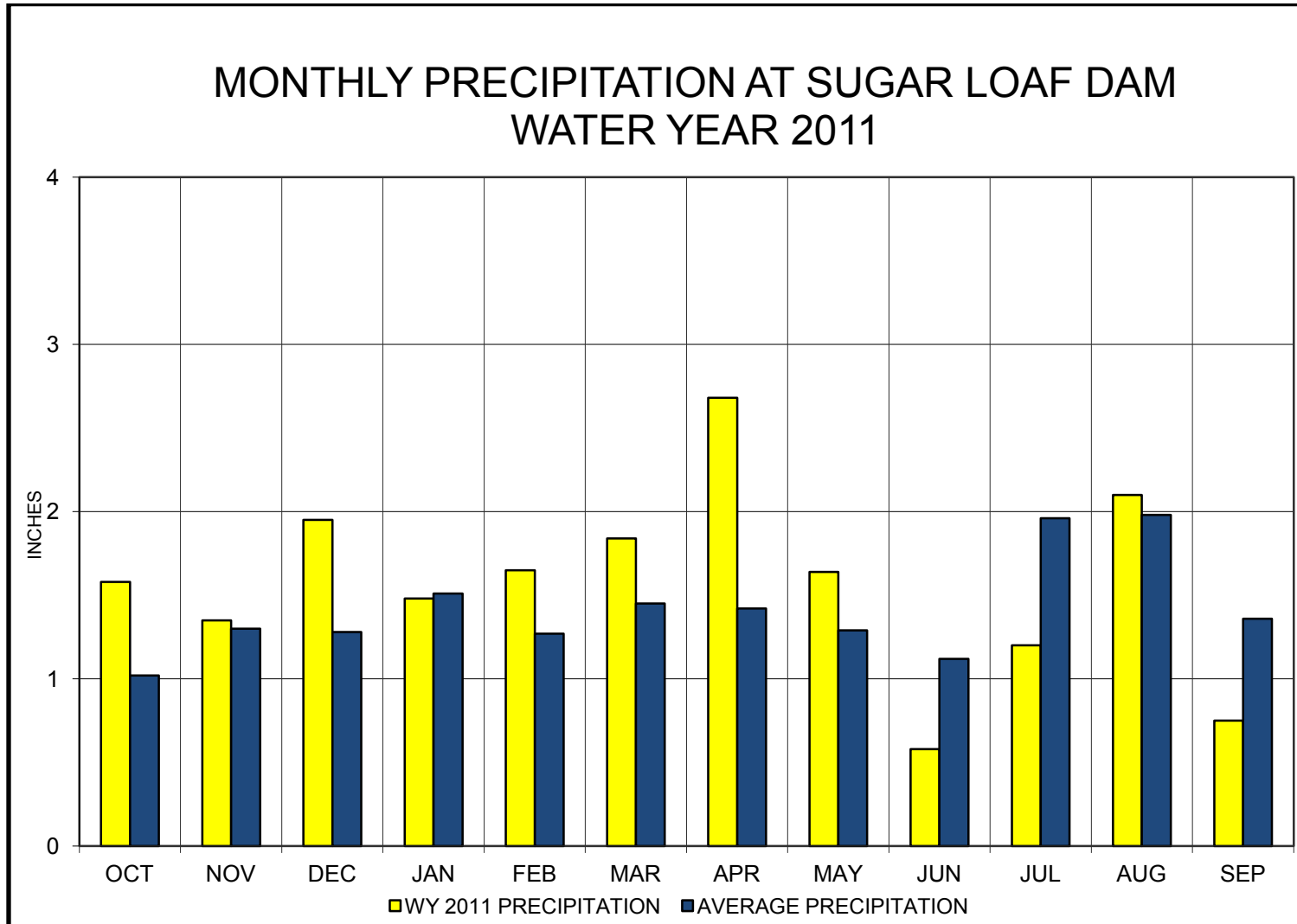
BOUSTEAD TUNNEL IMPORTS WATER YEAR 2011

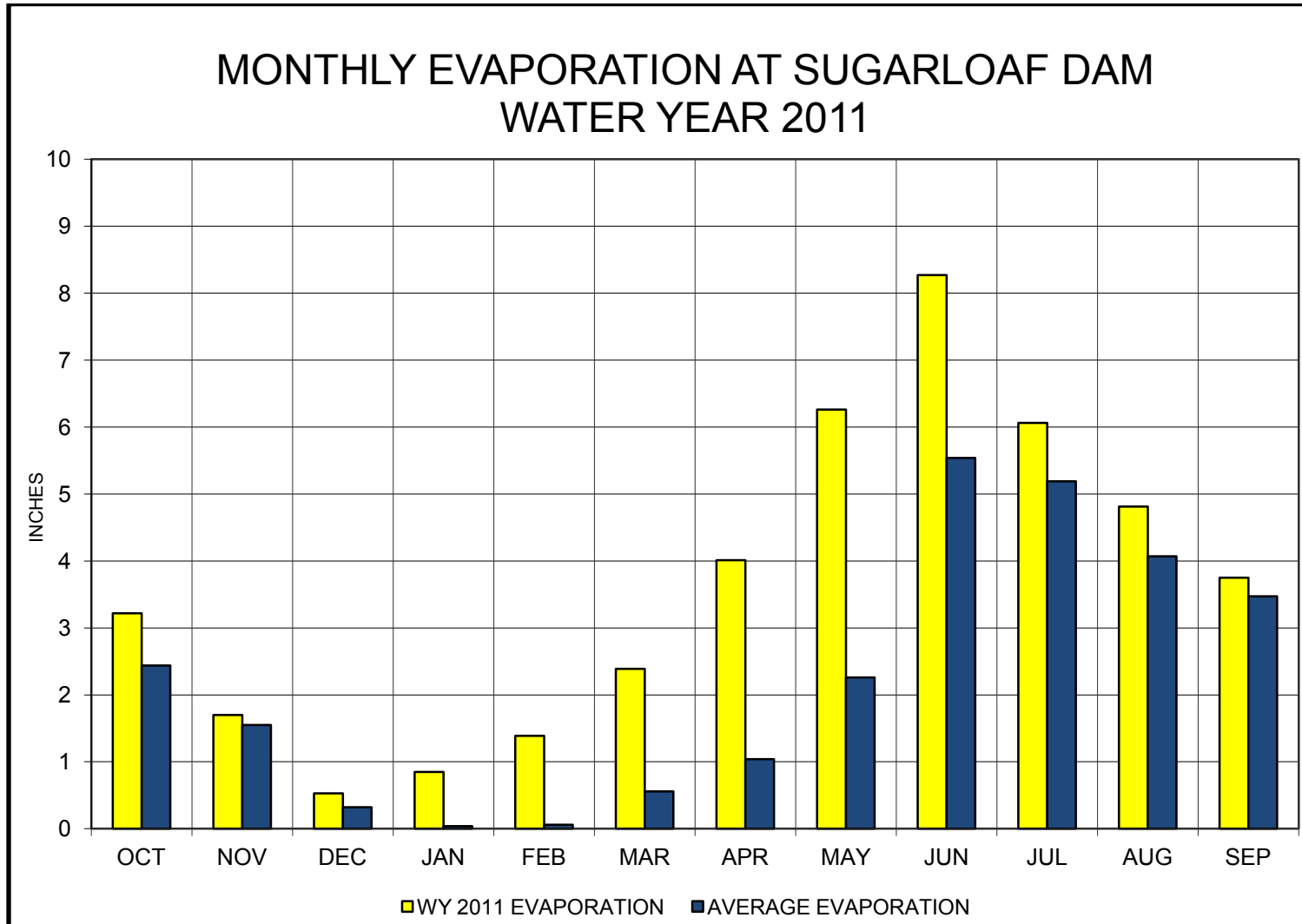




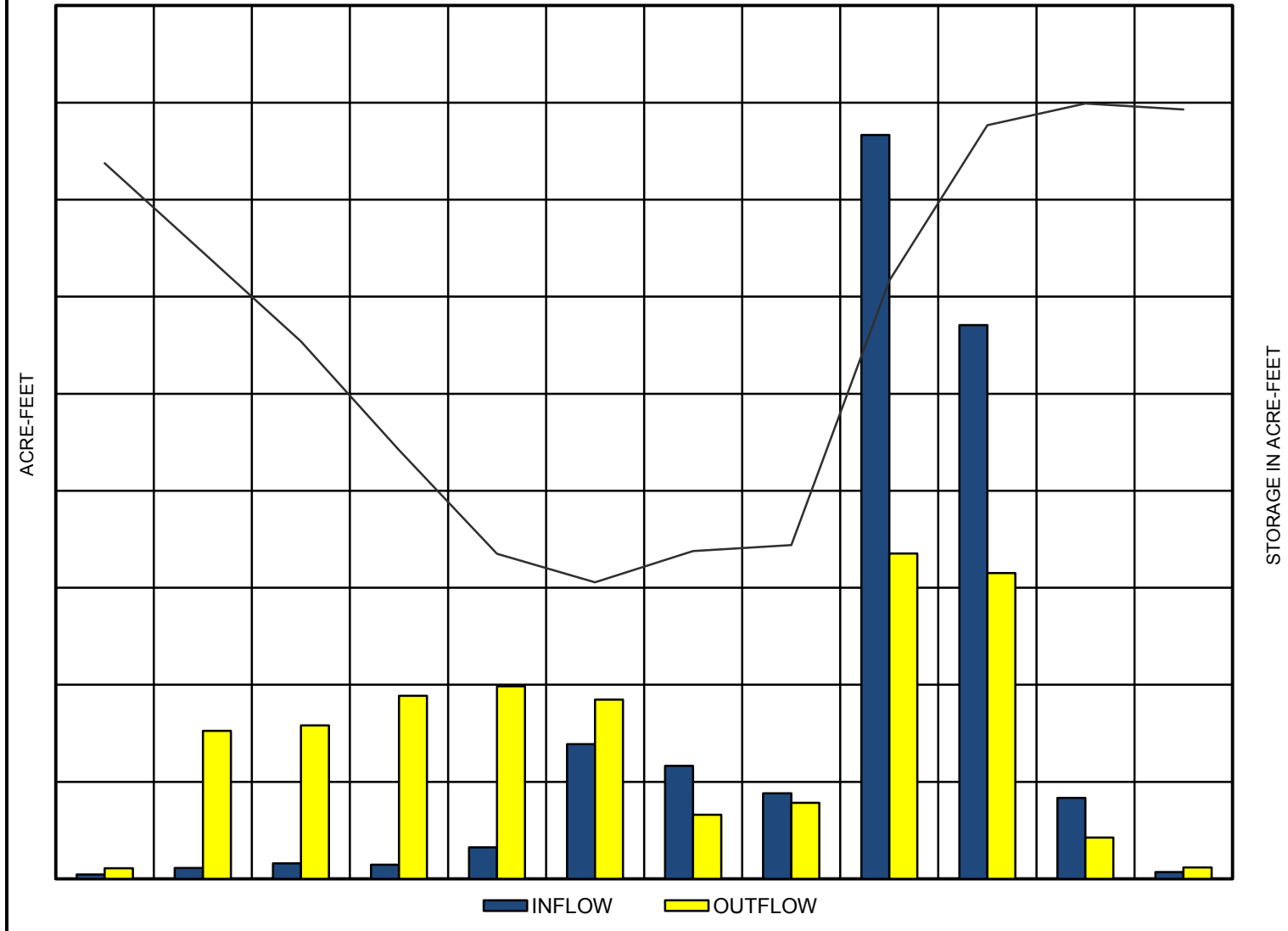
BUSK-IVANHOE TUNNEL IMPORTS WATER YEAR 2011



