YELLOWSTONE RIVER

COMPACT COMMISSION

FORTY-EIGHTH ANNUAL REPORT

1999

YELLOWSTONE RIVER COMPACT COMMISSION
DENVER FEDERAL CENTER, BUILDING 53, ROOM H-2102
LAKEWOOD, COLORADO 80225

Honorable Jim Geringer
Governor of the State of Wyoming
Cheyenne, Wyoming 82002

Honorable Marc Racicot
Governor of the State of Montana
Helena, Montana 59620

Honorable Edward T. Schafer
Governor of the State of North Dakota
Bismarck, North Dakota 58501

Dear Sirs:

Pursuant to Article III of the Yellowstone River Compact, the Commission submits the following forty-eighth annual report of activities for the period ending September 30, 1999.

Members of the Yellowstone River Compact Commission conducted a field tour of part of the Yellowstone River basin on July 20-22, 1999. The group visited the Twin Lakes area; Tie Hack Dam and Reservoir; Greybull Valley Dam and supply ditch (under construction); and Tongue River Dam and Reservoir. Attendees included Mr. James Kircher, Mr. Jack Stults, Mr. Jeff Fassett, Mr. Glen McDonald, Ms. Sue Lowry, Mr. Mike Whitaker, Mr. Keith Kerbel, and Mr. Robert Davis.

Members of the Yellowstone River Compact Commission convened their forty-eighth Annual Meeting on November 30, 1999 at 9:30 a.m. in Billings, Montana. In attendance were Mr. James Kircher, U.S. Geological Survey, Chairman and Federal Representative; Mr. Gordon W. Fassett, Wyoming State Engineer; and Mr. Jack Stults, Administrator, Water Resources Division, Montana Department of Natural Resources and Conservation. Also in attendance were Mr. Keith Kerbel, Mr. Richard Moy, and Mr. James Robinson, Montana Department of Natural Resources and Conservation; Ms. Faye Bergan, Montana Reserved Water Rights Compact Commission; Mr. Mike Whitaker, Wyoming Board of Control, Water Division II; Mr. Tim Felchle and Mr. Gordon Aycock, Bureau of Reclamation; Ms. Rose Rennie, Bureau of Indian Affairs; Mr. Gary Elwell, MSE-HKM Associates; and Mr. Myron Brooks and Mr. Robert E. Davis, U.S. Geological Survey.

All attendees introduced themselves.

Mr. Davis presented information on budgets for the program of streamflow data collection and preparation of the annual report. The program cost was $55,500 in fiscal year 1999. The program is estimated to cost $58,000 for fiscal year 2000, $60,900 for fiscal year 2001, $64,000 for fiscal year 2002, and $67,200 for fiscal year 2003. One-fourth of the program is provided by the State of Wyoming, one-fourth by the State of Montana, and one-half by the U.S. Geological Survey through the Cooperative program. Mr. Davis stated that the estimates probably represent maximum program costs and if future costs could be lowered then the reduction would be passed along to the States. The Commission accepted the proposed budget for fiscal year 2000.

Mr. Davis reported that streamflow during water year 1999 was 109 percent of average for the Clarks Fork Yellowstone River, 143 percent of average for the Bighorn River, 119 percent of average for the Tongue River, and 139 percent of average for the Powder River. Total adjusted streamflow in the 4 rivers was 5,517,000 acre-feet during water year 1999. Tongue River Reservoir, Bighorn Lake, and Pilot Butte Reservoir had more water in

storage at the end of water year 1999 than at the end of water year 1998. Boysen Reservoir, Anchor Reservoir, Bull Lake, and Buffalo Bill Reservoir had less water in storage at the end of water year 1999 than at the end of water year 1997. The total usable contents of the reservoirs at the end of water year 1999 was 2,307,000 acre-feet, which represents an increase of 17,800 acre-feet during the water year. Mr. Fassett commented that the capacity of Buffalo Bill Reservoir and Tongue River Reservoir, both pre-1950 reservoirs, had been enlarged since 1950, and requested that the enlargements be noted in the annual report. Mr. Davis agreed to add the new technical information to the report--Tongue River Reservoir capacity was increased from 66,000 acre-feet to 80,000 acre-feet in 1999 and Buffalo Bill Reservoir capacity was increased from 456,600 acre-feet to 644,540 acre-feet in 1992.

Mr. Kircher asked if any discussion of the Rules for Resolution of Disputes was needed. Mr. Fassett and Mr. Stults stated that no discussions were needed at this time.

Mr. Fassett reported that no new discussions occurred in 1999 regarding the Wind River Indian Reservation settlement. Mr. Fassett explained the completion plan for the Bighorn River adjudication. The Wyoming District Court judge desires to complete the process by January 2003. Quantification of reserved water rights and non-tribal water rights is complete and quantification of Walton Rights is nearly complete. Quantification of outstanding State water rights subject to the Court's jurisdiction has yet to be completed. Previous (1983) agreements on water rights of the U.S. Forest Service and Bureau of Land Management on Federal lands are being re-examined and updated to be more accurate. All pre-1985 rights for ground-water use on the Wind River Reservation have been approved and include about 600 wells. All water rights prior to 1985 will be listed in the final settlement document.

Mr. Fassett reported that no new action has occurred on the Dry Fork pumped hydroelectric project. The developers are still pursuing a permit from the Federal Energy Regulatory Commission. The likelihood of completion of the project is uncertain.

Mr. Fassett reported on current activities of the Wyoming Water Conservation Program. An inventory of all water conservation groups has been compiled and published. Scientific information and research on the amount of water that can be conserved by various methods is being compiled and evaluated. The program personnel also are trying to determine the level of interest in the program throughout the State and are evaluating various types of incentives and legal modifications that could be implemented to promote participation and provide benefit to all interests. Mr. Stults stated that current Montana laws have allowed for several examples of successful conservation efforts, but the efforts are not yet widespread. Mr. Stults described the value of the recent Montana District Court "Smith Farms" decision on use of salvaged water. He also stated that some conservation, or salvage, efforts have resulted in additional acreage being irrigated rather than increasing instream flows, which was one of the original intentions.

Mr. Fassett reported that the Wyoming legislature has fully authorized the Wyoming Water Planning Program. Technical assessments using the latest technologies will be prepared for all major drainage basins in Wyoming in the next five years, after which time the cycle will begin again and completed assessments will be updated. The Bear River drainage and the Green River drainage are the first two basins being assessed. Basin advisory groups have been formed and are active. Funding for these two assessments is approximately $1,000,000. The next basins to be assessed will be in northeastern Wyoming--the Powder-Tongue River basin and the Little Missouri-Belle Fourche-Cheyenne-Niobrara River basin--and are expected to begin in July 2000. Funding for these assessments is anticipated to be about $850,000. Mr. Moy asked if adjoining states have shown interest in the basin advisory groups. Mr. Fassett replied that participation is open to all, but out-of-state interest has not been extensive. Mr. Moy asked if the program was developed to deal with any specific issue or issues. Mr. Fassett replied that this program will provide contemporary hydrologic information to help various interests deal with a wide variety of hydrologic issues. Additional information is available on the internet at http://waterplan.state.wy.us.

Mr. Stults asked Mr. Moy and Mr. Robinson to describe activities in Montana regarding formation of basin task forces. Mr. Moy reported that about 50 watershed groups are active. These groups are primarily locally founded to try to solve specific problems, although some have expanded into broader based groups. The Montana Department of Natural Resources and Conservation (DNRC) tries to facilitate the groups to help them solve the problems. Some have been in existence since 1984. A larger group, the Montana Watershed Coordination Council, consists primarily of State and Federal agencies and other groups. This council shares information among agencies and groups and helps coordinate various efforts and foster cooperation. Mr. Robinson reported on two groups in the Yellowstone River basin. The Upper Yellowstone River Task Force was formed by Governor Racicot in 1997 to address the permitting process for bank-stabilization efforts in the upper area. The task force currently is acquiring data on the problem through a cumulative effects study. The river reach being studied is about 80 miles long from Yellowstone National Park to near Livingston. Agencies involved in the study include the Montana DNRC, U.S. Geological Survey, and universities. After the study is completed, the task force will develop recommendations to streamline and improve the permitting process. Completion of these tasks is expected in about four years. Total funding is about $1,500,000 including in-kind services and is provided by the Montana legislature, U.S. Army Corps of Engineers, watershed assistance grants of DNRC, and the U.S. Geological Survey. The group for the lower Yellowstone River is the Yellowstone Conservation District Council, also known as the Yellowstone River Council, and is just forming. Mr. Moy described numerous successful outcomes of the various watershed groups in Montana. Mr. Fassett confirmed similar successes of such groups in Wyoming.

Mr. Fassett reported on coal-bed methane development in Wyoming. At present, 4,584 water discharge permits have been issued in the Powder River basin for a total water discharge of 31,608 acre-feet per year. Development is rapidly expanding and cumulative effects of the discharges are of concern. A new 24-inch gas pipeline from Gillette to Cheyenne was recently completed, adding an additional gas transmission capacity of 250 million cubic feet per day. Mr. Moy asked if the discharges are considered to be a beneficial use by Wyoming. Mr. Fassett replied that beneficial use is not legally defined in Wyoming. However, if the Wyoming State Engineer issues a permit, then the use would therefore essentially be considered beneficial. Mr. Moy asked about the fate of the discharge permits after gas production ceases. Mr. Fassett replied that the permit could be transferred to the landowner. Typical production per water well is 10 to 20 gallons per minute. Various potential uses of the discharges are being considered.

Mr. Stults reported that 200 coal-bed methane wells have been permitted in Montana. The average water discharge is 6 to 12 gallons per minute. The permitting agency is the Montana Board of Oil and Gas. Much of the produced water is too saline for irrigation, but some is marginally suitable for human consumption. A Controlled Ground Water Area has been proposed for areas underlain by the Fort Union Formation or the Wasatch Formation in the Powder River structural basin in Montana. Under the proposed rules, both the field of wells and the individual wells will need to be permitted. Monitoring will be required. A Technical Advisory Committee will provide technical advice on monitoring and review and evaluate the monitoring data obtained. The Montana DNRC will have regulatory authority. Well-owner mitigation agreements would be required for existing wells and springs within a given area of influence. At present the discharges are not considered to be a beneficial use of water. Mr. Stults explained that numerous questions and problems are anticipated and that they will be addressed as they arise. Mr. Fassett stated that numerous questions and problems are also being identified in Wyoming, and that air quality could become an issue.

Mr. Stults asked Mr. Kerbel to report on the Montana Statewide Adjudication process. Adjudication of water rights for the Clarks Fork Yellowstone River basin is near the end of the objection phase, adjudication of the Yellowstone River basin near Billings is in the counter-objection phase, and agency examination of water-rights claims in the Yellowstone River basin near Miles City is nearing completion. Examination of water-rights claims in the Bighorn and Little Bighorn River basins will begin soon.

Mr. Brooks reported that the environmental-setting and retrospective-analysis reports for the Yellowstone River Basin National Water-Quality Assessment (NAWQA) project have been published and provided copies for the Commissioners. Bed-sediment and tissue sampling has been conducted at 20 sites and data have been described in a press release. Publication of the information will be in both the 1999 USGS annual water-data report for Wyoming and in an interpretive report. Ten fixed-site monitoring stations have been in operation since January 1999 and will continue into 2001. Alluvial aquifers in the Bighorn River basin are also being sampled. Future efforts could expand to sampling sediment and pathogens in various streams, determining the effects of rural ranchettes on ground-water quality, and sampling relatively deep aquifers in the Bighorn River basin. Mr. Fassett asked if future efforts might include determining the effects of coal-bed methane development. Mr. Brooks replied that such efforts are not in the current plans but some efforts might be focused in that direction.

Ms. Bergan reported that discussions are in progress on development of a streamflow and lake-level management plan for the Bighorn River as required by the Crow-Montana water-rights compact. Montana desires to maintain the fishery resource and is discussing the issue with the Crow Tribe. Another compact-related issue is preparation of a listing of current users of tribal water rights by June 17, 2000. Negotiations also are in progress for issues relating to Section 2 of the Crow Allotment Act of 1920, which describes the amount of acreage that can be irrigated by non-tribal interests within the Crow Reservation.

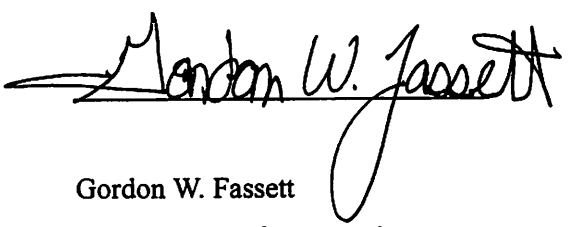
Mr. Fassett reported that the Tie Hack Municipal Reservoir for the Buffalo water supply is completed. Needed grout repairs to the dam were completed this fall.

Mr. Fassett reported that the Greybull Valley Reservoir project is nearing completion and is only slightly behind schedule.

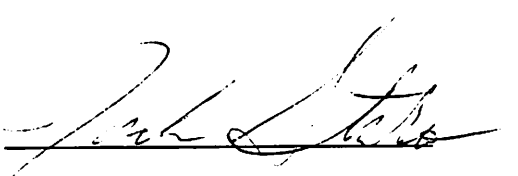
Mr. Whitaker asked Mr. Stults about a water-right issue in the Twin Creek basin. The water is diverted in Wyoming for use in Montana. Mr. Stults agreed to examine the issue.

The next Commission meeting is tentatively scheduled for November 28, 2000 in Wyoming. A field trip probably will not be scheduled for 2000, but a trip for 2001 could be discussed at the 2000 meeting.

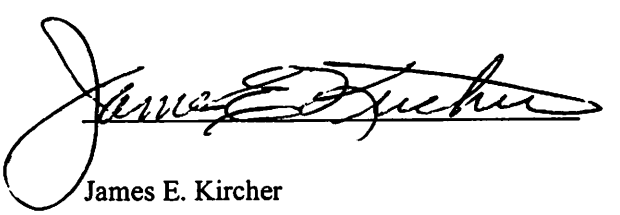
The meeting was adjourned at 12:45 p.m.



Gordon W. Fassett
Commissioner for Wyoming



Jack Stults
Commissioner for Montana



James E. Kircher
Chairman and Federal Representative

CONTENTS

ILLUSTRATIONS

GENERAL REPORT

Cost of operation and budget

The work funded by the Yellowstone River Compact Commission, which to date has been primarily concerned with the collection of required hydrologic data, has been financed through cooperative arrangements whereby Montana and Wyoming each bear one-fourth of the cost and the remaining one-half is borne by the United States. The salaries and necessary expenses of the State and U.S. Geological Survey representatives, and the cost to other agencies of collecting hydrologic data, are not considered as expenses of the Commission.

The expense of the Commission during fiscal year 1999 was $55,500, in accordance with the budget adopted for the year.

The budgets for fiscal years 2000, 2001, 2002, and 2003 were tentatively adopted subject to the availability of appropriations.

The budgets for the five fiscal years are summarized as follows:

October 1, 1998, to September 30, 1999 (fiscal year 1999):	
Operation of existing streamflow-gaging programs	$55,500
October 1, 1999, to September 30, 2000 (fiscal year 2000):	
Estimate of continuation of existing streamflow-gaging programs	$58,000
October 1, 2000, to September 30, 2001 (fiscal year 2001):	
Estimate of continuation of existing streamflow-gaging programs	$60,900
October 1, 2001, to September 30, 2002 (fiscal year 2002):	
Estimate of continuation of existing streamflow-gaging programs	$64,000
October 1, 2002, to September 30, 2003 (fiscal year 2003):	
Estimate of continuation of existing streamflow-gaging programs	$67,200

Streamflow-gaging station operation

Gaging stations at the measuring sites specified in the Yellowstone River Compact were continued in operation and satisfactory discharge records were collected at each station. Locations of streamflow-gaging and reservoir stations are shown on a map of the Yellowstone River Basin at the end of the report.

During water year 1999, annual streamflow was normal[1] in two of the four reporting Yellowstone River tributaries. Streamflow in Bighorn and Powder River basins was above normal.

Station number	Measurement site	Percent of average[2]
06208500	Clarks Fork Yellowstone River at Edgar, Mont., minus diversions to White Horse Canal	109
06294500	Bighorn River above Tullock Creek, near Bighorn, Mont., minus Little Bighorn River near Hardin, Mont. Adjusted for change in contents in Bighorn Lake	143
06308500	Tongue River at Miles City, Mont.	119
06326500	Powder River near Locate, Mont.	139

[1]The "normal" range is 80 to 120 percent of average.

[2]Average is based on period of record at station.

Tabulation of streamflow data for water year 1999 and graphical comparisons with average flows for the preceding year and for selected base periods are given in the section "Summary of discharge for Compact streamflow-gaging stations."

Diversions

No diversions were regulated by the Commission during the year. The Commissioners considered the need to develop procedures to administer water in accordance with the provisions of the Compact.

Storage in reservoirs

Reservoirs completed after January 1, 1950

Bighorn Lake, a Bureau of Reclamation project on the Bighorn River, and the largest storage project in the basin, contained 1,032,000 acre-feet at the beginning of the year and 1,037,000 acre-feet at the end of the year. Daily contents ranged from 757,200 acre-feet on April 23, 1999 to 1,185,000 acre-feet on July 14, 1999. Boysen Reservoir, located on the Wind River and operated by the Bureau of Reclamation, began the year with 595,500 acre-feet in storage and ended the year with 592,500 acre-feet. Anchor Reservoir began the year with 628 acre-feet in storage and ended the year with 248 acre-feet. Monthend and year-end contents and a description of these reservoirs are given in the section "Monthly summary of contents for Compact reservoirs completed after January 1, 1950." The Commission is cognizant of other reservoirs in the Yellowstone River basin and considers their aggregate effect to be insufficient to warrant the collection of storage data at this time.

Reservoirs existing on January 1, 1950

As a matter of record and general information, monthend contents are given later in the report for reservoirs in existence upstream from the points of measurement on January 1, 1950. The reservoirs are Bull Lake, Pilot Butte Reservoir, Buffalo Bill Reservoir, and Tongue River Reservoir. These data are pertinent to allocation under Article V, Section C, Item 3 of the Compact.

The capacity of Buffalo Bill Reservoir was increased in 1992 from 456,600 acre-feet to 644,540 acre-feet (listed as 646,565 acre-feet by Bureau of Reclamation). The capacity of Tongue River Reservoir was increased in 1999 from 66,000 acre-feet to 80,000 acre-feet.

SUMMARY OF DISCHARGE FOR COMPACT STREAMFLOW-GAGING STATIONS

06208500 Clarks Fork Yellowstone River at Edgar, Mont.

LOCATION.--Lat 45°27'58", long 108°50'35", in SE¼SE¼SE¼ sec.23, T.4 S., R.23 E., Carbon County, Hydrologic Unit 10070006, on right bank 400 ft downstream from county bridge, 0.5 mi east of Edgar, 6 mi upstream from Rock Creek, and at river mile 22.1.

DRAINAGE AREA.--2,032 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1921 to September 1969, October 1986 to current year.

REVISED RECORDS.--WSP 1509: 1924, 1932(M). WSP 1729: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,460 ft above sea level, from topographic map. Prior to Aug. 31, 1953, nonrecording gage at same site and datum.