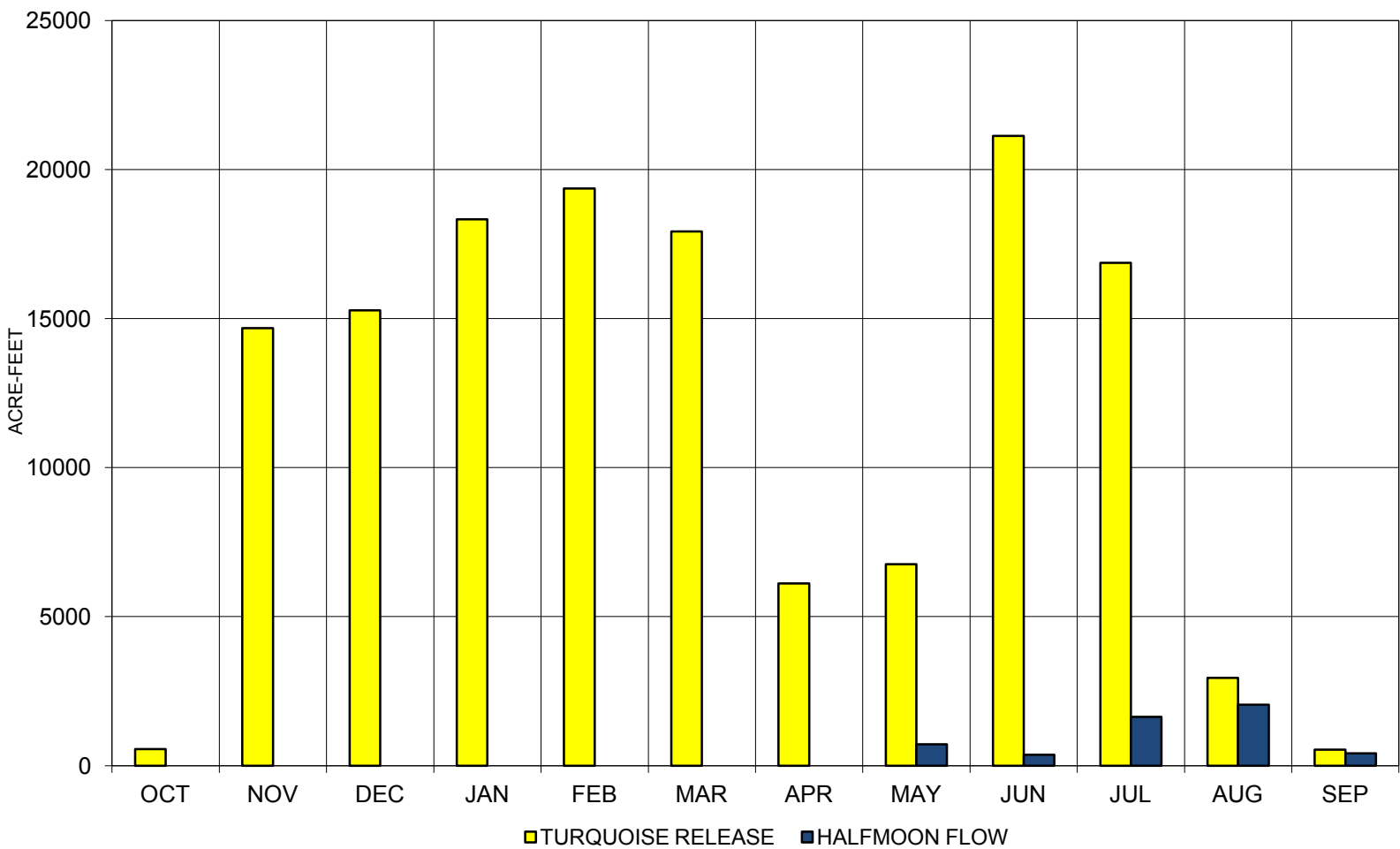


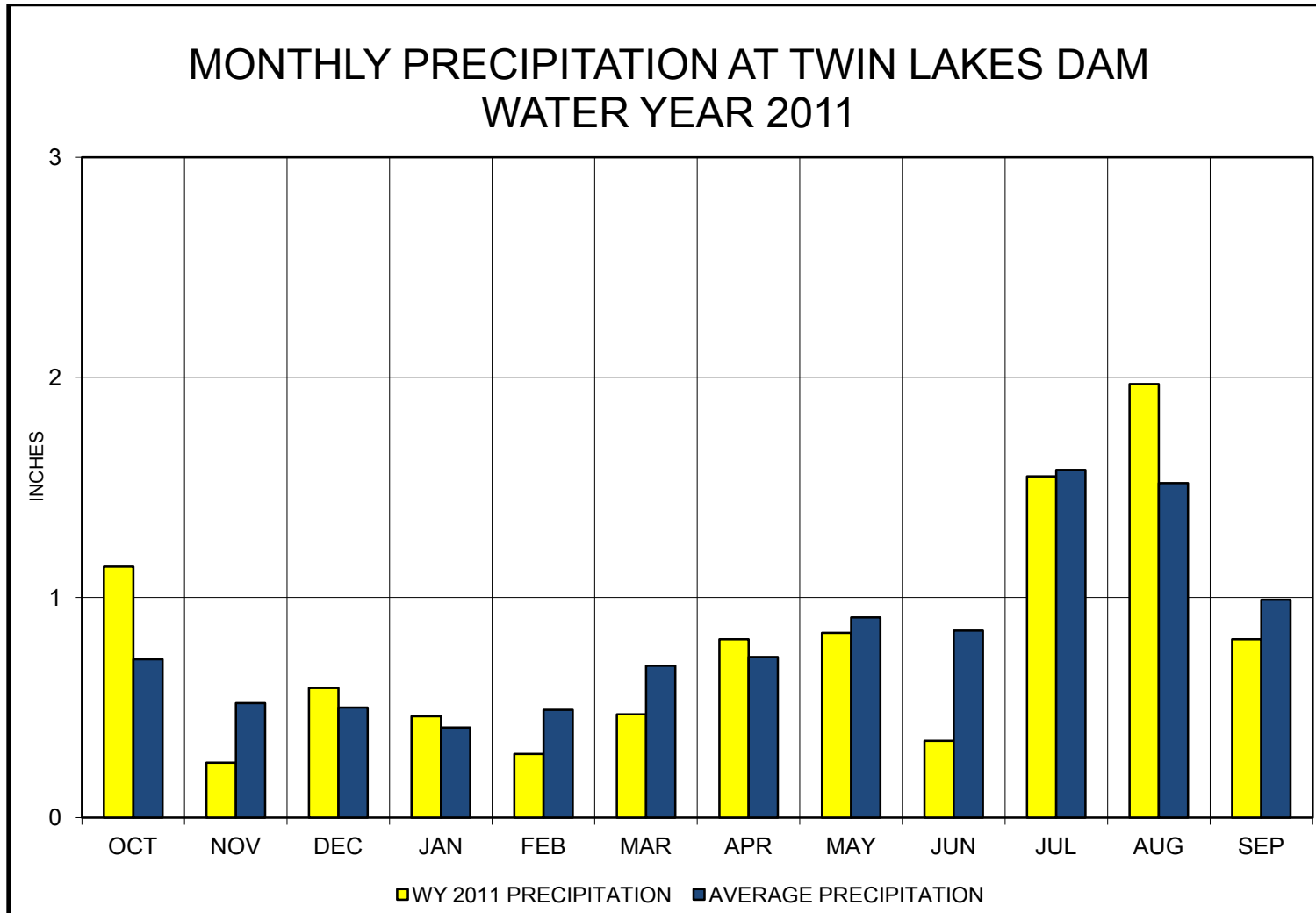


TURQUOISE LAKE ACTUAL OPERATIONS WATER YEAR 2011

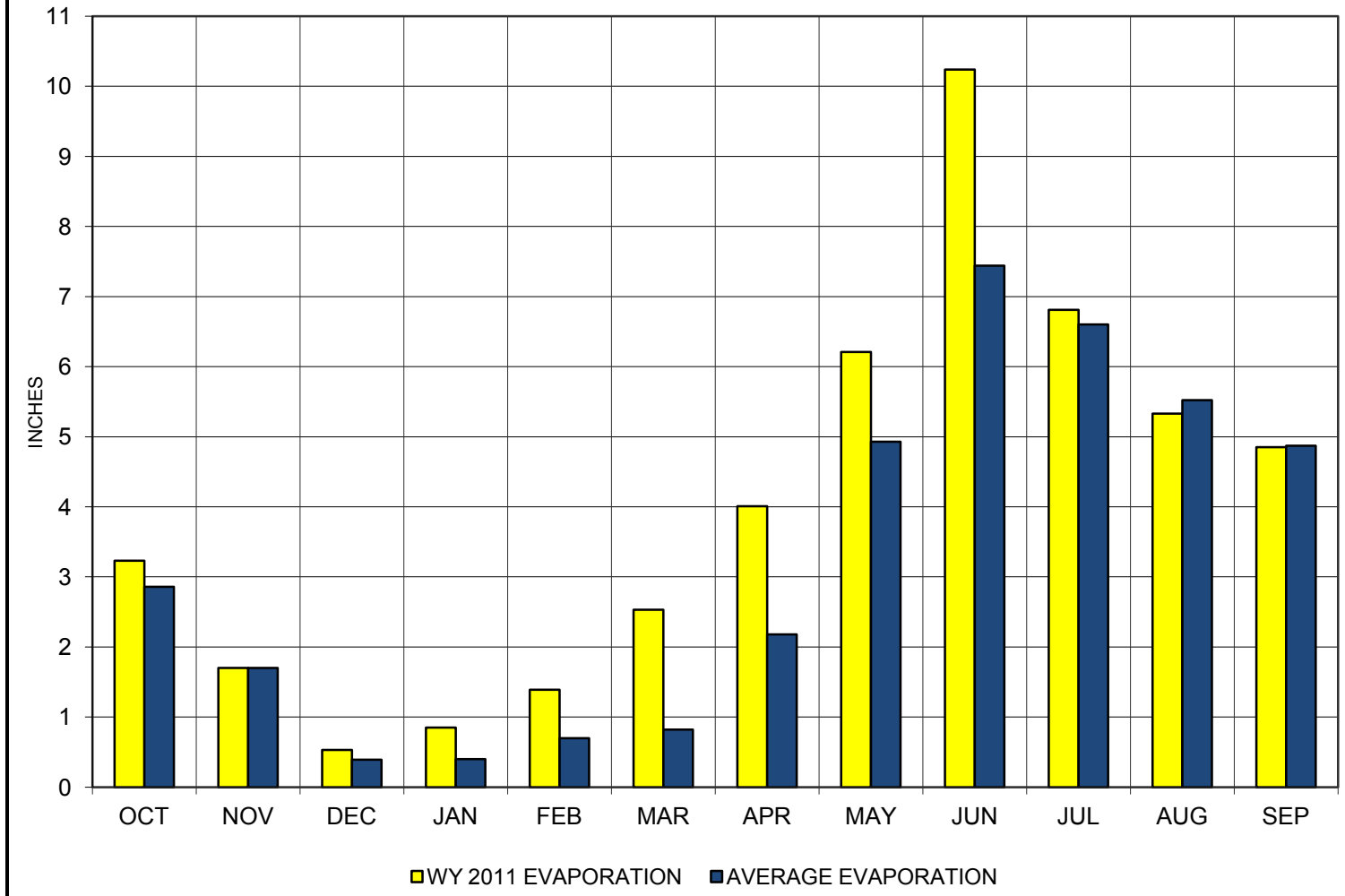


MT. ELBERT CONDUIT FLOW ACTUAL OPERATIONS WATER YEAR 2011

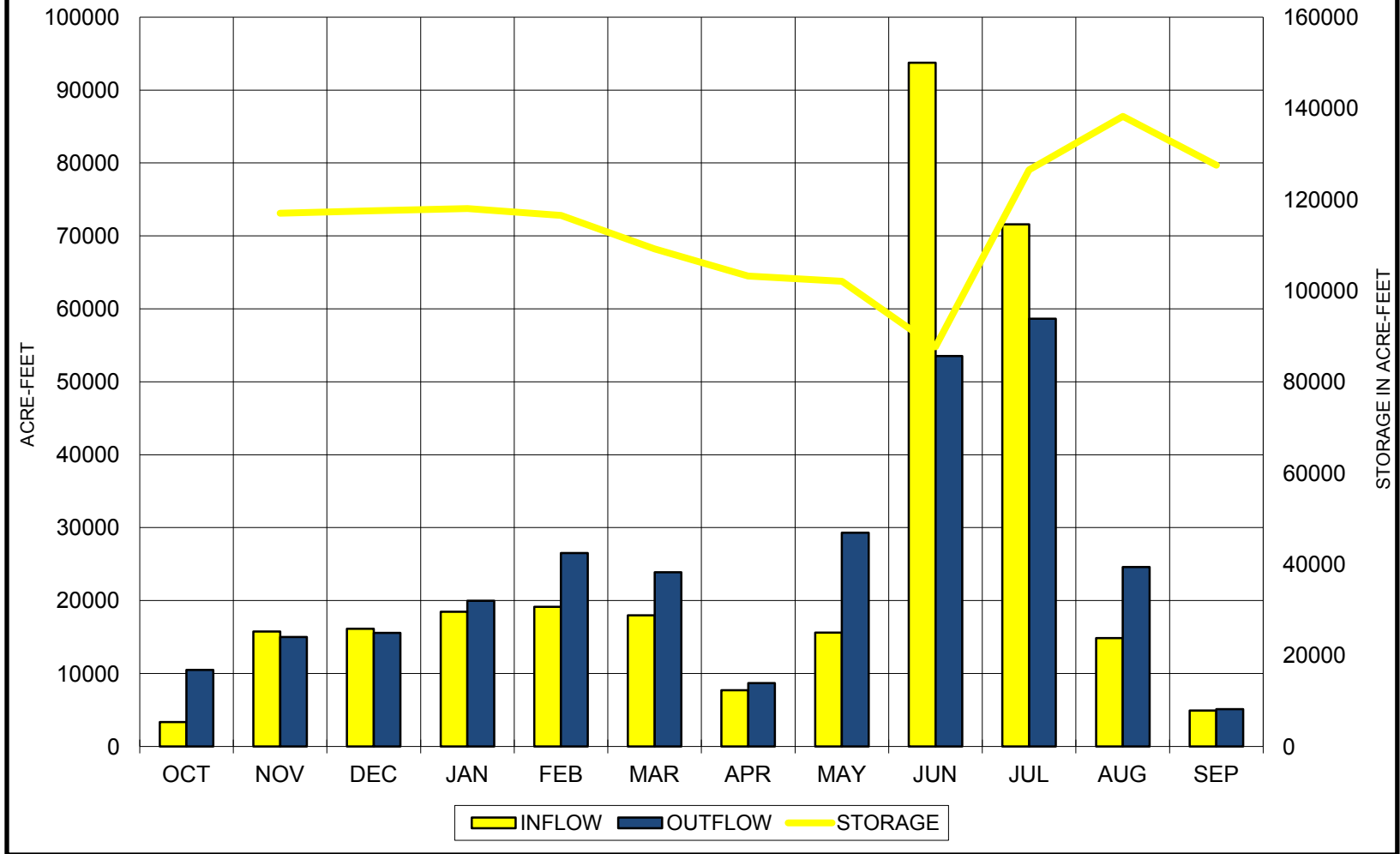


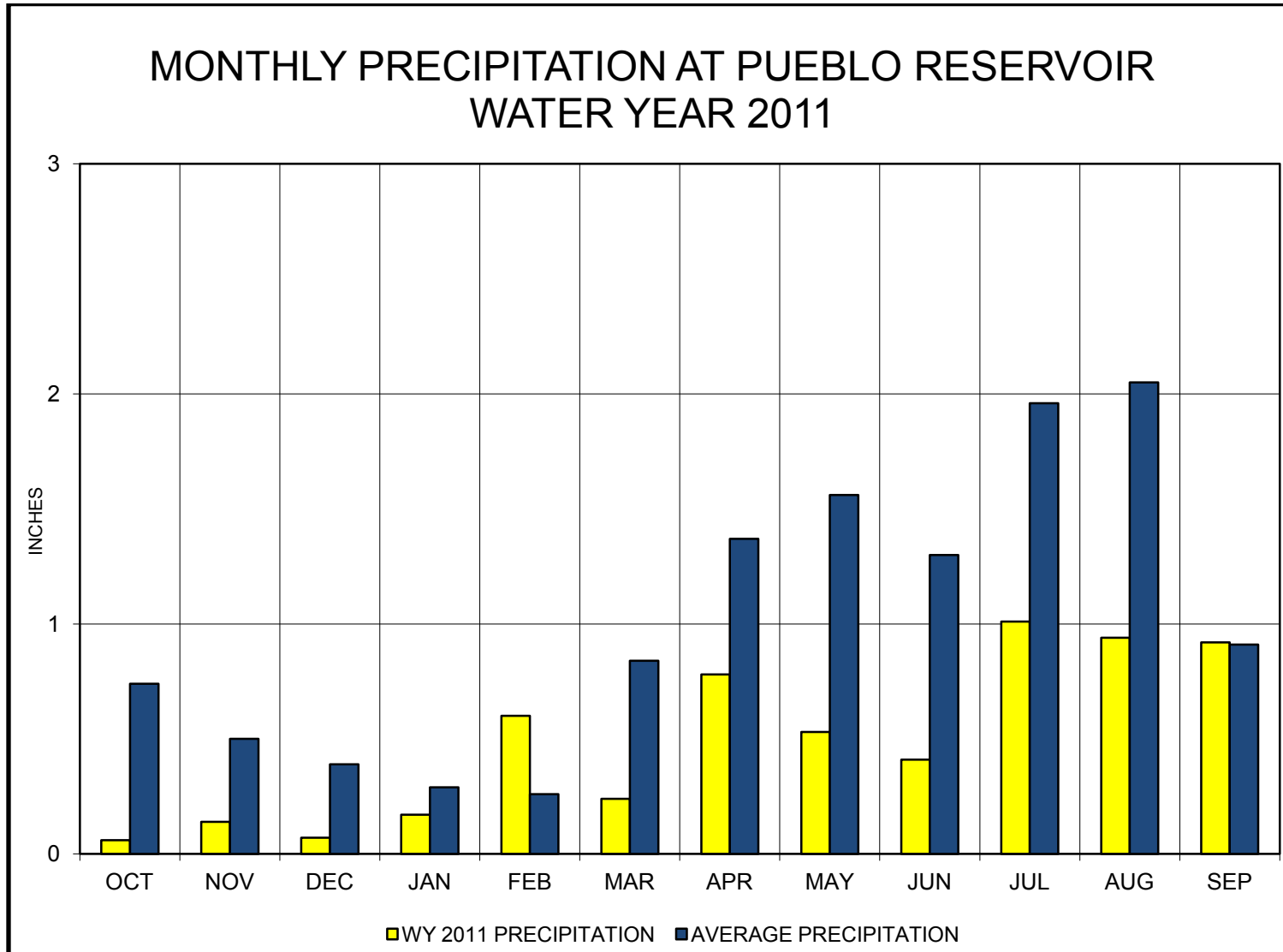


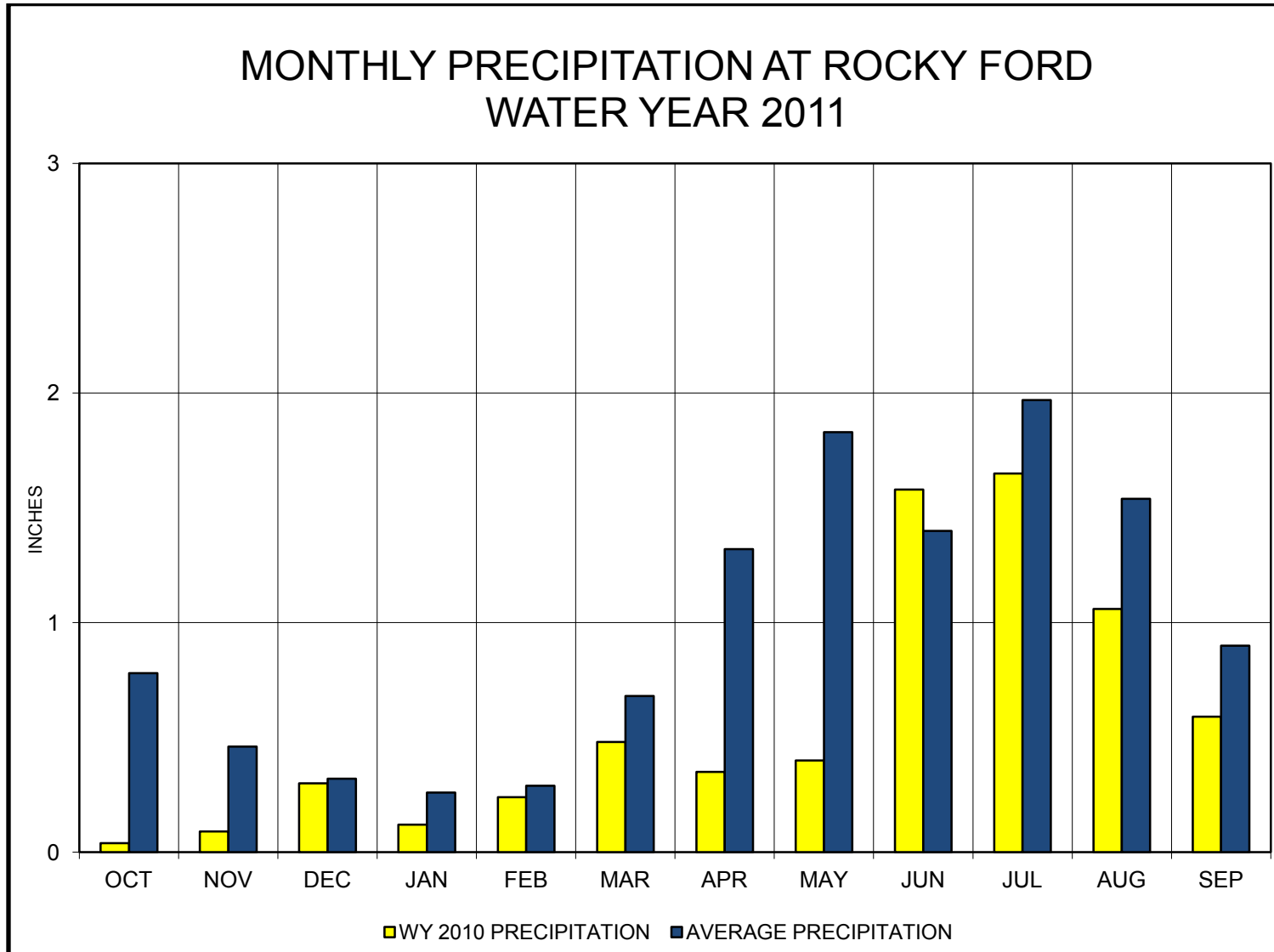
MONTHLY EVAPORATION AT TWIN LAKES DAM WATER YEAR 2011

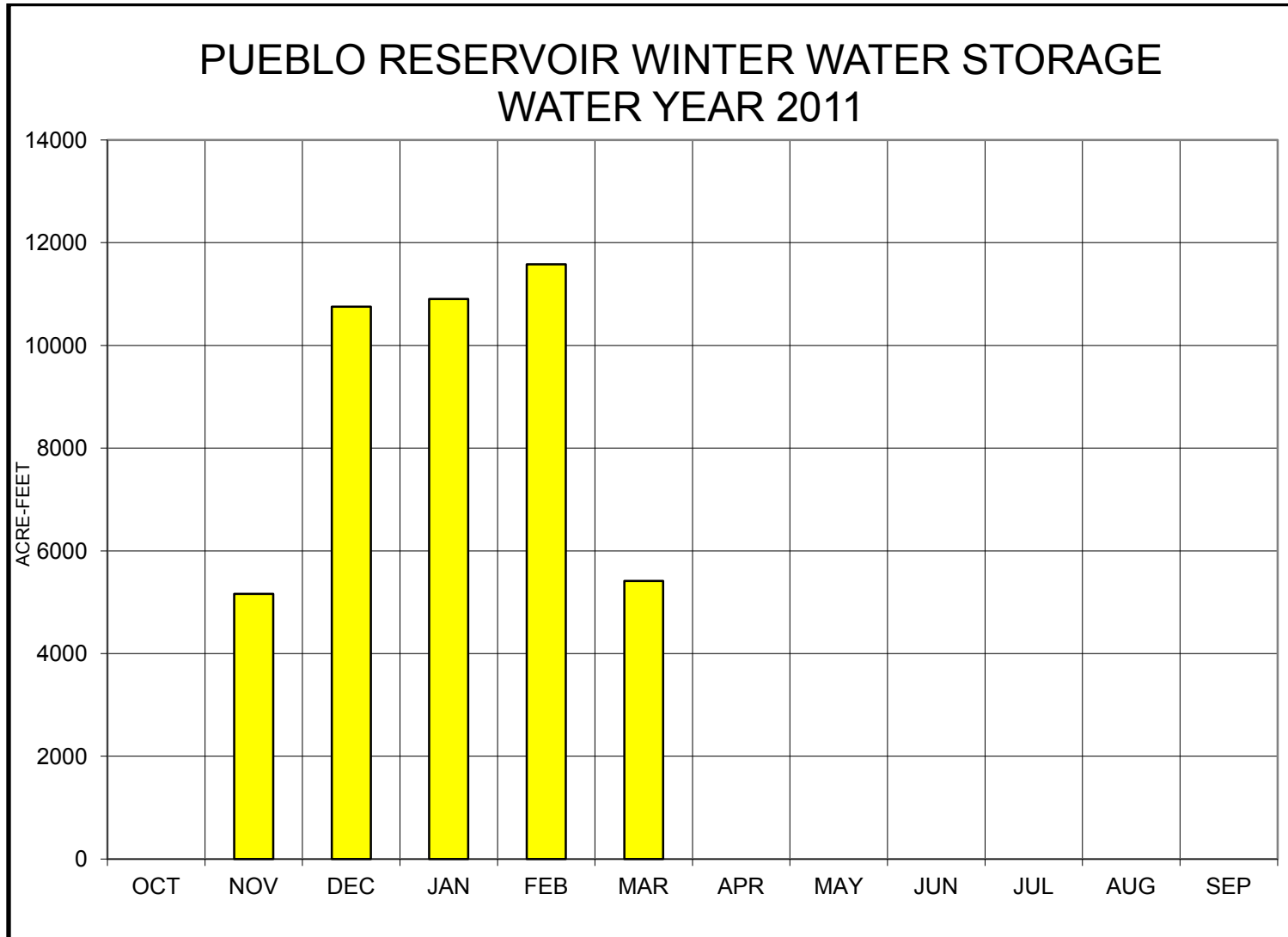


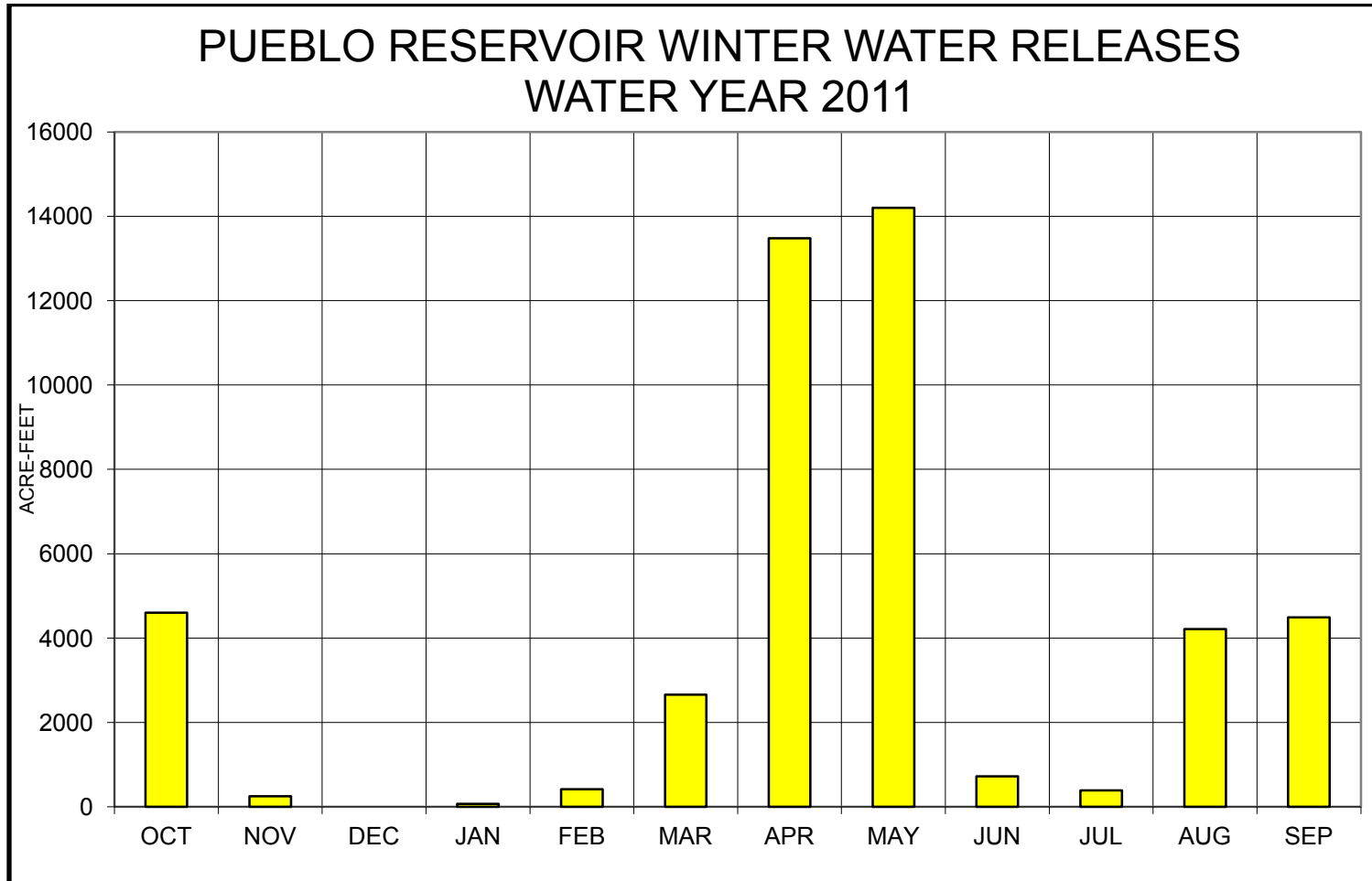