REMARKS.--Records good except those for the estimated daily discharges, which are poor. Diversions for irrigation of about 41,500 acres, of which about 840 acres lies downstream from the station. In addition, about 6,300 acres of land upstream from the station are irrigated by diversions from the adjoining Rock Creek basin. U.S. Geological Survey satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year. Figures of discharge given herein have the flow of White Horse Canal subtracted.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	514	506	507	e380	e480	359	386	1550	3990	3400	1240	626
2	510	506	504	e360	e460	358	372	1780	3360	3310	1160	670
3	521	520	503	e340	e460	352	349	1720	3330	3140	1070	816
4	547	514	514	e360	e480	345	344	1510	3560	3220	1060	1050
5	567	506	514	e380	e460	354	342	1340	3530	3680	1200	1090
6	591	502	e470	e400	494	343	337	1120	3600	3540	1300	970
7	576	511	e420	e360	468	328	330	960	3880	3300	1240	853
8	572	512	e400	e320	481	335	327	1080	3920	3480	1320	752
9	552	496	e420	e340	443	351	334	1330	3610	3460	1190	667
10	555	478	e440	e360	e400	341	353	1130	2950	3120	1050	608
11	570	447	e460	e400	e380	339	352	993	2600	2860	948	568
12	568	444	e470	e440	e370	330	335	858	2580	2700	932	556
13	563	485	514	e400	e370	322	328	785	2700	2600	1080	537
14	545	506	543	e400	e420	315	340	806	3050	2660	1180	475
15	538	500	513	e420	e400	317	341	768	3830	2820	1110	439
16	550	498	490	e400	e380	325	327	770	4710	2710	1020	403
17	561	486	486	e400	e360	327	303	731	5410	2490	909	397
18	555	483	e400	e380	368	329	300	639	6460	2410	797	382
19	537	475	e200	e400	358	316	326	626	7110	2290	717	393
20	527	466	e170	e420	365	323	432	746	7820	2120	647	408
21	519	443	e150	e400	358	345	515	1120	7880	1950	602	426
22	505	469	e170	e400	341	378	569	1720	7640	1750	604	400
23	501	490	e200	e380	359	429	517	e2000	7820	1590	595	384
24	491	492	e250	e340	357	409	441	e2500	6830	1520	521	375
25	492	491	e300	e300	363	427	379	e3000	6440	1490	469	393
26	496	491	e380	e340	362	478	400	e4000	6870	1440	445	391
27	488	487	e420	e370	355	557	503	4710	5570	1340	437	390
28	486	494	e400	e400	342	526	712	5030	4200	1220	490	412
29	494	507	e380	e440	---	436	1320	5490	3260	1190	677	409
30	484	523	e360	e460	---	396	1960	5820	3100	1260	692	410
31	502	---	e380	e480	---	391	---	5260	---	1290	651	---
TOTAL	16477	14728	12328	11970	11234	11481	14174	61892	141610	75350	27353	16650
MEAN	532	491	398	386	401	370	472	1997	4720	2431	882	555
MAX	591	523	543	480	494	557	1960	5820	7880	3680	1320	1090
MIN	484	443	150	300	341	315	300	626	2580	1190	437	375
AC-FT	32680	29210	24450	23740	22280	22770	28110	122800	280900	149500	54250	33030

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 1999, BY WATER YEAR (WY)*

MEAN	537	503	409	351	351	367	563	2113	4114	2079	636	488
MAX	1010	777	593	512	584	554	1398	5578	7256	4771	1541	1395
(WY)	1942	1928	1996	1997	1963	1943	1943	1928	1996	1943	1951	1941
MIN	298	310	217	200	180	220	123	757	1768	290	49.5	156
(WY)	1956	1936	1937	1922	1922	1924	1961	1968	1987	1988	1988	1988

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1921 - 1999*	
ANNUAL TOTAL	362289		415247			
ANNUAL MEAN	993		1138		1044	
HIGHEST ANNUAL MEAN					1623	1997
LOWEST ANNUAL MEAN					668	1988
HIGHEST DAILY MEAN	5520	Jul 4	7880	Jun 21	10600	Jun 2 1936
LOWEST DAILY MEAN	150	Dec 21	150	Dec 21	37	May 11 1961
ANNUAL SEVEN-DAY MINIMUM	206	Dec 19	206	Dec 19	43	Apr 18 1961
INSTANTANEOUS PEAK FLOW			8400	Jun 20	11100	Jun 12 1997
INSTANTANEOUS PEAK STAGE			8.24	Jun 20	9.30	Jun 12 1997
INSTANTANEOUS LOW FLOW					36	Apr 22 1961
ANNUAL RUNOFF (AC-FT)	718600		823600		756200	
10 PERCENT EXCEEDS	2710		3280		2870	
50 PERCENT EXCEEDS	496		502		472	
90 PERCENT EXCEEDS	357		341		275	

*--During period of operation (water years 1921-69, 1987 to current year).
e--Estimated.

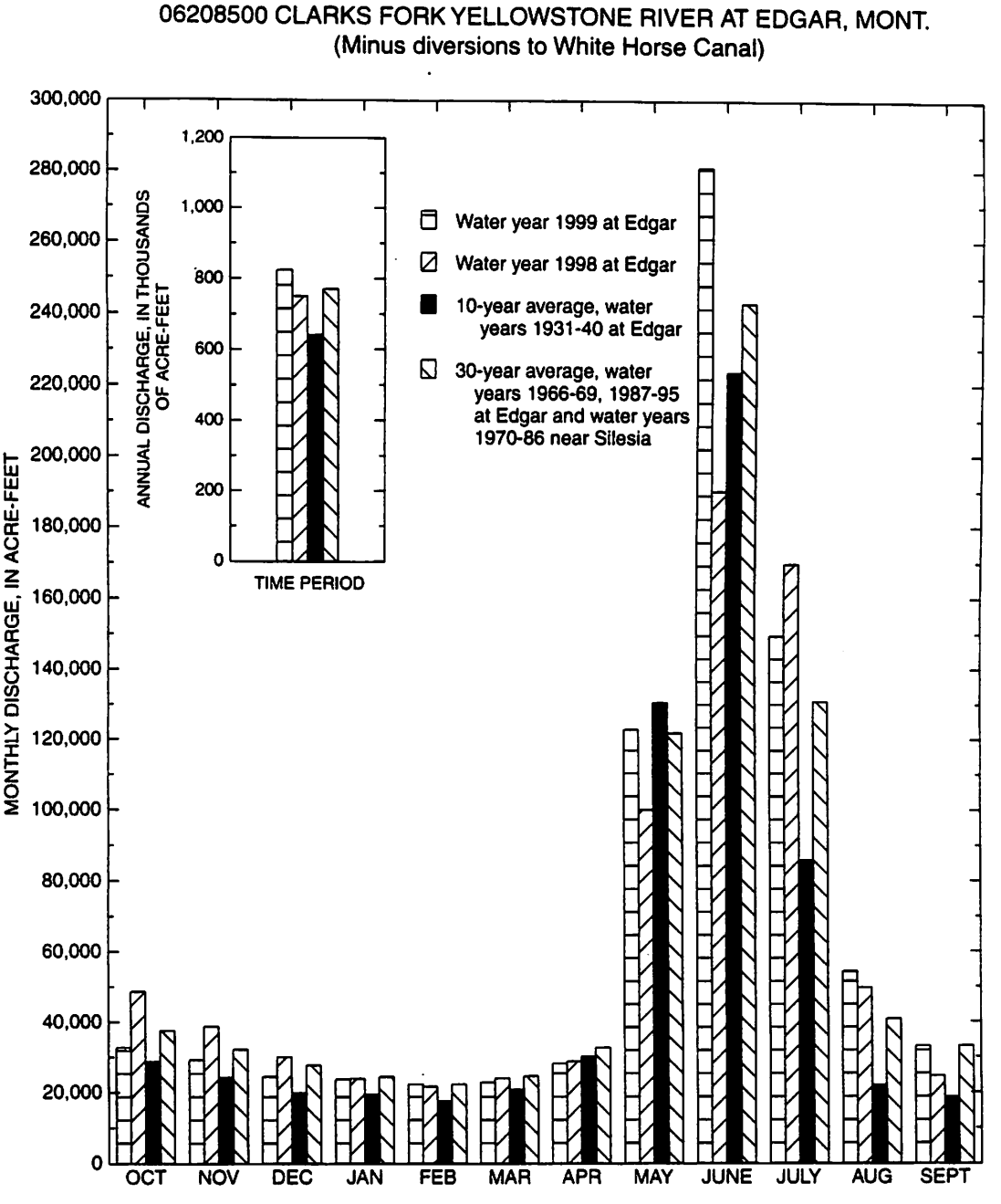


Figure 1. Comparison of discharge of the Clarks Fork Yellowstone River during water year 1999 with discharge during water year 1998 and with 10-year and 30-year average discharges.

06294000 Little Bighorn River near Hardin, Mont.

LOCATION.--Lat 45°44'09", long 107°33'24", in SE$^1/_4$NE$^1/_4$NE$^1/_4$ sec.19, T.1 S., R.34 E., Big Horn County, Hydrologic Unit 10080016, on left bank 50 ft downstream from bridge on Sarpy Road, 0.2 mi upstream of terminal wasteway of Agency Canal, 0.6 mi upstream from mouth, and 2.3 mi east of Hardin.
DRAINAGE AREA.--1,294 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1953 to current year.
REVISED RECORDS.--WDR MT-86-1: 1978.
GAGE.--Water-stage recorder. Datum of gage is 2,882.29 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to Oct. 7, 1953, nonrecording gage at site 0.4 mi downstream. Oct. 7, 1953 to May 6, 1963, water-stage recorder at site 0.3 mi downstream. May 6, 1963 to Nov. 6, 1963, nonrecording gage at site 0.4 mi downstream. All at different datums. Nov. 7, 1963 to Aug. 15, 1976, water-stage recorder at site 35 ft downstream at present datum. Aug. 15, 1976 to Sept. 30, 1979, water-stage recorders were located on each bank downstream of Sarpy Road bridge and were used depending on control conditions.
REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Flow partly regulated by Willow Creek Reservoir (capacity 23,000 acre-ft). Diversions for irrigation of 20,980 acres upstream from station. Figures of discharge given herein include flow of terminal wasteway of Agency Canal. U.S. Geological Survey satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	139	198	163	e150	e180	e180	145	472	1550	364	103	100
2	142	184	163	e130	e180	e180	153	547	1310	345	107	106
3	152	183	163	e110	e180	e190	158	606	1180	327	113	130
4	167	188	159	e130	e180	e190	161	649	1200	302	118	146
5	172	188	e140	e150	e180	194	164	638	1240	291	118	162
6	174	181	e120	e130	e180	214	166	685	1260	266	106	195
7	165	174	e100	e110	e190	184	173	573	1540	239	96	184
8	168	179	e110	e120	e180	190	185	480	1740	225	101	157
9	170	178	e140	e130	e170	186	211	458	1740	193	112	141
10	169	173	162	e160	e170	154	249	499	1660	188	99	140
11	172	166	187	e200	e180	163	281	651	1450	174	83	144
12	169	159	197	e180	e180	160	323	790	1270	157	96	152
13	171	160	198	e170	e200	159	314	599	1160	151	127	152
14	178	177	200	e180	e180	153	356	508	1100	142	148	152
15	178	161	191	e180	e170	151	352	487	1030	131	156	150
16	174	159	184	e170	e170	159	345	495	1010	127	155	126
17	193	163	186	e180	e170	177	291	714	925	118	151	118
18	211	163	e130	e180	e180	176	252	717	890	124	142	127
19	202	166	e90	e190	e180	164	240	545	885	117	131	134
20	177	173	e70	e180	e170	154	258	504	867	112	124	136
21	164	173	e80	e180	e160	149	282	501	837	105	116	139
22	159	171	e100	e160	e170	148	376	537	782	98	113	137
23	154	172	e100	e130	e180	146	567	642	732	82	112	117
24	155	170	e120	e100	e190	145	625	764	677	96	107	91
25	158	170	e140	e130	e200	146	520	857	601	102	101	90
26	155	176	e160	e140	e190	147	388	1000	537	109	102	94
27	155	171	e170	e150	e170	145	354	1210	489	111	96	97
28	162	170	e160	e160	e180	143	360	1380	460	108	85	102
29	179	167	e150	e170	---	144	375	1460	438	105	86	110
30	205	164	e150	e180	---	144	398	1570	397	101	96	122
31	220	---	e150	e180	---	142	---	1670	---	99	105	---
TOTAL	5309	5177	4533	4810	5010	5077	9022	23208	30957	5209	3505	3951
MEAN	171	173	146	155	179	164	301	749	1032	168	113	132
MAX	220	198	200	200	200	214	625	1670	1740	364	156	195
MIN	139	159	70	100	160	142	145	458	397	82	83	90
AC-FT	10530	10270	8990	9540	9940	10070	17900	46030	61400	10330	6950	7840

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 1999, BY WATER YEAR (WY)

MEAN	158	156	138	144	208	324	326	632	861	278	125	134
MAX	276	248	223	366	610	987	748	2852	1981	1333	382	267
(WY)	1979	1979	1979	1975	1971	1972	1965	1978	1968	1975	1975	1978
MIN	67.6	84.6	68.7	71.6	70.3	92.7	54.8	71.9	117	8.50	2.46	19.1
(WY)	1957	1986	1962	1988	1989	1961	1961	1961	1961	1961	1961	1960

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1954 - 1999	
ANNUAL TOTAL	78827		105768			
ANNUAL MEAN	216		290		290	
HIGHEST ANNUAL MEAN					676	1975
LOWEST ANNUAL MEAN					70.4	1961
HIGHEST DAILY MEAN	812	Jun 21	1740	Jun 8	15800	May 20 1978
LOWEST DAILY MEAN	66	Sep 11	70	Dec 20	.30	Aug 5 1961
ANNUAL SEVEN-DAY MINIMUM	78	Sep 5	96	Aug 26	.40	Aug 3 1961
INSTANTANEOUS PEAK FLOW			1790	Jun 8	a22600	May 19 1978
INSTANTANEOUS PEAK STAGE			4.71	Jun 8	b11.78	Mar 20 1960
INSTANTANEOUS LOW FLOW					c.20	Aug 7 1961
ANNUAL RUNOFF (AC-FT)	156400		209800		210200	
10 PERCENT EXCEEDS	411		661		636	
50 PERCENT EXCEEDS	171		170		169	
90 PERCENT EXCEEDS	107		107		80	

a--Gage height, 11.20 ft.
b--Site and datum then in use, backwater from ice.
c--Result of discharge measurement.
e--Estimated.

06294500 Bighorn River above Tullock Creek, near Bighorn, Mont.

LOCATION.--Lat 46°07'29", long 107°28'06", in $SE^1/_4SE^1/_4NE^1/_4$ sec.3, T.4 N., R.34 E., Treasure County, Hydrologic Unit 10080015, on right bank 1.9 mi upstream from Tullock Creek, 3.6 mi southwest of Bighorn, 4.5 mi southeast of Custer, and at river mile 3.0.
DRAINAGE AREA.--22,414 mi^2. Area at site used Oct. 7, 1955, to Sept. 30, 1981, 22,885 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1981 to current year. Previously published as "06294700 Bighorn River at Bighorn, MT" 1956-81, and as "near Custer" 1945-55. Flows are equivalent at all sites.
GAGE.--Water-stage recorder. Elevation of gage is 2,700 ft above sea level, from topographic map. May 11, 1945 to Dec. 6, 1945, nonrecording gage, and Dec. 7, 1945 to Oct. 6, 1955, water-stage recorder 1.7 mi upstream at different datum. Oct. 7, 1955 to Sept. 30, 1981, at site 2.3 mi downstream at different datum.
REMARKS.--Water-discharge records good. Flow regulated by Bighorn Lake beginning November 1965 (usable capacity, 1,356,000 acre-ft). Major regulation prior to November 1965 by 14 reservoirs in Wyoming and 1 in Montana with combined usable capacity of about 1,400,000 acre-ft. Diversion for irrigation of about 445,200 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5030	4040	3480	4010	4160	4750	6770	3880	9520	7580	5860	3850
2	5010	4070	3500	4030	4150	4680	6740	4080	9290	7500	5350	3990
3	5080	4150	3540	4040	4200	4680	6810	4660	9260	7520	4720	4070
4	5200	4160	3560	4050	4160	4690	6810	5340	10100	7540	4310	4060
5	5170	4230	3620	4090	4150	4490	6830	6210	11500	7570	4270	4080
6	5240	4270	3630	4120	4160	4080	6890	7170	11500	7500	4270	4110
7	5320	4300	3540	4150	4220	4010	6700	7920	11900	7450	4330	4090
8	5240	4170	3550	4170	4330	4000	6260	8280	12200	7600	4240	4050
9	5470	4060	3610	4110	4320	4000	5660	8650	12100	7500	4170	4030
10	5480	4030	3630	4100	4390	4030	5110	8950	12000	7240	4080	4000
11	5460	4010	3670	4160	4380	4030	4920	9750	12000	7280	4020	4020
12	5460	4000	3840	4320	4360	4020	4940	10300	11900	7250	4150	4050
13	5500	4020	4050	4380	4240	4270	4920	10400	11700	7140	4220	4040
14	5110	4110	4090	4340	4220	4610	4720	10200	11700	7130	4450	4040
15	4450	4150	4110	4780	4220	4610	4320	10300	11700	7150	4440	4040
16	4290	4200	4120	5150	4210	4660	4250	10300	11600	7110	4410	4050
17	4050	3940	4140	5040	4230	4680	4210	10400	11500	7170	4340	4040
18	4070	3480	4120	4950	4210	4680	4070	10400	11500	7330	4240	4060
19	4040	3270	4140	4900	4200	4680	3770	10000	11500	7240	4110	4050
20	3970	3250	e3000	4880	4190	4680	3700	9760	11500	7150	4020	4060
21	3890	3300	e3500	4850	4190	4910	3870	9500	11500	7120	3990	4050
22	e2000	3310	e4000	4840	4210	5290	3940	9320	11400	7050	3940	3780
23	e3000	3310	e4000	4870	4180	5300	4210	9320	11200	7020	3890	2730
24	4040	3340	e4000	4610	4380	5310	4380	9340	10600	6980	3850	2710
25	3880	3360	3880	4600	4670	5570	4310	9250	9280	6960	3870	2850
26	3650	3370	3890	4170	4750	6210	4040	9150	8150	6890	3760	3710
27	3760	3400	3910	4140	4720	6590	3900	9250	8010	6790	3780	3740
28	3850	3420	3900	4140	4730	6630	3810	9420	7950	6680	3790	3530
29	3950	3450	3930	4160	---	6660	3840	9290	7640	6660	3850	2990
30	3920	3480	3980	4150	---	6680	3810	9390	7560	6590	3850	3730
31	3990	---	4010	4160	---	6690	---	9580	---	6330	3880	---
TOTAL	138570	113650	117940	136460	120530	154170	148510	269760	319260	222020	130450	114600
MEAN	4470	3788	3805	4402	4305	4973	4950	8702	10640	7162	4208	3820
MAX	5500	4300	4140	5150	4750	6690	6890	10400	12200	7600	5860	4110
MIN	2000	3250	3000	4010	4150	4000	3700	3880	7560	6330	3760	2710
AC-FT	274900	225400	233900	270700	239100	305800	294600	535100	633300	440400	258700	227300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 1999, BY WATER YEAR (WY)

MEAN	3295	3371	3204	3085	3260	3793	3641	4526	7251	5543	2915	2917
MAX	5546	5599	4907	5478	5314	6580	7881	9102	15180	19090	6972	4952
(WY)	1972	1974	1968	1968	1971	1972	1997	1947	1948	1967	1997	1973
MIN	1391	1223	1280	1382	1843	908	1063	1304	1050	707	868	1009
(WY)	1990	1978	1961	1961	1966	1966	1966	1966	1966	1960	1961	1966

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1945 - 1999	
ANNUAL TOTAL	1608260		1985920			
ANNUAL MEAN	4406		5441		3882	
HIGHEST ANNUAL MEAN					5594	1997
LOWEST ANNUAL MEAN					1623	1961
HIGHEST DAILY MEAN	7640	Jul 9	12200	Jun 8	50000	May 20 1978
LOWEST DAILY MEAN	2000	Oct 22	2000	Oct 22	400	Apr 4 1967
ANNUAL SEVEN-DAY MINIMUM	2980	Jan 1	3180	Sep 23	528	May 6 1961
INSTANTANEOUS PEAK FLOW			12300	Jun 8	a59200	May 20 1978
INSTANTANEOUS PEAK STAGE			6.08	Jun 8	14.15	May 20 1978
INSTANTANEOUS LOW FLOW					b275	Nov 15 1959
ANNUAL RUNOFF (AC-FT)	3190000		3939000		2813000	
10 PERCENT EXCEEDS	5600		9360		6550	
50 PERCENT EXCEEDS	4140		4270		3290	
90 PERCENT EXCEEDS	3380		3720		1850	

06294500 Bighorn River Above Tullock Creek, Near Bighorn, Mont.--continued

SUMMARY STATISTICS	WATER YEARS 1946 - 1961*		WATER YEARS 1967 - 1999**	
ANNUAL MEAN	3358		4021	
HIGHEST ANNUAL MEAN	5501	1947	5594	1997
LOWEST ANNUAL MEAN	1623	1961	1999	1989
HIGHEST DAILY MEAN	25700	Jun 23 1947	50000	May 20 1978
LOWEST DAILY MEAN	462	May 12 1961	400	Apr 4 1967
ANNUAL SEVEN-DAY MINIMUM	528	May 6 1961	843	Nov 18 1977
INSTANTANEOUS PEAK FLOW	c26200	Jun 24 1947	59200	May 20 1978
INSTANTANEOUS PEAK STAGE	d10.65	Mar 20 1947	14.15	May 20 1978
INSTANTANEOUS LOW FLOW	b275	Nov 15 1959		
ANNUAL RUNOFF (AC-FT)	2578000		2913000	
10 PERCENT EXCEEDS	6200		6460	
50 PERCENT EXCEEDS	2810		3550	
90 PERCENT EXCEEDS	1500		2030	

*--Prior to construction of Yellowtail Dam.
**--After completion of Yellowtail Dam.
a--Gage height, 14.15 ft, at different site and datum.
b--About,result of freezeup.
c--Gage height, 8.79 ft, at different site and datum.
d--Backwater from ice.
e--Estimated.