TWIN LAKES ACTUAL OPERATIONS WATER YEAR 2011



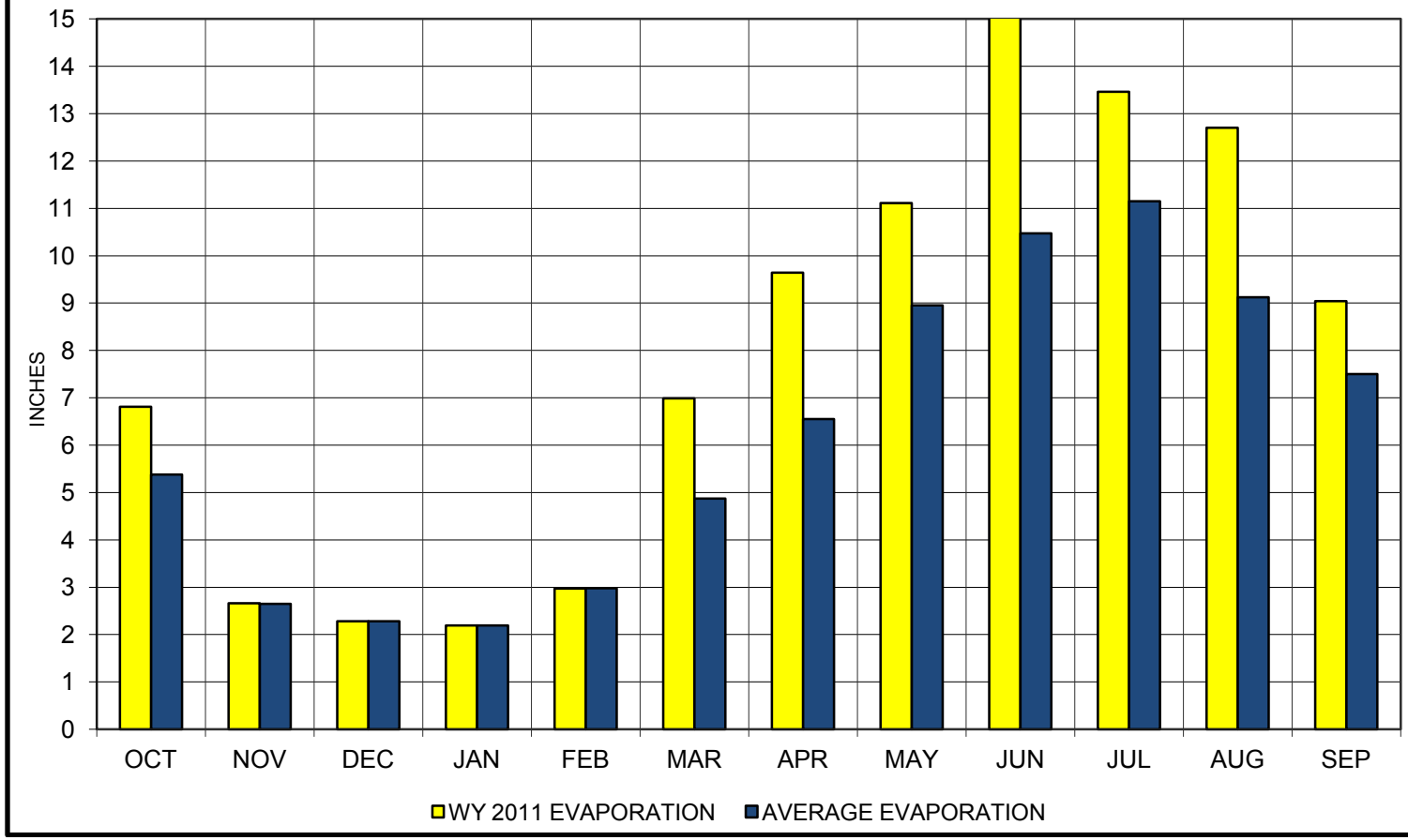




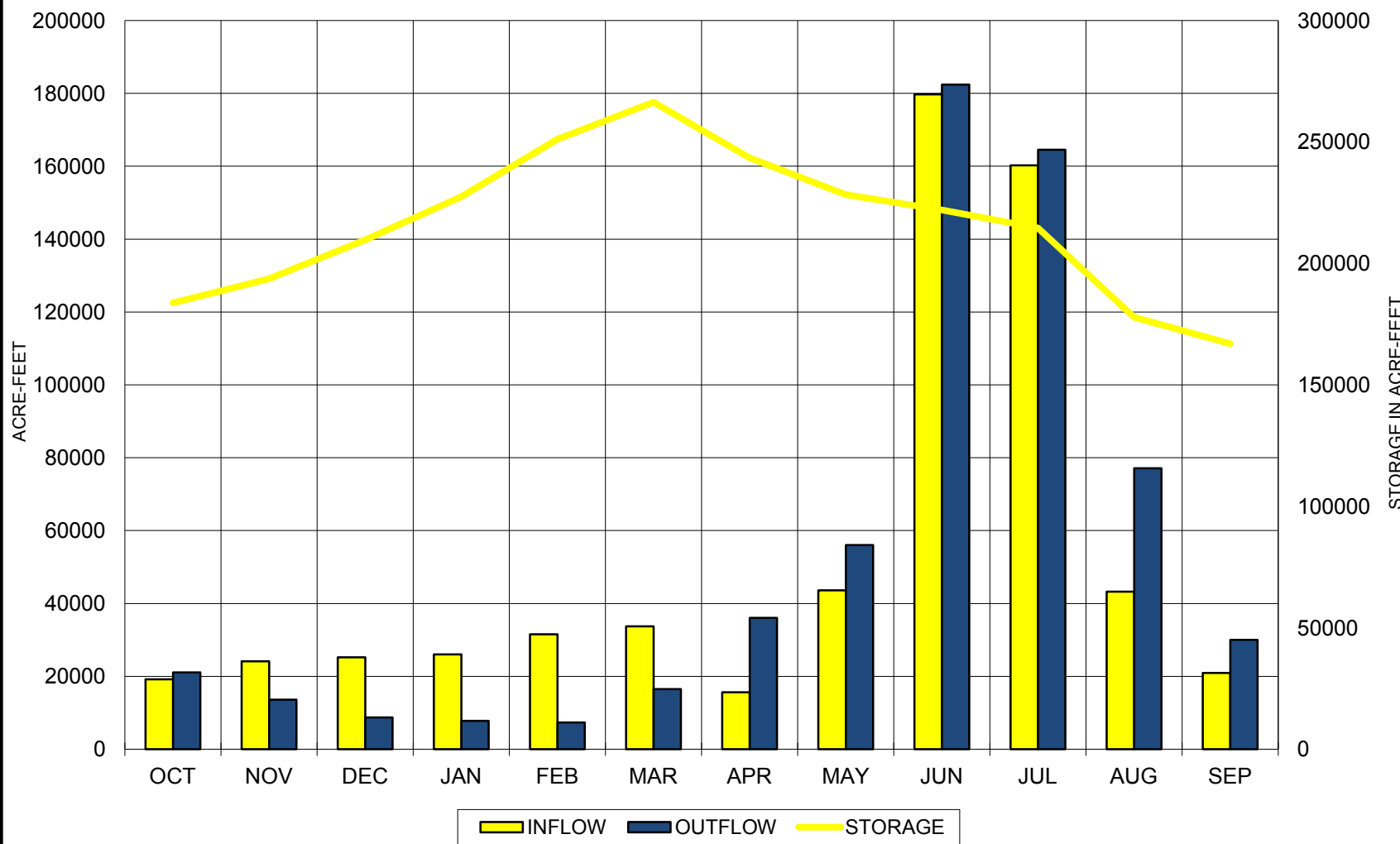




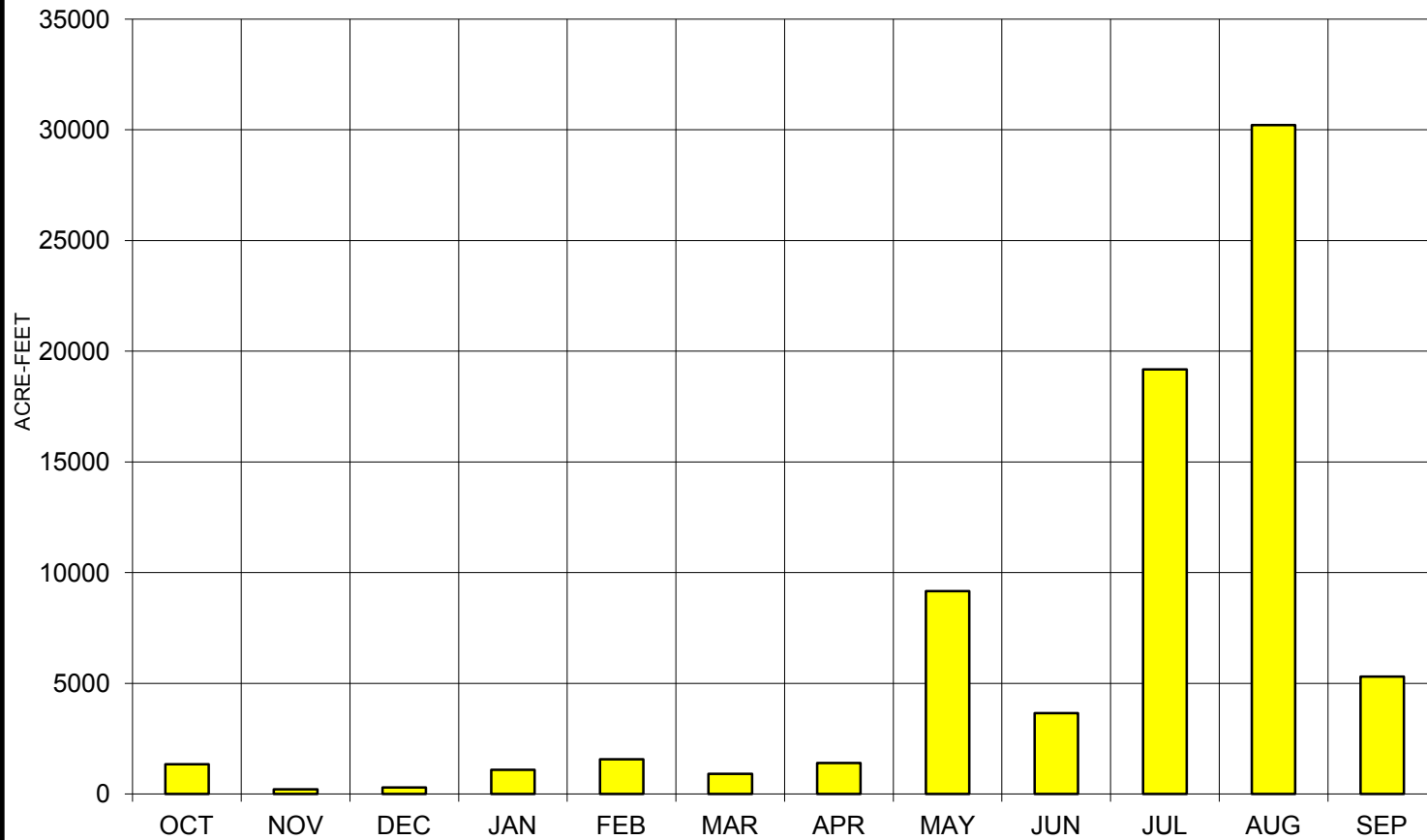
MONTHLY EVAPORATION AT PUEBLO DAM WATER YEAR 2011



PUEBLO RESERVOIR ACTUAL OPERATIONS WATER YEAR 2011



PUEBLO RESERVOIR PROJECT WATER RELEASES WATER YEAR 2011



Twin Lakes Reservoir and Canal Company Exchange
with Fryingpan-Arkansas Project Water
2010-2011
Units = Acre-Feet

	Lincoln Creek below Grizzly Reservoir (1)	Roaring Fork River above Lost Man Creek (2)	Total (1 + 2) (3)	Twin Lakes Storage (3) x 0.9913 ⁷ (4)
October	175	0	175	174
November	170	0	170	169
December	180	0	180	178
January	184	0	184	183
February	166	0	166	164
March	184	0	184	183
April	169	0	169	168
May	174	0	174	173
June	217	205	422	418
July	233	213	446	442
August	234	177	411	407
September	113	80	193	191
Total	2,199	675	2,874	2,850

⁷ .87% transit loss from the outlet of Twin Lakes Tunnel to Twin Lakes normally taken on all Twin Lakes Reservoir and Canal Company imported water.