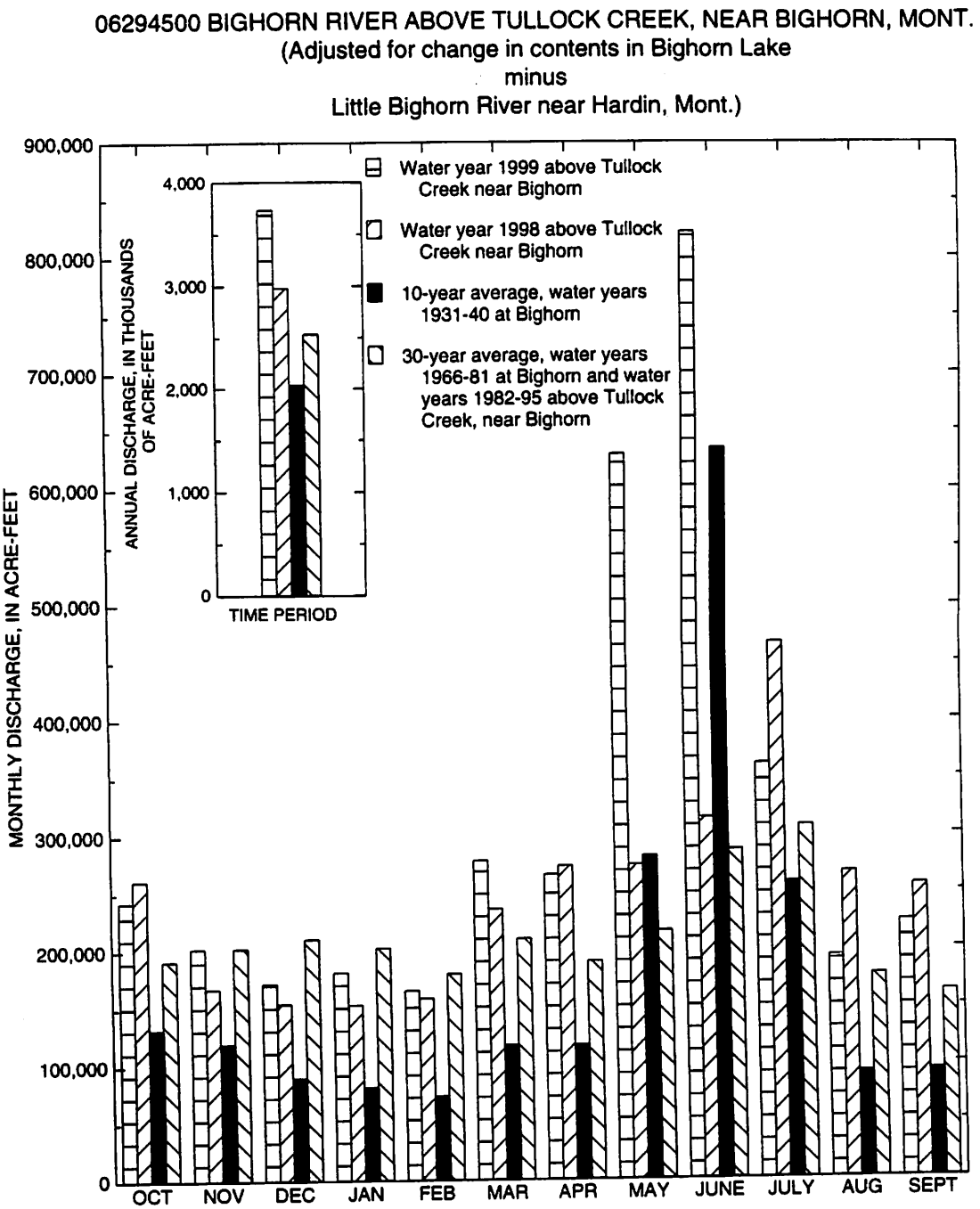


Figure 2. Comparison of discharge of the Bighorn River during water year 1999 with discharge during water year 1998 and with 10-year and 30-year average discharges.

06308500 Tongue River at Miles City, Mont.

LOCATION.--Lat 46°23'05", long 105°50'41", in $SE^1/_4SE^1/_4SE^1/_4$ sec. 4, T.7 N., R.47 E., Custer County, Hydrologic Unit 10090102, on right bank 1.5 mi south of Miles City and at river mile 2.3.
DRAINAGE AREA.--5,397 mi^2. Area at site used prior to Oct. 4, 1995, 5,379 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1938 to April 1942, April 1946 to current year. Published as "near Miles City" April 1938 to April 1942. Not equivalent to records published as "near Miles City" May 1929 to October 1932. April 1946 to Oct. 4, 1995, at site 2.5 mi upstream. Flows at present site are equivalent with site operated from 1946. Monthly discharge only for some periods, published in WSP 1309.
REVISED RECORDS.--WSP 1729: Drainage area.
GAGE.--Water-stage recorder. Elevation of gage is 2,360 ft above sea level, from topographic map. April 1938 to April 1942, nonrecording gage at site 8 mi upstream at different datum. April 1946 to Sept. 30, 1963, at datum 1.00 ft higher. Oct. 4, 1995, gage was moved 2.5 miles downstream.
REMARKS.--Water-discharge records good except those for estimated daily discharges, which are poor. Flow regulation by Tongue River Reservoir (station 06307000), and many small reservoirs in Wyoming (combined capacity about 15,000 acre-ft). Diversions for irrigation of about 100,800 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	714	392	318	e140	e240	718	204	193	1930	1150	279	124
2	582	369	316	e110	e250	590	209	188	2180	1130	271	130
3	361	383	313	e110	e270	495	221	186	1950	1090	255	177
4	335	421	303	e120	e280	430	228	381	1340	1060	231	188
5	615	437	296	e170	e290	406	233	838	1130	929	198	203
6	894	453	293	e150	e300	407	236	1060	1650	800	214	206
7	601	449	e250	e140	e320	376	221	1130	2810	770	258	199
8	472	483	e170	e130	e330	350	210	878	2660	705	279	165
9	449	486	e140	e150	e320	354	204	721	2820	611	264	155
10	480	448	e130	e200	e300	362	259	642	2830	572	263	144
11	586	382	e140	e300	e310	341	458	608	2090	474	225	150
12	609	358	e150	e1600	e330	341	322	1050	2010	435	684	151
13	533	351	e160	e1900	e360	311	254	722	2830	391	713	147
14	507	354	e170	e1100	e350	295	227	561	3070	366	453	160
15	482	355	e180	e900	e340	285	207	482	2750	350	384	154
16	415	358	e180	e2000	e340	279	195	430	2200	311	371	143
17	421	303	e200	e1700	e340	278	190	409	1410	283	329	110
18	400	343	e150	e1000	e350	270	185	389	1270	272	305	118
19	369	382	e120	e750	e360	268	183	373	1400	276	303	122
20	356	388	e100	e700	e350	260	183	308	1260	278	281	130
21	344	385	e100	e550	e360	254	433	317	1230	268	270	118
22	323	385	e110	e400	e380	250	1060	338	1450	208	250	116
23	276	385	e120	e360	e400	249	539	327	1760	200	234	113
24	288	384	e140	e190	e430	242	392	257	2280	242	200	114
25	313	381	e160	e200	e800	238	300	248	2340	263	163	119
26	398	376	e180	e200	e900	235	246	253	2440	254	152	147
27	351	386	e200	e200	823	221	224	325	2490	288	131	159
28	449	357	e210	e230	718	211	210	599	2100	293	112	163
29	580	333	e200	e240	---	205	196	756	1400	256	126	167
30	513	322	e170	e230	---	200	196	818	1220	254	137	194
31	438	---	e160	e230	---	199	---	1740	---	230	129	---
TOTAL	14454	11589	5829	16400	11141	9920	8425	17527	60300	15009	8464	4486
MEAN	466	386	188	529	398	320	281	565	2010	484	273	150
MAX	894	486	318	2000	900	718	1060	1740	3070	1150	713	206
MIN	276	303	100	110	240	199	183	186	1130	200	112	110
AC-FT	28670	22990	11560	32530	22100	19680	16710	34760	119600	29770	16790	8900

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 1999, BY WATER YEAR (WY)*

MEAN	250	260	194	199	289	551	455	722	1313	486	190	207
MAX	694	585	423	529	1794	1783	1693	2983	3825	2207	700	599
(WY)	1972	1942	1950	1999	1971	1971	1965	1978	1978	1975	1975	1968
MIN	10.3	60.9	68.0	78.6	102	79.8	12.5	29.2	48.6	12.6	6.08	2.40
(WY)	1961	1989	1990	1961	1961	1961	1961	1961	1960	1960	1949	1938

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1938 - 1999*	
ANNUAL TOTAL	116532		183544			
ANNUAL MEAN	319		503		423	
HIGHEST ANNUAL MEAN					986	1978
LOWEST ANNUAL MEAN					57.2	1961
HIGHEST DAILY MEAN	985	Sep 29	3070	Jun 14	9290	Jun 15 1962
LOWEST DAILY MEAN	52	May 27	100	Dec 20	.00	Jul 9 1940
ANNUAL SEVEN-DAY MINIMUM	58	May 25	118	Sep 17	.00	Jul 9 1940
INSTANTANEOUS PEAK FLOW			a3330	Jun 14	b13300	Jun 15 1962
INSTANTANEOUS PEAK STAGE			c8.79	Jan 13	13.27	Mar 19 1960
INSTANTANEOUS LOW FLOW					.00	Jul 9 1940
ANNUAL RUNOFF (AC-FT)	231100		364100		306700	
10 PERCENT EXCEEDS	581		1130		978	
50 PERCENT EXCEEDS	312		317		233	
90 PERCENT EXCEEDS	103		150		73	

*--During period of operation (April 1938 to April 1942, April 1946 to current year).
a--Gage height, 6.90 ft.
b--At previous site and datum.
c--Backwater from ice.
e--Estimated.

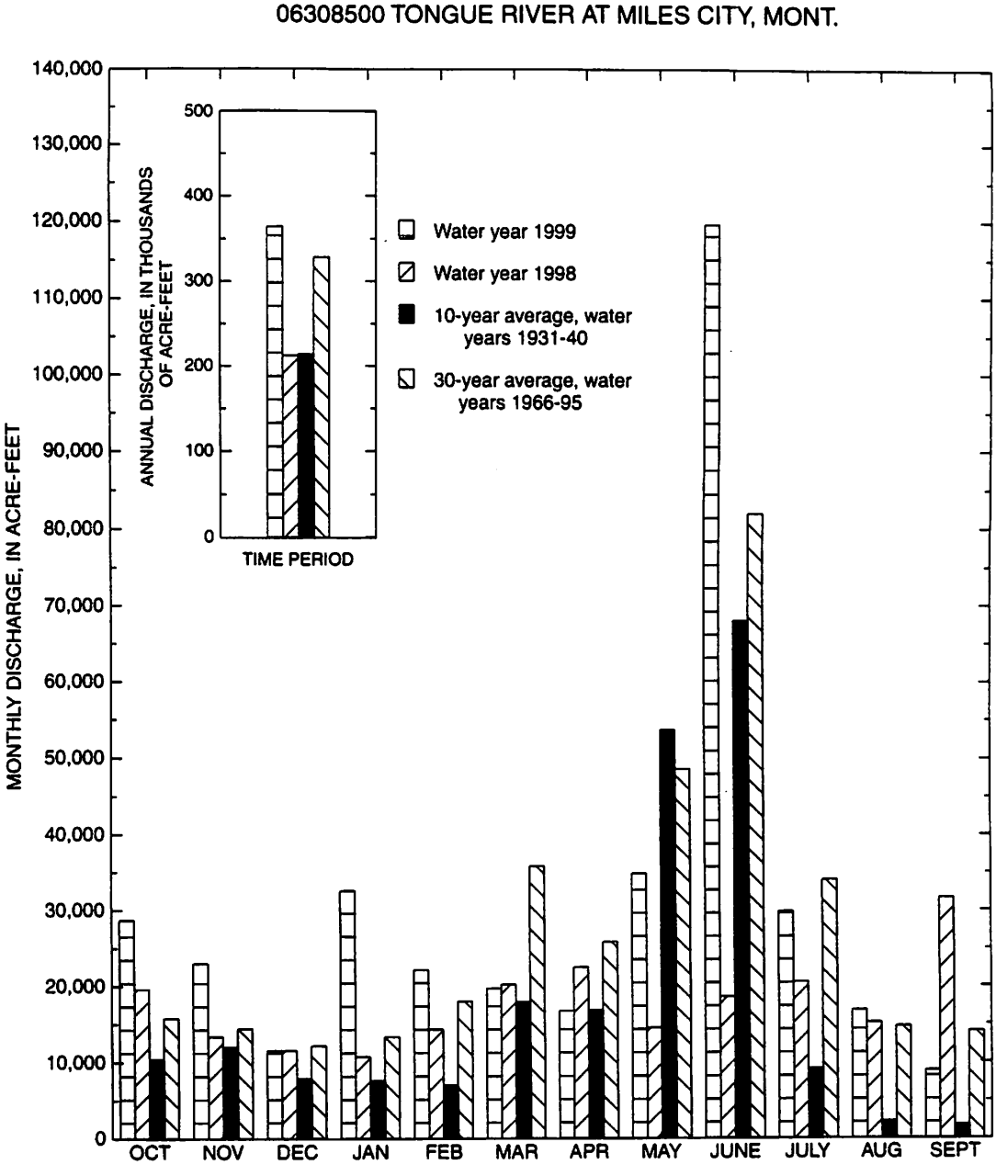


Figure 3. Comparison of discharge of the Tongue River during water year 1999 with discharge during water year 1998 and with 10-year and 30-year average discharges.

06326500 Powder River near Locate, Mont.

LOCATION.--Lat 46°25'48", long 105°18'34", in SW¼SW¼SE¼ sec. 23, T.8 N., R.51 E., Custer County, Hydrologic Unit 10090209, on left bank at downstream side of bridge on U.S. Highway 12, 0.1 mi west of Locate, and 25 mi east of Miles City, and at river mile 29.4.
DRAINAGE AREA.--13,189 mi².
PERIOD OF RECORD.--March 1938 to current year.

WATER-DISCHARGE RECORDS

REVISED RECORDS.--WSP 926: 1939. WSP 1309: 1938-39 (M). WSP 1729: Drainage area.
GAGE.--Water-stage recorder. Datum of gage is 2,384.79 ft above sea level (levels by U.S. Army Corps of Engineers). Prior to July 11, 1947, nonrecording gage at bridge 1.5 mi upstream, and July 11, 1947 to Sept. 30, 1965, water-stage recorder at site near upstream bridge at different datum. Oct. 1, 1965 to Oct. 4, 1966, nonrecording gage, and Oct. 5, 1966 to Mar. 21, 1978, water-stage recorder at present site and datum. Mar. 22, 1978 to Apr. 23, 1981, water-stage recorder 1.5 mi upstream at different datum, Apr. 24 to Aug. 20, 1981, water-stage recorder at present site and datum, and Aug. 21, 1981 to Sept. 30, 1981, water-stage recorder 1.5 mi upstream at different datum. Oct. 1, 1981 to Apr. 5, 1995 water-stage recorder at site 1.5 miles downstream at different datum. Apr. 7, 1995 to present, water-stage recorders located on each bank and used depending on control conditions.
REMARKS.--Water discharge records fair except those for estimated daily discharges, which are poor. Some regulation by three reservoirs in Wyoming with combined usable capacity of 36,800 acre-ft. Diversions for irrigation of about 101,800 acres upstream from station. U.S. Army Corps of Engineers satellite telemeter at station. Several observations of water temperature and specific conductance were made during the year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	379	730	497	e250	e220	e440	537	1790	3610	883	e85	59
2	357	1480	498	e250	e230	e410	560	2130	3620	812	e70	62
3	349	1450	471	e280	e255	e460	600	2760	3340	938	e68	68
4	354	1300	466	e280	e230	e490	628	3980	3000	813	e100	e66
5	708	1220	448	e275	e250	e430	665	4800	2700	810	e97	e75
6	897	1120	415	e265	e280	e470	647	4400	3220	721	e90	e90
7	634	1060	401	e255	e250	e420	558	3620	3450	766	e84	e100
8	627	1040	408	e250	e350	e420	611	3400	3300	795	e78	e150
9	605	991	373	e255	e340	e480	662	3120	3490	811	e72	e170
10	536	901	287	e270	e280	e450	672	2830	3200	738	e65	170
11	636	828	198	e280	e250	e550	801	2880	3050	669	62	282
12	659	742	140	e280	e255	e690	1210	3040	2950	606	1000	296
13	574	732	141	e270	e300	696	1520	2930	2640	518	640	283
14	515	649	259	e250	e350	776	1430	2730	2300	412	366	276
15	494	650	325	e240	e340	804	1250	2530	2080	413	332	280
16	502	656	301	e230	e305	840	1100	2340	1800	338	320	273
17	571	655	314	e230	e310	822	1170	1890	1690	294	261	278
18	561	625	e280	e230	e340	783	1210	2120	1710	262	244	285
19	484	628	e190	e240	e330	699	1110	2100	1580	213	212	288
20	599	617	e175	e245	e340	730	1060	1930	1550	216	215	291
21	1420	641	e140	e245	e340	687	1380	1800	1750	208	212	303
22	1300	638	e190	e245	e370	617	1720	1710	1880	228	192	306
23	1110	619	e240	e235	e400	555	1330	1970	1760	215	120	291
24	985	571	e245	e200	e490	524	1200	1720	1620	198	99	290
25	851	546	e240	e180	e450	500	1230	2380	1490	160	91	299
26	782	532	e240	e245	e400	469	1420	2510	1350	e140	89	313
27	718	525	e260	e200	e430	448	1490	2610	1250	e131	76	315
28	663	538	e280	e195	e400	462	1530	2660	1070	e100	64	328
29	741	517	e275	e200	---	503	1570	3100	1040	e80	68	332
30	758	509	e265	e240	---	484	1930	3320	944	e72	71	325
31	689	---	e260	e210	---	490	---	3640	---	e68	64	---
TOTAL	21058	23710	9222	7520	9085	17599	32801	84740	68434	13628	5607	6944
MEAN	679	790	297	243	324	568	1093	2734	2281	440	181	231
MAX	1420	1480	498	280	490	840	1930	4800	3620	938	1000	332
MIN	349	509	140	180	220	410	537	1710	944	68	62	59
AC-FT	41770	47030	18290	14920	18020	34910	65060	168100	135700	27030	11120	13770

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1999, BY WATER YEAR (WY)

MEAN	257	222	151	144	447	1280	762	1194	1683	588	225	174
MAX	921	790	417	476	3850	4627	3062	5970	8045	2015	1096	898
(WY)	1941	1999	1942	1981	1943	1972	1965	1978	1944	1993	1941	1941
MIN	1.77	12.5	12.5	4.53	2.82	80.2	109	142	123	14.4	1.30	.19
(WY)	1961	1961	1961	1950	1950	1950	1961	1961	1966	1988	1988	1960

SUMMARY STATISTICS	FOR 1998 CALENDAR YEAR		FOR 1999 WATER YEAR		WATER YEARS 1939 - 1999	
ANNUAL TOTAL	244361		300348			
ANNUAL MEAN	669		823		594	
HIGHEST ANNUAL MEAN					1622	1944
LOWEST ANNUAL MEAN					79.4	1961
HIGHEST DAILY MEAN	1820	Jul 6	4800	May 5	26000	Feb 19 1943
LOWEST DAILY MEAN	46	Jul 29	59	Sep 1	.00	Jan 16 1950
ANNUAL SEVEN-DAY MINIMUM	80	Jul 26	65	Aug 28	.00	Jan 16 1950
INSTANTANEOUS PEAK FLOW			a5170	May 5	b31000	Feb 19 1943
INSTANTANEOUS PEAK STAGE			b6.44	Feb 26	12.20	Mar 16 1978
INSTANTANEOUS LOW FLOW					c.00	Jul 30 1998
ANNUAL RUNOFF (AC-FT)	484700		595700		430100	
10 PERCENT EXCEEDS	1290		2120		1400	
50 PERCENT EXCEEDS	581		490		244	
90 PERCENT EXCEEDS	189		146		43	

a--Gage height, 5.26 ft.
b--Backwater from ice.
c--On many days in 1950, 1960-61, and 1988.
e--Estimated.