OPERATING CRITERIA

1. The water exchange will be implemented October 1 through September 30.
2. The releases to the Roaring Fork River at the Roaring Fork Diversion Dam and Lincoln Creek at the Grizzly Diversion Dam shall be accounted as follows:

<u>Month</u> <u>Diversion(ft³/s)</u>	<u>Grizzly Diversion(ft³/s)</u>	<u>Roaring Fork</u>
October	3.0	0.0
November	3.0	0.0
December	3.0	0.0
January	3.0	0.0
February	3.0	0.0
March	3.0	0.0
April	3.0	0.0
May	3.0	0.0
June	4.0	4.0
July	4.0	4.0
August	4.0	3.0
September	4.0	3.0

3. At any time the Twin Lakes Reservoir and Canal Company (Company) is bypassing water, in addition to that designated above, it will be assumed that the Company could not have diverted that water and will not receive any credit for exchange in excess of the above amounts.

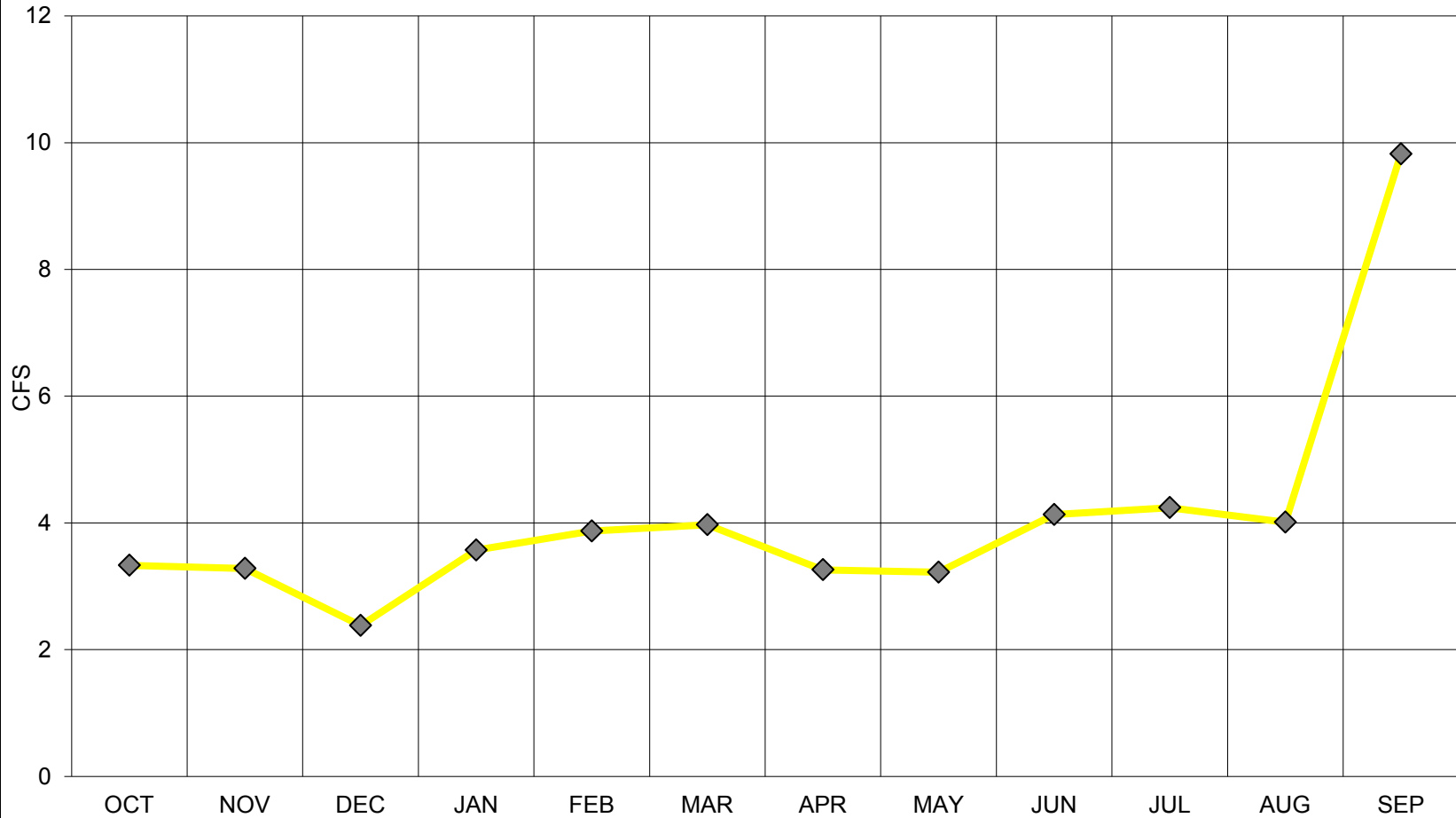
4. In the event less water than the above amounts is bypassed, only the amount actually bypassed will be credited.

5. The total volume of the release at both gages combined shall not exceed 3,000 acre-feet in any one water year.

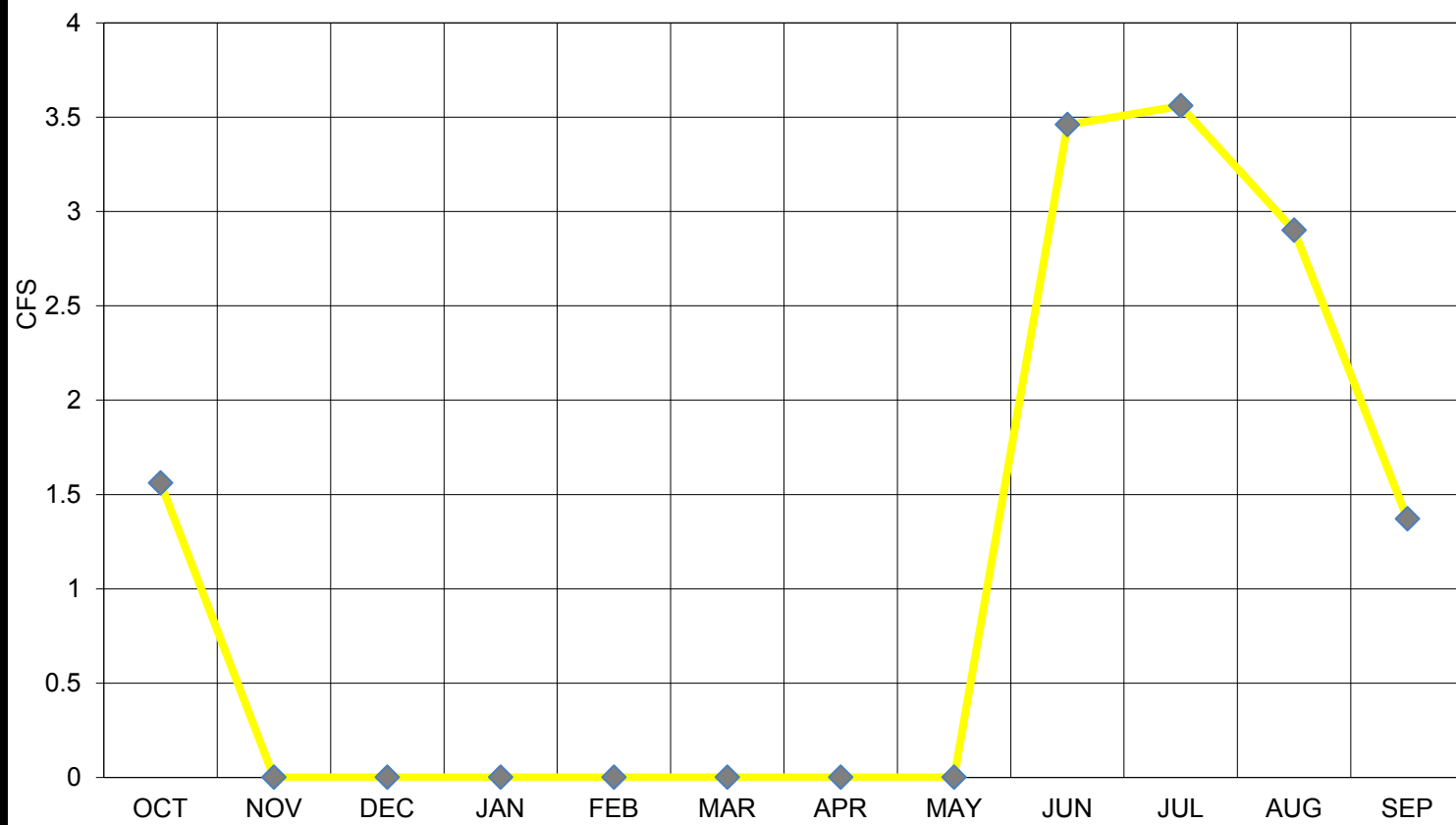
6. No credit for exchange will be made on days when there is no documentation of such bypasses.