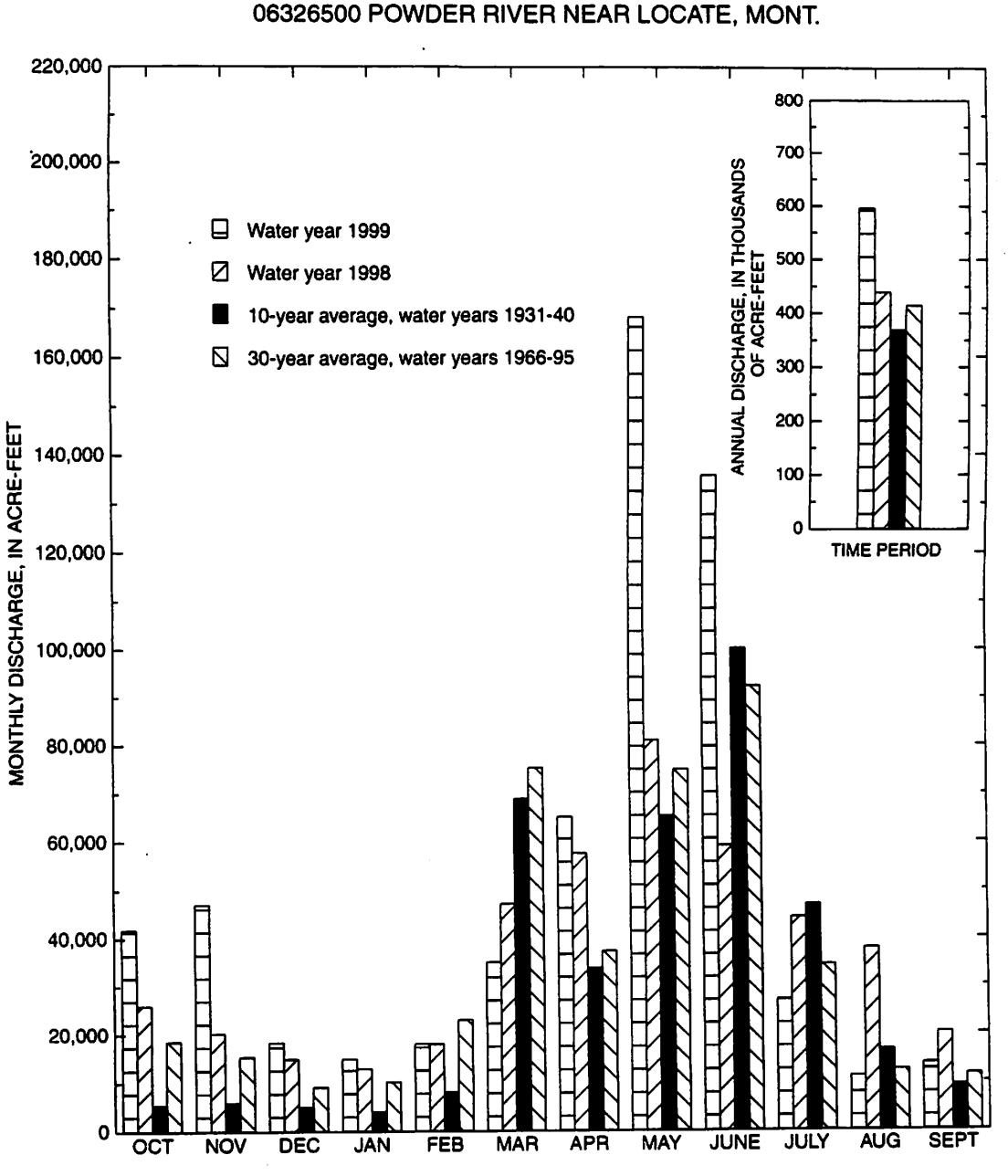


Figure 4. Comparison of discharge of the Powder River during water year 1999 with discharge during water year 1998 and with 10-year and 30-year average discharges.

MONTHLY SUMMARY OF CONTENTS FOR COMPACT RESERVOIRS COMPLETED AFTER JANUARY 1, 1950

06258900 Boysen Reservoir, Wyo.

LOCATION.--Lat 43°25'00", long 108°10'37", in $NW^1/_4NW^1/_4$ sec. 16, T.5 N., R.6 E., Fremont County, Hydrologic Unit 10080005, at dam on Wind River and 13 mi north of Shoshoni, Wyoming.

DRAINAGE AREA.--7,700 mi^2.

PERIOD OF RECORD.--October 1951 to current year (monthend contents only).

GAGE.--Water-stage recorder. Datum of gage is feet above sea level (levels by Bureau of Reclamation).

REMARKS.--Reservoir is formed by rock-fill dam completed in October 1951. Storage began Oct. 11, 1951. Usable capacity, 701,500 acre-ft between elevation 4,657.00 ft, invert of penstock pipe, and 4,725.00 ft, top of spillway gate. Dead storage, 40,080 acre-ft below elevation 4,657.00 ft. Prior to Jan. 1, 1966, usable capacity was 757,800 acre-ft and dead storage was 62,000 acre-ft at same elevations. Between January 1966 and October 1996, usable capacity was 742,100 acre-ft and dead storage was 59,880 acre-ft, at same elevations. Crest of dam is at elevation 4,758.00 ft. Figures given herein represent usable contents. Water used for irrigation, flood control, and power development.

COOPERATION.--Elevations and capacity table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 862,500 acre-ft, July 6, 7, 1967, elevation, 4,730.83 ft; minimum daily contents since normal use of water started, 191,900 acre-ft, Mar. 18, 19, 1956, elevation, 4,684.18 ft, capacity table then in use.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 734,000 acre-ft, July 8, 9, elevation, 4,726.63 ft; minimum daily contents, 460,100 acre-ft, May 24, elevation, 4,710.54 ft.

Month	Water-surface elevation, in feet	Usable contents, in acre-feet	Change in usable contents, in acre-feet
September 30, 1998	4,719.27	595,500	---
October 31	4,720.98	625,800	+30,300
November 30	4,721.63	637,600	+11,800
December 31	4,720.26	612,900	-24,700
January 31, 1999	4,718.90	589,100	-23,800
February 28	4,717.76	569,800	-19,300
March 31	4,712.87	493,600	-76,200
April 30	4,712.94	494,600	+1,000
May 31	4,713.99	510,200	+15,600
June 30	4,725.73	715,900	+205,700
July 31	4,723.84	679,000	-36,900
August 31	4,720.66	620,000	-59,000
September 30, 1999	4,719.10	592,500	-27,500
1999 water year			-3,000

06260300 Anchor Reservoir, Wyo.

LOCATION.--Lat 43°39'50", long 108°49'27", in sec. 26, T.43 N., R.100 W., Hot Springs County, Hydrologic Unit 10080007, at dam on South Fork Owl Creek, 2 mi downstream from Middle Fork, 3 mi southeast of Anchor, and 32 mi west of Thermopolis.

DRAINAGE AREA.--131 mi^2.

PERIOD OF RECORD.--November 1960 to current year (monthend contents only).

GAGE.--Water-stage recorder. Datum of gage is feet above sea level (Bureau of Reclamation benchmark).

REMARKS.--Reservoir is formed by concrete arch dam completed in 1960. Usable capacity, 17,160 acre-ft between elevation 6,343.75 ft, invert of river outlet, and 6,441.00 ft, spillway crest, including 68 acre-ft below elevation 6,343.75 ft. Prior to Oct. 1, 1971, usable capacity was 17,280 acre-ft, including 149 acre-ft below the invert. Figures given herein represent usable contents. Water is used for irrigation of land in Owl Creek basin.

COOPERATION.--Records furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 9,250 acre-ft, July 4, 1967, elevation, 6,418.52 ft; no usable storage on many days some years.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 7,570 acre-ft, June 24, elevation, 6,412.80 ft; minimum daily contents, 174 acre-ft, many days, elevation, 6,351.20 ft.

Month	Water-surface elevation, in feet	Usable contents, in acre-feet	Change in usable contents, in acre-feet
September 30, 1998	6,365.00	628	---
October 31	6,368.00	790	+162
November 30	6,353.20	216	-574
December 31	6,353.80	229	+13
January 31, 1999	6,351.20	174	-55
February 28	6,351.60	183	+9
March 31	6,363.10	540	+357
April 30	6,369.20	864	+324
May 31	6,400.20	4,500	+3,636
June 30	6,411.64	7,130	+2,630
July 31	6,395.10	3,630	-3,500
August 31	6,357.30	323	-3,307
September 30, 1999	6,354.70	248	-75
1999 water year			-380

06286400 Bighorn Lake near St. Xavier, Mont.

LOCATION.--Lat 45°18'27", long 107°57'26", in $SW^1/_4SE^1/_4$ sec.18, T.6 S., R.30 E., Big Horn County, Hydrologic Unit 10080010, in block 13 of Yellowtail Dam on Bighorn River, 1.3 mi upstream from Grapevine Creek, 15.5 mi southwest of St. Xavier, and at river mile 86.6.

DRAINAGE AREA.--19,626 mi^2.

PERIOD OF RECORD.--November 1965 to current year (monthend contents only). Prior to October 1969, published as "Yellowtail Reservoir." Records of daily elevations and contents on file in Helena district office.

GAGE.--Water-stage recorder in powerhouse control room. Datum of gage is referenced to sea level (levels by Bureau of Reclamation).

REMARKS.--Reservoir is formed by thin concrete-arch dam; construction began in 1961; completed in 1967. Storage began Nov. 3, 1965. Usable capacity, 1,312,000 acre-ft, between elevation 3,296.50 ft, river outlet invert, and 3,657.00 ft, top of flood control. Elevation of spillway crest, 3,593.00 ft. Normal maximum operating level, 1,097,000 acre-ft, elevation, 3,640.00 ft. Minimum operating level, 483,400 acre-ft, elevation, 3,547.00 ft. Dead storage, 16,010 acre-ft, below elevation 3,296.50 ft. Figures given herein represent usable contents. Water is used for power production, flood control, irrigation, and recreation.

COOPERATION.--Elevations and capacity table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 1,346,000 acre-ft, July 6, 1967, elevation, 3,656.43 ft; minimum since first filling, 641,900 acre-ft, Apr. 14, 1989, elevation 3,583.30 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 1,185,000 acre-ft, July 14, elevation, 3,649.26 ft; minimum, 757,200 acre-ft, Apr. 23, elevation, 3,605.06 ft.