7. No credit will be given for water bypassed when diversions are called out by the State Engineer.

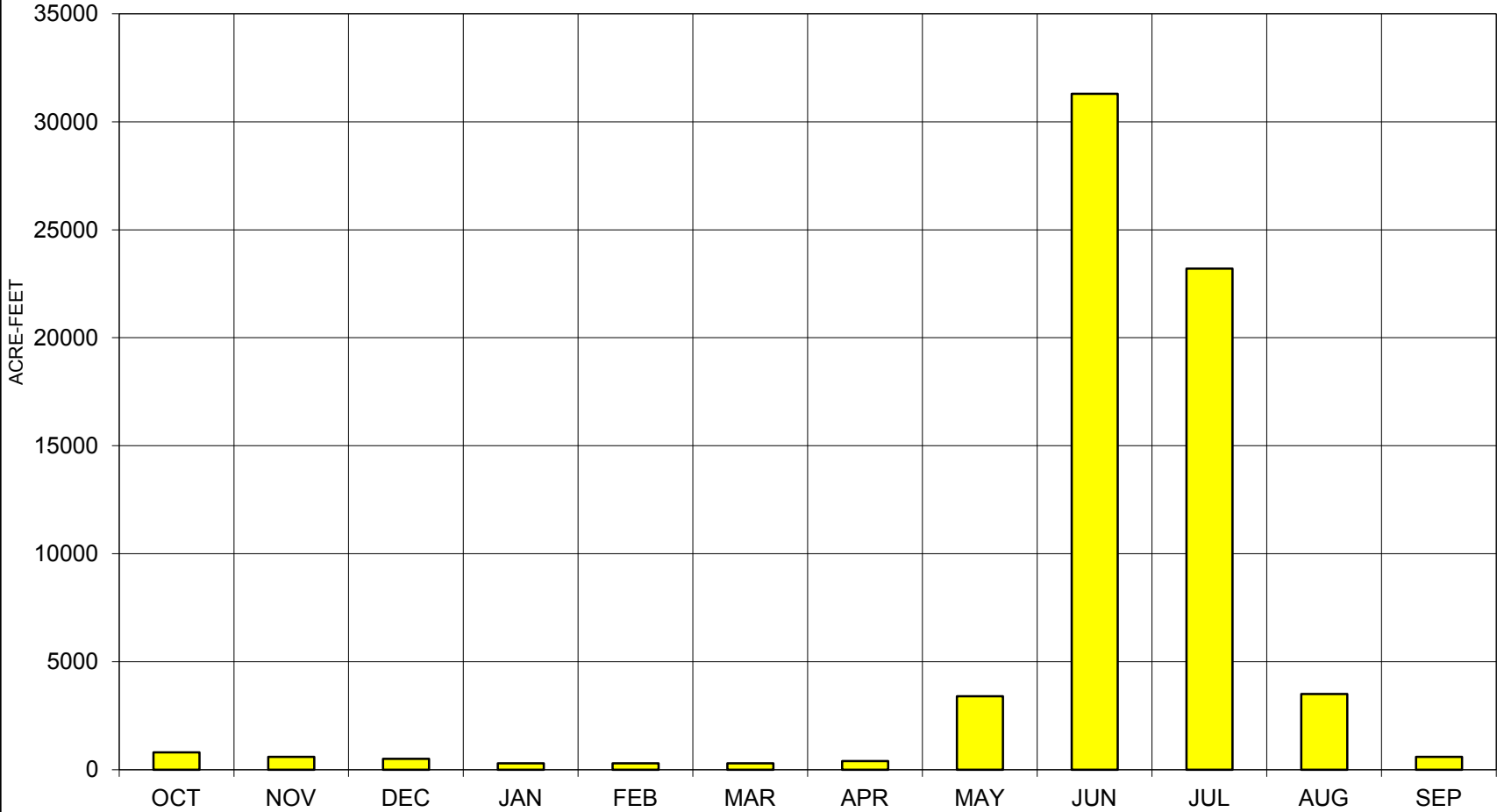
LINCOLN CREEK BELOW GRIZZLY RESERVOIR WATER YEAR 2011



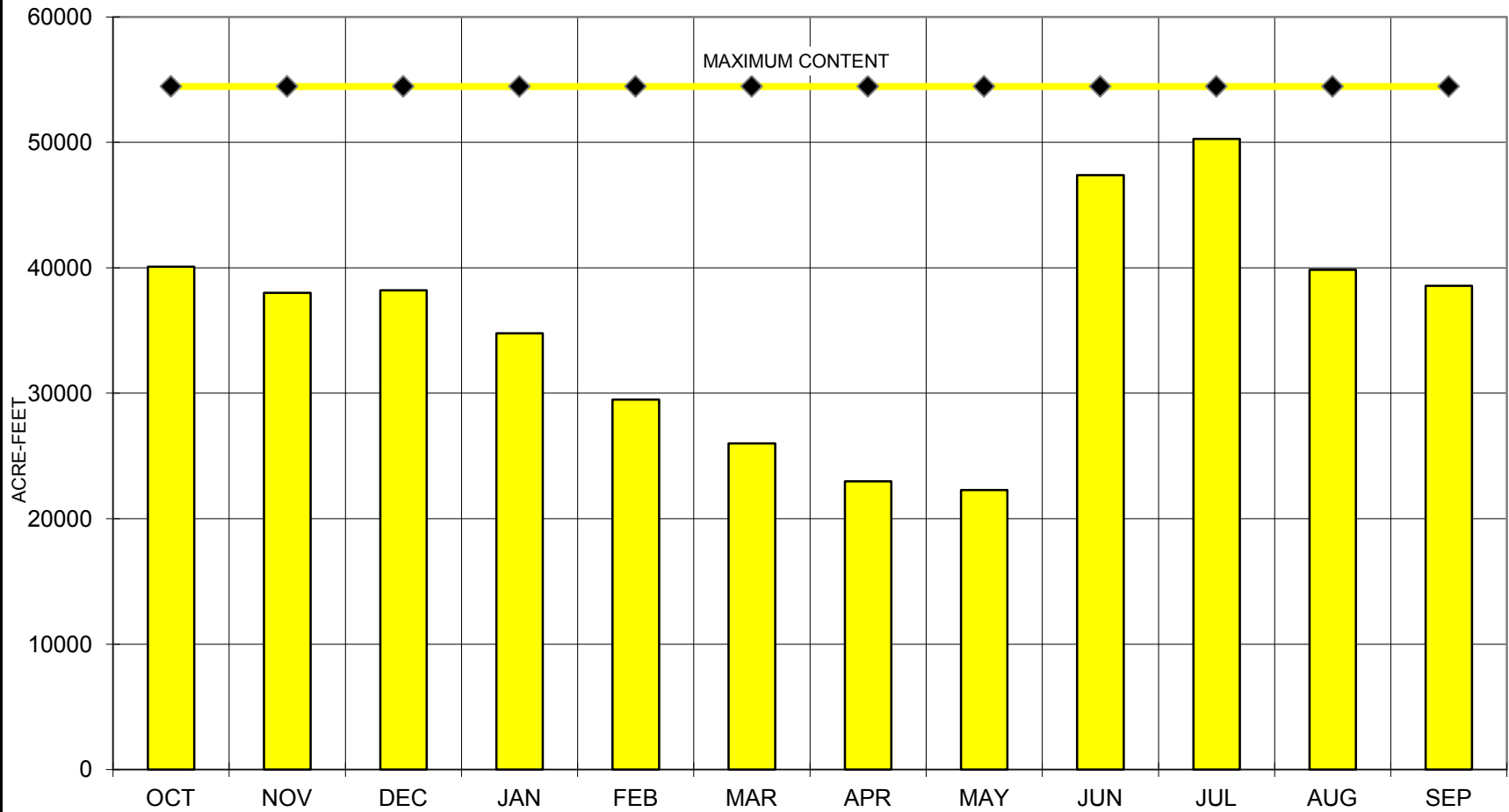
ROARING FORK ABOVE LOST MAN WATER YEAR 2011



TWIN LAKES TUNNEL IMPORTS WATER YEAR 2011



TWIN LAKES CANAL COMPANY STORAGE WATER YEAR 2011



Appendix D (1 of 15)
 Carter Creek Feeder Conduit near Norrie, CO
 Water Year 2011
 Unit: Cubic Feet Per Second
 Source: U.S. Bureau of Reclamation

<u>Day</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>
1			21	31	14	
2			35	30	13	
3			36	30	15	
4			37	38	14	
5			45	39	13	
6			46	36	11	
7			46	40	9	
8			43	34	8	
9		1	41	30	6	
10		3	42	36	6	
11		8	45	42	6	
12		3	44	42	5	
13		2	45	53	4	
14		2	42	47	5	
15		4	43	41		
16		9	47	34		
17		10	45	35		
18		6	45	39		
19		4	44	39		
20		3	40	35		
21		2	33	32		
22		1	35	29		
23		2	39	26		
24		2	40	23		
25		1	35	23		
26		3	36	20		
27		6	40	18		
28		10	41	17		
29		27	40	17		
30		27	36	16		
31		16		15		
Total	0	151	1207	985	130	0
Mean	0	7	40	32	9	0
Max	0	27	47	53	15	0
Min	0	1	21	15	4	0
Acre- Feet	0	299	2394	1954	257	0

Water year total: 4,904 acre-feet

Maximum instantaneous peak: 53 cubic feet per second – July 13

Note: All blank spaces, recorder was not operated; no water was diverted.

Appendix D (2 of 15)
 North Fork Fryingpan River Feeder Conduit near Norrie, CO
 Water Year 2011
 Unit: Cubic Feet Per Second
 Source: U.S. Bureau of Reclamation

<u>Day</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>
1			1	20	1	
2			4	19	1	
3			5	20	1	
4			6	20	1	
5			9	20	1	
6			10	20	1	
7			10	20		
8			10	20		
9			10	20		
10			10	19		
11			10	18		
12			10	15		
13			10	14		
14			10	13		
15			10	11		
16			10	9		
17			10	8		
18			11	8		
19			11	8		
20			10	7		
21			9	6		
22			9	5		
23			10	5		
24			7	2		
25			5	0		
26			6	2		
27		0	7	2		
28		0	6	2		
29		1	11	2		
30		2	21	2		
31		1		2		
Total	0	5	270	342	6	0
Mean	0	1	9	11	1	0
Max	0	2	21	20	1	0
Min	0	0	1	0	1	0
Acre- Feet	0	10	535	678	12	0

Water year total: 1,235 acre-feet

Maximum instantaneous peak: 21 cubic feet per second – June 30

Note: All blank spaces, recorder was not operated; no water was diverted.

Appendix D (3 of 15)
Mormon Creek Feeder Conduit near Norrie, CO
Water Year 2011
Unit: Cubic Feet Per Second
Source: U.S. Bureau of Reclamation

<u>Day</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>
1			23	40	4	
2			31	40	4	
3			39	40	4	
4			41	40	3	
5			48	42	2	
6			53	43	1	
7			52	43		
8			48	40		
9			50	40		
10			49	42		
11			49	48		
12			49	46		
13			50	47		
14			51	40		
15		0	52	35		
16		1	54	31		
17		4	58	29		
18		5	47	28		
19		4	47	25		
20		2	44	21		
21		2	46	18		
22		2	48	15		
23		2	54	13		
24		2	54	11		
25		2	48	11		
26		3	40	10		
27		8	40	9		
28		13	41	7		
29		26	40	6		
30		31	39	5		
31		17		5		
Total	0	125	1386	871	18	0
Mean	0	7	46	28	3	0
Max	0	31	58	48	4	0
Min	0	0	23	5	1	0
Acre- Feet	0	247	2750	1728	36	0

Water year total: 4,761 acre-feet

Maximum instantaneous peak: 58 cubic feet per second – June 17

Note: All blank spaces, recorder was not operated; no water was diverted.

Appendix D (4 of 15)
 North Cunningham Feeder Conduit near Norrie, CO
 Water Year 2011
 Unit: Cubic Feet Per Second
 Source: U.S. Bureau of Reclamation

<u>Day</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>
1			15	30		
2			22	30		
3			22	29		
4			23	28		
5			26	28		
6			28	30		
7			28	29		
8			27	29		
9			26	30		
10			26	28		
11		3	26	27		
12		2	24	21		
13		2	26	22		
14		3	26	18		
15		3	27	16		
16		5	28	14		
17		6	29	13		
18		4	23	12		
19		3	24	11		
20		2	22	9		
21		2	20	7		
22		2	25	6		
23		2	28	3		
24		2	29	2		
25		2	30	2		
26		4	29	3		
27		6	29	3		
28		11	29	2		
29		18	30	2		
30		19	30			
31		11				
Total	0	110	776	482	0	0
Mean	0	5	26	17	0	0
Max	0	19	30	30	0	0
Min	0	2	15	2	0	0
Acre- Feet	0	219	1540	956	0	0

Water year total: 2,715 acre-feet

Maximum instantaneous peak: 30 cubic feet per second – June 30

Note: All blank spaces, recorder was not operated; no water was diverted.

Appendix D (5 of 15)
 Middle Cunningham Feeder Conduit near Norrie, CO
 Water Year 2011
 Unit: Cubic Feet Per Second
 Source: U.S. Bureau of Reclamation

<u>Day</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>
1			11	40	2	
2			19	40	1	
3			22	39	1	
4			23	40	1	
5			29	40	1	
6			33	39	1	
7			34	39		
8			32	39		
9			32	53		
10			31	38		
11			31	32		
12			33	27		
13			33	25		
14			33	22		
15		1	37	19		
16		1	38	16		
17		1	39	15		
18		1	32	14		
19		1	33	13		
20		1	32	10		
21		1	31	9		
22		1	36	7		
23		1	44	4		
24		1	40	1		
25		1	41	1		
26		1	37	3		
27		2	39	4		
28		4	39	3		
29		10	39	3		
30		12	40	2		
31		8		2		
Total	0	44	992	635	7	0
Mean	0	3	33	20	1	0
Max	0	12	44	53	2	0
Min	0	1	11	1	1	0
Acre- Feet	0	87	1967	1259	13	0

Water year total: 3,326 acre-feet

Maximum instantaneous peak: 53 cubic feet per second – July 9

Note: All blank spaces, recorder was not operated; no water was diverted.

Appendix D (6 of 15)
Ivanhoe Creek Feeder Conduit near Norrie, CO
Water Year 2011
Unit: Cubic Feet Per Second
Source: U.S. Bureau of Reclamation

<u>Day</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>
1			58	129	4	
2			85	128	4	
3			98	133	4	
4			95	136	3	
5			107	128	3	
6			113	124	3	
7			117	128	6	
8			112	134	9	
9		0	112	134	2	
10		6	114	135	2	
11		10	108	133	2	
12		8	108	126	2	
13		7	105	100	1	
14		8	109	62	1	
15		10	106	57		
16		14	107	54		
17		17	110	43		
18		15	124	36		
19		12	124	36		
20		9	120	32		
21		7	130	28		
22		7	116	24		
23		8	112	18		
24		9	113	12		
25		8	118	3		
26		12	123	7		
27		22	124	8		
28		36	123	6		
29		57	120	5		
30		64	123	5		
31		44		4		
Total	0	393	3336	2106	46	0
Mean	0	17	111	68	3	0
Max	0	64	130	136	9	0
Min	0	0	58	3	1	0
Acre- Feet	0	779	6616	4176	92	0

Water year total: 11,663 acre-feet

Maximum instantaneous peak: 136 cubic feet per second – July 4

Note: All blank spaces, recorder was not operated; no water was diverted.

Appendix D (7 of 15)
 Lily Pad Creek Feeder Conduit near Norrie, CO
 Water Year 2011
 Unit: Cubic Feet Per Second
 Source: U.S. Bureau of Reclamation

<u>Day</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>
1			4	17		
2			7	14		
3			11	13		
4			14	12		
5			14	12		
6			12	12		
7			10	12		
8			11	12		
9			15	13		
10			28	10		
11			26	11		
12			25	9		
13			24	8		
14			24	7		
15			25	6		
16			28	5		
17			29	5		
18			24	5		
19			24	5		
20			20	4		
21			17	3		
22			21	3		
23			24	2		
24			26	2		
25			25	2		
26			23	2		
27			21			
28			21			
29			20			
30		2	19			
31		2				
Total	0	4	594	208	0	0
Mean	0	2	20	8	0	0
Max	0	2	29	17	0	0
Min	0	2	4	2	0	0
Acre- Feet	0	9	1177	413	0	0

Water year total: 1,599 acre-feet

Maximum instantaneous peak: 29 cubic feet per second – June 17

Note: All blank spaces, recorder was not operated; no water was diverted.

Appendix D (8 of 15)
 Granite Creek Feeder Conduit near Norrie, CO
 Water Year 2011
 Unit: Cubic Feet Per Second
 Source: U.S. Bureau of Reclamation

<u>Day</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>
1			12	34	6	
2			18	33	8	
3			21	30	8	
4			23	29	6	
5			27	29	5	
6			38	29	5	
7			37	28	4	
8			30	28	4	
9			31	29	4	
10			30	26	3	
11			31	25	3	
12			32	22	3	
13		1	32	21	3	
14		1	32	18	3	
15		1	34	16		
16		1	38	15		
17		2	38	14		
18		3	35	14		
19		3	35	14		
20		3	31	12		
21		3	28	11		
22		3	31	10		
23		3	35	9		
24		3	38	8		
25		3	37	8		
26		3	36	9		
27		4	35	8		
28		6	35	7		
29		10	36	6		
30		11	37	6		
31		9		6		
Total	0	70	953	553	66	0
Mean	0	4	32	18	5	0
Max	0	11	38	34	8	0
Min	0	1	12	6	3	0
Acre- Feet	0	140	1891	1097	131	0

Water year total: 3,259 acre-feet

Maximum instantaneous peak: 38 cubic feet per second – June 24

Note: All blank spaces, recorder was not operated; no water was diverted.

Appendix D (9 of 15)
 No Name Creek Feeder Conduit near Norrie, CO
 Water Year 2011
 Unit: Cubic Feet Per Second
 Source: U.S. Bureau of Reclamation

<u>Day</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>
1			27	22		
2			43	36		
3			50	43		
4			49	42		
5			56	21		
6			52	12		
7			51	8		
8		1	43	10		
9		0	46	8		
10			49	8		
11			53	9		
12			56	20		
13			58	23		
14			53	16		
15			51	12		
16		1	49	10		
17		3	38	9		
18		0	53	9		
19			54	8		
20			52	5		
21			53	4		
22			53	3		
23			54	2		
24			53	1		
25			42	0		
26			30	0		
27		3	40	1		
28		10	49	0		
29		19	49			
30		26	42			
31		17				
Total	0	80	1448	341	0	0
Mean	0	8	48	12	0	0
Max	0	26	58	43	0	0
Min	0	0	27	0	0	0
Acre- Feet	0	159	2872	676	0	0

Water year total: 3,707 acre-feet

Maximum instantaneous peak: 58 cubic feet per second – June 13

Note: All blank spaces, recorder was not operated; no water was diverted.

Appendix D (10 of 15)
 Midway Creek Feeder Conduit near Norrie, CO
 Water Year 2011
 Unit: Cubic Feet Per Second
 Source: U.S. Bureau of Reclamation

<u>Day</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>
1			28	40	11	
2			54	36	3	
3			58	46		
4			55	59		
5			51	46		
6			64	32		
7			63	53		
8			66	50		
9			57	48		
10			60	24		
11			62	55		
12			65	68		
13			66	67		
14			66	55		
15			65	46		
16			56	42		
17			46	39		
18			65	39		
19			74	43		
20			75	35		
21			73	27		
22			68	23		
23			61	19		
24			54	17		
25			49	16		
26			58	16		
27		2	60	18		
28		8	59	13		
29		21	54	11		
30		26	46	9		
31		13		11		
Total	0	70	1778	1103	14	0
Mean	0	14	59	36	7	0
Max	0	26	75	68	11	0
Min	0	2	28	9	3	0
Acre- Feet	0	138	3527	2188	28	0

Water year total: 5,881 acre-feet

Maximum instantaneous peak: 75 cubic feet per second – June 20

Note: All blank spaces, recorder was not operated; no water was diverted.

Appendix D (11 of 15)
 Hunter Creek Feeder Conduit near Norrie, CO
 Water Year 2011
 Unit: Cubic Feet Per Second
 Source: U.S. Bureau of Reclamation

<u>Day</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>
1			34	37	11	
2			67	57	2	
3			74	65		
4			74	72		
5			93	49		
6			81	34		
7			76	53		
8			75	59		
9			67	57		
10			64	56		
11			68	64		
12		1	71	73		
13		0	73	82		
14			73	66		
15			70	55		
16			62	52		
17		6	52	50		
18		4	61	50		
19			61	76		
20			71	64		
21			67	43		
22			65	34		
23			59	28		
24			51	26		
25			51	23		
26			62	23		
27		3	67	25		
28		15	59	14		
29		28	55	10		
30		42	50	7		
31		18		13		
Total	0	117	1953	1417	13	0
Mean	0	13	65	46	6	0
Max	0	42	93	82	11	0
Min	0	0	34	7	2	0
Acre- Feet	0	232	3874	2811	25	0

Water year total: 6,942 acre-feet

Maximum instantaneous peak: 93 cubic feet per second – June 5

Note: All blank spaces, recorder was not operated; no water was diverted.

Appendix D (12 of 15)
 Sawyer Creek Feeder Conduit near Norrie, CO
 Water Year 2011
 Unit: Cubic Feet Per Second
 Source: U.S. Bureau of Reclamation

<u>Day</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>
1					16	
2					17	
3					16	
4				53	15	
5				52	14	
6				49	14	
7				47	13	
8				47	12	
9				50	12	
10				49	11	
11				44	11	
12				39	11	
13				36	10	
14				34	10	
15				31		
16				28		
17				30		
18				32		
19				33		
20				32		
21				27		
22				24		
23				22		
24				21		
25				20		
26				19		
27				18		
28				17		
29				16		
30				16		
31				16		
Total	0	0	0	903	185	0
Mean	0	0	0	32	13	0
Max	0	0	0	53	17	0
Min	0	0	0	16	10	0
Acre- Feet	0	0	0	1792	367	0

Water year total: 2,159 acre-feet

Maximum instantaneous peak: 53 cubic feet per second – July 4

Note: All blank spaces, recorder was not operated; no water was diverted.

Appendix D (13 of 15)
 Chapman Gulch Feeder Conduit near Norrie, CO
 Water Year 2011
 Unit: Cubic Feet Per Second
 Source: U.S. Bureau of Reclamation

<u>Day</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>
1			127	250	55	
2			222	267	37	
3			254	283	27	
4			249	301	24	
5			273	278	21	
6			298	224	20	
7			297	253	17	
8			291	260	16	
9		8	281	267	14	
10		5	281	218	13	
11		4	292	238	12	
12		4	302	244	11	
13		3	304	258	11	
14		5	303	216	10	
15		6	303	184		
16		11	296	170		
17		22	266	167		
18		16	287	166		
19		8	301	218		
20		6	293	183		
21		5	268	137		
22		5	282	113		
23		6	302	97		
24		6	298	89		
25		6	289	81		
26		9	287	79		
27		22	296	84		
28		60	306	64		
29		106	307	55		
30		141	302	48		
31		79		54		
Total	0	542	8456	5548	288	0
Mean	0	24	282	179	21	0
Max	0	141	307	301	55	0
Min	0	3	127	48	10	0
Acre- Feet	0	1075	16771	11004	571	0

Water year total: 29,421 acre-feet

Maximum instantaneous peak: 307 cubic feet per second – June 29

Note: All blank spaces, recorder was not operated; no water was diverted.

Appendix D (14 of 15)
 South Fork Fryingpan River Feeder Conduit near Norrie, CO
 Water Year 2011
 Unit: Cubic Feet Per Second
 Source: U.S. Bureau of Reclamation

<u>Day</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>
1			50	167	43	
2			78	167	55	
3			91	158	58	
4			94	149	45	
5			113	171	38	
6			127	188	34	
7			134	177	30	
8			127	176	27	
9		5	129	167	24	
10		5	128	176	22	
11		5	130	157	18	
12		5	136	143	15	
13		5	134	130	10	
14		6	138	116	5	
15		7	139	103		
16		11	146	96		
17		17	158	96		
18		15	140	95		
19		8	143	89		
20		6	126	83		
21		4	107	72		
22		3	123	64		
23		3	141	58		
24		4	149	55		
25		4	150	53		
26		6	150	58		
27		14	149	57		
28		23	149	48		
29		40	152	45		
30		54	151	41		
31		37		44		
Total	0	289	3882	3399	424	0
Mean	0	13	129	110	30	0
Max	0	54	158	188	58	0
Min	0	3	50	41	5	0
Acre- Feet	0	573	7700	6742	841	0

Water year total: 15,856 acre-feet

Maximum instantaneous peak: 188 cubic feet per second – July 6

Note: All blank spaces, recorder was not operated; no water was diverted.

Appendix D (15 of 15)
 Fryngpan River Feeder Conduit near Norrie, CO
 Water Year 2011
 Unit: Cubic Feet Per Second
 Source: U.S. Bureau of Reclamation

<u>Day</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>
1			86	252	59	
2			128	250	57	
3			138	235	57	
4			146	223	46	
5			171	234	33	
6			198	246	25	
7			205	253	18	
8		2	194	249	14	
9		3	197	255	10	
10			195	236	5	
11			202	220	2	
12			206	198	1	
13			204	176	1	
14			201	161	1	
15			208	148	2	
16		4	238	139		
17		16	237	138		
18		21	207	143		
19		18	208	139		
20		14	187	114		
21		10	154	110		
22		10	167	97		
23		14	204	90		
24		14	240	86		
25		12	250	84		
26		20	242	82		
27		34	233	69		
28		54	232	49		
29		91	246	34		
30		95	266	26		
31		68		36		
Total	0	500	5991	4772	332	0
Mean	0	28	200	154	22	0
Max	0	95	266	255	59	0
Min	0	2	86	26	1	0
Acre- Feet	0	991	11882	9464	658	0

Water year total: 22,995 acre-feet

Maximum instantaneous peak: 266 cubic feet per second – June 30

Note: All blank spaces, recorder was not operated; no water was diverted.

OPERATING PRINCIPLES
FRYINGPAN-ARKANSAS PROJECT

ADOPTED BY THE STATE OF COLORADO

APRIL 30, 1959

(As amended December 30, 1959,
and December 9, 1960)

MARCH 15, 1961----Ordered to be printed

U. S. GOVERNMENT PRINTING OFFICE
WASHINGTON: 1961

H. RES. 91
In the House of Representatives, U. S.,
March 15, 1961.

Resolved, That there be printed as a House document the publication entitled "Operating Principles, Fryingpan-Arkansas Project, Adopted by the State of Colorado, April 30, 1959 (as amended December 30, 1959, and December 9, 1960)", and that there be printed for the use of the Committee on Interior and Insular Affairs one thousand additional copies.

Attest:

Ralph R. Roberts, Clerk.

OPERATING PRINCIPLES, FRYINGPAN-ARKANSAS PROJECT

ADOPTED BY THE STATE OF COLORADO, APRIL 30, 1959

(As Amended December 30, 1959, and December 9, 1960)

The construction and operation of the project involve the diversion of water from the headwaters of the Fryingpan River and other tributaries of the Roaring Fork River to the Arkansas River Basin. The project contemplates—

- (a) The maximum conservation and use of water;
- (b) The protection of western Colorado water uses, both existing and potential, in accordance with the declared policy of the State of Colorado; and
- (c) The preservation of recreational values.

In order to accomplish such purposes, the project shall be operated by the United States in compliance with the Federal reclamation laws, the laws of the State of Colorado relating to the appropriation, use, or distribution of water, and the following operating principles:

1. As used herein:

- (a) “Project” means that certain enterprise planned and designed by the Bureau of Reclamation, Department of the Interior, for the transmountain diversion of water from the headwaters of the Fryingpan River and other tributaries of the Roaring Fork River to the basin of the Arkansas River, together with all of its appurtenant works and facilities in both eastern and western Colorado.
- (b) “Eastern Colorado” means that portion of the State of Colorado lying within the natural drainage basin of the Arkansas River.
- (c) “Western Colorado” means that portion of the State of Colorado lying within the natural drainage basin of the Colorado River and served by diversions made from the Colorado River, or its tributaries, above its confluence with the Gunnison River.
- (d) “Southeastern Colorado Water Conservancy District” means that entity created to contract for payment to the United States of an appropriate portion of project cost allocated to certain water uses in eastern Colorado.
- (e) “Colorado River Water Conservation District” means that entity created by Colorado Revised Statutes 1953, 149-8, as amended.
- (f) “Southwestern Water Conservation District” means that entity created by Colorado Revised Statutes 1953, 149-9, as amended.
- (g) “Ruedi Reservoir” means the reservoir presently planned for construction on the Fryingpan River above the town of Basalt as part of the project.
- (h) “Ashcroft Reservoir” means not only the reservoir contemplated for construction on Castle Creek, a tributary of the Roaring Fork River, but also, unless the context requires otherwise, any other reservoir that may be constructed in the Roaring Fork basin above the town of Aspen in lieu of that reservoir.
- (i) “cfs” means cubic feet of water per second of time.

2. The Ruedi Reservoir shall be constructed and maintained on the Fryingpan River above the town of Basalt with an active capacity of not less than 100,000 acre-feet. In addition thereto and in order to offset adverse streamflow conditions on the Roaring Fork River above the town of Aspen which might occur as a result of the project enlargement of the Twin Lakes Reservoir, the Ashcroft Reservoir on Castle Creek, or some reservoir in lieu thereof, shall be constructed on the Roaring Fork drainage above Aspen to a capacity of

approximately 5,000 acre-feet: Providing, However, That the Ashcroft Reservoir shall be constructed only if the Secretary of the Interior after appropriate study shall determine that its benefits exceed the costs: And providing further, That no part of the construction, operation, or maintenance of said Ashcroft Reservoir shall be chargeable to the Fryingpan-Arkansas project.

All of such stored water shall be released under the conditions and limitations hereinafter set forth.

3. The receipts from the sale of water from Ruedi Reservoir, as permitted in paragraph 6(b) hereof, shall be applied solely to the operation and maintenance costs and to those reimbursable construction costs of said reservoir which exceed \$7,600,000. The cost of perpetual operation and maintenance of the Ruedi Reservoir shall be borne by users of project water and users of water stored in Ruedi Reservoir in such proportion as may be determined by the Secretary of the Interior.
4. The inclusion of the Ruedi Reservoir in the project shall not preclude the construction of any other replacement or regulatory reservoirs on the Colorado River or its tributaries above Cameo gaging station.
5. The Ruedi Reservoir shall be completed and in operation before any water is diverted to eastern Colorado by means of the project.
6.
 - (a) The replacement capacity of Ruedi Reservoir, and any reservoir constructed in addition thereto, is that portion of the total reservoir capacity required to permit project diversions at times when such diversions could not otherwise be made because of simultaneous demands of senior diversions in western Colorado existing at the time of the adoption of these operating principles, and shall be so operated to accomplish this purpose. Water stored in such capacity shall be released by the United States, upon the request of the Colorado State engineer, to the extent that water would have been available to said decreed rights except for stream depletion resulting from diversions by this project to the Arkansas Valley.
 - (b) The regulatory capacity of Ruedi Reservoir, and any reservoir constructed in addition thereto, is that portion of the total reservoir capacity not needed for replacement purposes. Water stored in such category may be sold or leased by the United States to water users in Colorado for any purpose recognized by the laws of the United States: Provided, That the sale of water for use outside the natural basin of the Colorado River can only be made with the consent of the Colorado River Water Conservation District. Charges for the use of such water shall be established by the Secretary of the Interior by appropriate contract in accordance with the payment ability of such water users.
7. The primary purpose of Ruedi Reservoir, and any reservoir constructed in addition thereto, is to furnish, to the extent of its capacity, in like manner as if the project were constructed by a water conservancy district organized pursuant to the laws of the State of Colorado, the water required for the protection of western Colorado water users by the provisions of Colorado Revised Statutes 1953, 149-6-13, reading as follows:

However, any works or facilities planned and designed for the exportation of water from the natural basin of the Colorado River and its tributaries in Colorado, by any district created under this article, shall be subject to the provisions of the Colorado River Compact and the Boulder Canyon Project Act. Any such works or facilities shall be designed, constructed and operated in such a manner that the present appropriations of water, and in addition thereto prospective uses of water for irrigation and other beneficial consumptive use purposes, including consumptive uses for domestic, mining, and industrial purposes, within the natural basin of the Colorado River in the State of Colorado, from which water is exported, will not be impaired nor increased in cost at the expense of the water users within the natural basin. The facilities and other means for the accomplishment of said purpose shall be incorporated in, and

made a part of any project plans for the exportation of water from said natural basin in Colorado.

8. Project diversions from Lime Creek shall be made only in the months of May and June of each year, unless the Colorado River Water Conservation District shall, by written communication, advise the Colorado State engineer that additional diversions can be made.
9. The respective decrees which may be or have been awarded to the parties hereto as a part of the Fryingpan-Arkansas project and Basalt project shall be administered by the proper officials of the State of Colorado, in accordance with the applicable laws of the State of Colorado, and with the following principles and procedures, to wit:
 - (1) That the demand on the waters available under such decrees shall be allocated in the following sequence:
 - (a) For diversion to the Arkansas Valley through the collection system and the facilities of the Fryingpan-Arkansas project in an amount not exceeding an aggregate of 120,000 acre-feet of water in any year, but not to exceed a total aggregate of 2,352,800 acre-feet in any period of 34 consecutive years reckoned in continuing progressive series starting with the first full year of diversions, both limitations herein being exclusive of Roaring Fork exchanges as provided in (c) below, and exclusive of diversions for the Busk-Ivanhoe decree; and with the further and absolute limitation that in order to protect existing and future beneficial uses of water in Western Colorado, including recreational and fishing values, the State engineer shall so regulate the transmountain diversions above referred to, to the end that no diversions shall be made which will reduce the remaining aggregate streamflows to less than either of the following minimum standards:
 - (i) The Fryingpan collection system at the points of diversion collectively, exclusive of Lime Creek: 15 cfs October 1 through March 31; 30 cfs April 1 through September 30.
 - (ii) Near Norrie (immediately below the junction of North Fork and Fryingpan River): 30 cfs October 1 through March 31; 100 cfs April 1 through April 30; 150 cfs May 1 through May 31; 200 cfs June 1 through June 30; 100 cfs July 1 through July 31; 75 cfs August 1 through August 31; 65 cfs September 1 through September 30.

In maintaining the above minimum standards, the project diversions shall be regulated, so far as is practicable, in such a manner that the North Fork of the Fryingpan River, the Fryingpan River, and each of the tributaries of those streams, shall contribute to the residual streamflows required by those minimum standards quantities of water in proportion to their natural contributions.

- (b) For storage in Ruedi Reservoir to the extent of its actual capacity, which is to be not less than 100,000 acre-feet.
- (c) For 3,000 acre-feet annually, to the extent that it is available in excess of (a) and (b) above, or such part thereof as may be required, to be delivered to the Twin Lakes Reservoir and Canal Company in exchange for equivalent releases from the headwaters of the Roaring Fork River which would otherwise be diverted through such Twin Lakes Reservoir and Canal Company collection and diversion system.
- (d) For any other beneficial use in western Colorado in accordance with court decree, but not herein contemplated.

- (2) The effectuation of the above principles requires concurrent Fryingpan-Arkansas project diversion and Ruedi Reservoir storage to be accomplished in the manner following: The State engineer annually shall collect pertinent data, including information pertaining to snowpack and all other available evidence, and shall thereafter so divide and apportion the surface runoff as to achieve, as nearly as possible, the foregoing division of water and the maximum of concurrent diversions and storage. The diversions herein contemplated shall be on the basis of a water year hereby defined as that interim of October 1 through the following September 30.
10. For the protection of recreational values, including fishing, on the Fryingpan River below Ruedi Reservoir, releases of water from said reservoir, not to exceed the stream inflow, shall be made so that the streamflow immediately below the junction of the Fryingpan River and Rocky Fork shall not be reduced below 39 cfs from November 1 to April 30, and 110 cfs from May 1 to October 30, or as actual experience or court decree hereafter dictate.
11. An appropriate written contract may be made whereby Twin Lakes Reservoir and Canal Company shall refrain from diverting water whenever the natural flow of the Roaring Fork River and its tributaries shall be only sufficient to maintain a flow equal to or less than that required to maintain the recommended average flows in the Roaring Fork River immediately above its confluence with Difficult Creek in a quantity proportionate to the respective natural flow of the Roaring Fork River. The recommended average flows above mentioned are flows in quantities equal to those recommended as a minimum immediately above its confluence with Difficult Creek according to the following schedule submitted by the United States Fish and Wildlife Service and the Colorado Game and Fish Commission:

Month	Average Second-foot	Acre-feet (thousands)	Month	Average Second-foot	Acre-feet (thousands)
October	44	2.7	May	100	6.2
November	35	2.1	June	120	7.1
December	29	1.8	July	100	6.2
January	26	1.6	August	63	3.9
February	25	1.4	September	44	<u>2.6</u>
March	24	1.5			
April	64		Total	----	40.9

In maintaining the above averages, at no time shall the flow be reduced below 15 cfs during the months of August to April, inclusive, or below 60 cfs during the months of May to July, inclusive, providing the natural flow during said period is not less than these amounts. The obligation to supply the minimum streamflow as set forth in the above table on the Roaring Fork River shall, to the extent of 3,000 acre-feet annually, be a project obligation to be supplied from any waters diverted from the south tributaries of Hunter Creek, Lime Creek, Last Chance Creek, or any of them.

The Twin Lakes Reservoir and Canal Company shall not be required to refrain from diverting water under its existing decrees from the Roaring Fork River except to the extent that a like quantity of replacement water is furnished to said company without charge therefore through and by means of project diversions and storage.

If by reason of storage capacity in the Ruedi Reservoir, or any reservoir constructed in addition thereto, the Twin Lakes Reservoir and Canal Company derives additional water or

other benefits or advantages it would not have realized had this project not been constructed, then nothing herein contained shall prevent the project from making appropriate charges for such water or other benefits or advantages. All revenues derived from the use of water stored in Ashcroft Reservoir shall be used to assist in the repayment of the construction, operation, and maintenance costs of that reservoir, or any reservoir constructed in lieu thereof, as may be determined by the Secretary of the Interior.

12. All lands acquired and held for project construction and operation and water surfaces of project reservoirs will be open to the public for recreational purposes, excepting those areas reserved by the operating agency.
13. The project will be operated in such a manner that those in eastern Colorado using project water imported from the Colorado River Basin for domestic purposes shall have preference over those claiming or using water for any other purpose.
14. The project is to be operated in such a manner as to secure the greatest benefit from the use and reuse of imported project waters within project boundaries in the State of Colorado
15. Any and all benefits and rights of western Colorado water users in and to water stored in Green Mountain Reservoir, as described and defined in Senate Document 80, 75th Congress, 1st session, shall not be impaired or diminished by this project.
16. The project, its operation, maintenance, and use shall be subject to the provisions of the Upper Colorado River Basin Compact of October 11, 1948 (Public Law 37, 81st Congress, 1st session), and the Colorado River Compact of November 24, 1922 (House Document 605, 67th Congress, 4th session).
17. The Colorado River Water Conservation District of the State of Colorado shall acquire title to storage of water in Ruedi Reservoir and any reservoir constructed in addition thereto, by appropriate proceedings in the courts of the State of Colorado. The Southeastern Colorado Water Conservancy District of the State of Colorado shall likewise acquire title to the water required by the project for diversion to the Arkansas Valley. The Secretary of the Interior shall at any time after the authorization of the project have the option to obtain or require the transfer to the United States of any and all rights initiated or acquired by appropriation as herein set forth: Provided, however, That the rights so taken shall be subject to a beneficial use of such water as may be provided in the repayment contract or contracts, and subject to all the operating principles herein set forth.
18. No transmountain diversion of water shall ever be made through the collection and diversion system of the Fryingpan-Arkansas Project in excess of the quantitative limitations and conditions established by this document: Provided, however, That when under the laws of the State of Colorado, there may be additional water available for such collection and diversion which is not at the time of diversion required for beneficial use in western Colorado or for filling interstate water compact agreements, then such water may be collected and diverted for beneficial use in the Arkansas Valley: Provided further, That such additional diversion shall only be made with the mutual consent of each of the following agencies of the State of Colorado, to wit: the Colorado Water Conservation Board, the Southwestern Water Conservation District, the Colorado River Water Conservation District, and the Southeastern Colorado Water Conservancy District.
19. To assure project operation in conformity with the operating principle heretofore stated, to provide a means for the collection and interchange of information, and to provide a method for the continued study of project operations to the end that, if the stated operating principles may be improved upon, recommendations for changes may be made to the contracting parties, a commission shall be created in an appropriate manner to be composed of one representative of the Southeastern Colorado Water

Conservancy District, one representative of the Colorado River Water Conservation District, two representatives of the United States, and one representative of the State of Colorado appointed by the Colorado Water Conservation Board after consultation with the Colorado Game and Fish Commission. The powers of such commission shall be limited to the collection of data, the making of findings of fact, and the suggestion of changes in operating principles.

These operating principles shall be deemed to have amended and take the place of those operating principles signed and executed on April 30, 1959. These operating principles shall be and do constitute a contract between the signatory parties, and shall inure to the benefit of and shall be and remain binding upon said parties, their respective successors and assigns.

Executed as amended at Denver, Colorado, this 9th day of December 1960.

COLORADO WATER CONSERVATION BOARD
Steve McNichols, Chairman;
Governor, State of Colorado

Attest:

Felix L. Sparks,
Director and Secretary

SOUTHEASTERN COLORADO WATER CONSERVANCY
DISTRICT
By J. Selby Young, President

Attest:

J. G. Shoun,
Secretary

COLORADO RIVER WATER CONSERVATION DISTRICT
By A. Allen Brown, President

Attest:

Philip P. Smith,
Secretary

SOUTHWESTERN WATER CONSERVATION DISTRICT
By Ira E. Kelly, President

Attest:

Archie B. Toner,
Secretary