Month	Water-surface elevation, in feet	Usable contents, in acre-feet	Change in usable contents, in acre-feet
September 30, 1998	3,638.18	1,032,000	--
October 31	3,636.32	1,010,000	-22,000
November 30	3,635.20	997,200	-12,800
December 31	3,630.06	944,100	-53,100
January 31, 1999	3,620.84	864,100	-80,000
February 28	3,612.01	800,200	-63,900
March 31	3,609.27	782,600	-17,600
April 30	3,607.43	771,300	-11,300
May 31	3,626.53	911,500	+140,200
June 30	3,647.66	1,161,000	+249,500
July 31	3,642.87	1,092,000	-69,000
August 31	3,638.31	1,033,000	-59,000
September 30, 1999	3,638.64	1,037,000	+4,000
1999 water year			+5,000

MONTHLY SUMMARY OF CONTENTS FOR COMPACT RESERVOIRS EXISTING ON JANUARY 1, 1950

The extent, if any, of the use of reservoirs in this section which may be subject to Compact allocations was not determined. As a matter of hydrologic interest the monthend usable contents in acre-feet of four reservoirs are given. The first three reservoirs are in the Bighorn River basin, Wyoming, and data on contents were furnished by the Bureau of Reclamation. The Tongue River Reservoir in Montana is operated under the supervision of the Water Resources Division of the Montana Department of Natural Resources and Conservation, which furnished the water level data.

	Usable contents, in acre-feet			
Month	06224500 Bull Lake	Pilot Butte Reservoir	06281500 Buffalo Bill Reservoir	06307000 Tongue River Reservoir
September 30, 1998	114,900	19,830	520,500	5,880
October 31	99,380	25,060	486,500	5,820
November 30	98,080	24,850	471,100	5,180
December 31	98,080	24,720	447,900	5,270
January 31, 1999	97,840	24,330	445,000	5,490
February 28	97,840	24,010	436,900	7,080
March 31	97,470	24,250	402,700	11,390
April 30	99,920	21,290	360,800	29,150
May 31	94,360	18,650	392,100	63,640
June 30	129,800	23,610	545,700	71,980
July 31	147,500	23,280	630,300	57,260
August 31	125,400	18,430	574,500	39,440
September 30, 1999	108,400	20,140	510,600	38,180
Change in contents during water year	-6,500	+310	-9,900	+32,300

RULES AND REGULATIONS FOR ADMINISTRATION OF THE YELLOWSTONE RIVER COMPACT

A compact, known as the Yellowstone River Compact, between the States of Wyoming, Montana, and North Dakota, having become effective on October 30, 1951, upon approval of the Congress of the United States, which apportions the waters of certain interstate tributaries of the Yellowstone River which are available after the appropriative rights existing in the States of Wyoming and Montana on January 1, 1950 are supplied, and after appropriative rights to the use of necessary supplemental water are also supplied as specified in the Compact, is administered under the following rules and regulations subject to the provisions for amendment revision or abrogation as provided herein.

Article I. Collection of Water Records

A. It shall be the joint and equal responsibility of the members of the States of Wyoming and Montana to collect, cause to be collected, or otherwise furnish records of tributary streamflow at the points of measurement specified in Article V (B) of the Compact, or as near thereto as is physically or economically feasible or justified.

1. Clarks Fork

The gaging station known as Clarks Fork near Silesia, Montana and located in NW1/4 SE1/4 sec. 1, T. 4 S., R. 23 E., shall be the point of measurement for the Clarks Fork.

2. Bighorn River (exclusive of Little Bighorn River)

The gaging station known as the Bighorn River above Tullock Creek, near Bighorn, Montana, and located in SE1/4 SE1/4 NE1/4 sec. 3, T. 4 N., R. 34 E., shall temporarily be the designated point of measurement on that stream. The flow of the Little Bighorn River as measured at the gaging station near Hardin, Montana, and located in SE1/4 NE1/4 NE1/4 sec. 19, T. 1 S., R. 34 E., shall be considered the point of measurement for that stream, except that if or when satisfactory records are not available, the records for the nearest upstream station with practical corrections for intervening inflow or diversion shall be used.

3. Tongue River

The gaging station known as the Tongue River at Miles City, Montana, and located in NE1/4 NE1/4 SE1/4 sec. 23, T. 7 N., R. 47 E., shall temporarily be the point of measurement for that stream.

4. Powder River

The gaging station known as the Powder River near Locate, Montana, and located in NW1/4 SW1/4 sec. 14, T. 8 N., R. 51 E., shall temporarily be the designated point of measurement for that stream.

B. Records of total annual diversion in acre-feet above the points of measurement designated in the Compact for irrigation, municipal, and industrial uses developed after January 1, 1950, shall be furnished by the members of the Commission for their respective States, at such time as the Commission deems necessary for interstate administration as provided by the terms of the Compact. Providing that if it be acceptable to the Commission, reasonable estimates thereof may be substituted.

C. Annual records of the net change in storage in all reservoirs, not excluded under Article V (E) of the Compact, above the point of measurement specified in the Compact and completed after January 1, 1950, and the annual net change in reservoirs existing prior to January 1, 1950, which is used for irrigation, municipal, and industrial purposes developed after January 1, 1950, shall be the primary responsibility of the member of the Commission in whose State such works are located; providing such data are not furnished by Federal agencies under the provisions of Article III (D) of the Compact, or collected by the Commission.

Article II. Office and Officers

A. The office of the Commission shall be located at the office of the Chairman of the Commission.

B. The Chairman of the Commission shall be the Federal representative as provided in the Compact.

C. The Secretary of the Commission shall be as provided for in Article III of these rules.

D. The credentials of each member of the Commission shall be placed on file in the office of the Commission.

Article III. Secretary

A. The Commission, subject to the approval of the Director of the United States Geological Survey, shall enter into cooperative agreements with the U.S. Geological Survey for such engineering and clerical services as may reasonably be necessary for the administration of the Compact. Said agreements shall provide that the Geological Survey shall:

1. Maintain and operate gaging stations at or near the points of measurement specified in Article V (A) of the Compact.

2. Assemble factual information on stream flow, diversion, and reservoir storage for the preparation of an annual report to the Governors of the signatory States.

3. Make such investigations and reports as may be requested by the Commission in aid of its administration of the Compact.

B. The Geological Survey shall act as Secretary to the Commission.

Article IV. Budget

A. At the annual meeting of each even-numbered year or prior thereto, the Commission shall adopt a budget for operation during the ensuing biennium beginning July first. Such budget shall set forth the total cost of construction, maintenance and operation of gaging stations, the cost of engineering and clerical aid, and other necessary expenses excepting the salaries and personal expenses of the Commissioners. On odd-numbered years revisions of the budget shall be considered.

B. It shall be the obligation of the Commissioners of the States of Montana and Wyoming to endeavor to secure from the Legislature of their respective States sufficient funds with which to meet the obligations of this Compact, except insofar as provided by the Federal government.

Article V. Meetings

An annual meeting of the Commission shall be held each November at some mutually agreeable point in the Yellowstone River Basin for consideration of the annual report for the water year ending the preceding September 30th, and for the transaction of such other business consistent with its authority; provided that by unanimous consent of the Commission the date and place of the annual meeting may be changed. Other meetings as may be deemed necessary shall be held at a time and place set by mutual agreement, for the transaction of any business consistent with its authority.

No action of the Commission shall be effective until approval by the Commissioners for the States of Wyoming and Montana.

Article VI. Amendments, Revisions and Abrogations.

The Rules and Regulations of the Commission may be amended or revised by a unanimous vote at any meeting of the Commission.

Gary Fritz
Commissioner for Montana

George L. Christopulos
Commissioner for Wyoming

ATTESTED:

L. Grady Moore
Federal Representative

Adopted November 17, 1953
Amended December 16, 1986

RULES FOR THE RESOLUTION OF DISPUTES OVER THE ADMINISTRATION OF THE YELLOWSTONE RIVER COMPACT

December 19, 1995

Section I. General Framework

According to Article III(F) of the Yellowstone River Compact.

"In case of the failure of the representatives of Wyoming and Montana to unanimously agree on any matter necessary to the proper administration of this compact, then the member selected by the director of the United States Geological Survey shall have the right to vote upon the matters in disagreement and such points of disagreement shall then be decided by a majority vote of the representatives of the states of Wyoming and Montana and said member selected by the director of the United States geological survey, each being entitled to one vote."

Section II. Purpose and Goal

A. The purpose of these rules is to clarify and more fully develop the dispute resolution process outlined in Section I.

B. The goal of the dispute resolution process outlined in these rules is to encourage joint problem solving and consensus building. It consists of three phases -- unassisted negotiation, facilitation, and voting.

C. Any agreement reached through this process is binding on Montana, Wyoming, and the United States Geological Survey (USGS).

D. Either state can initiate the dispute resolution process defined in Sections IV, V, and VI, and the other state is obligated to participate in good faith. The states agree that the issues pursued under this dispute resolution process shall be both substantive and require timely resolution.

Section III. Consensus

A. In the process of administering the Yellowstone River Compact, the representatives from Montana and Wyoming agree to seek consensus.

B. For purposes of this rule, consensus is defined as an agreement that is reached by identifying the interests of Montana and Wyoming and then building an integrative solution that maximizes the satisfaction of as many of the interests as possible. The process of seeking consensus does not involve voting, but a synthesis and blending of alternative solutions.

Section IV. Unassisted Negotiation

A. In all situations, the representatives from Montana and Wyoming shall first attempt to seek consensus through unassisted negotiation. The federal representative will not serve as chairperson in the unassisted negotiation process.

B. During a negotiation process, the representatives from Montana and Wyoming shall identify issues about which they differ, educate each other about their needs and interests, generate possible resolution options, and collaboratively seek a mutually acceptable solution.

C. To help facilitate negotiations, the representatives from Montana and Wyoming in cooperation with the USGS agree to share technical information and develop joint data bases. Other data sources may also be used.

D. The USGS shall serve as technical advisor in the two-state negotiations.

Section V. Facilitation

A. If the representatives from Montana and Wyoming are not able to reach consensus through unassisted negotiation, they shall each identify, articulate, and exchange, in writing, the unresolved issues.

B. The representatives from Montana and Wyoming shall then jointly appoint a facilitator to assist in resolving the outstanding dispute. If the representatives from Montana and Wyoming cannot identify a mutually acceptable facilitator, the representative appointed by the USGS shall appoint a facilitator.

C. A facilitator, for purposes of this rule, is defined as a neutral third party that shall help the representatives from Montana and Wyoming communicate, negotiate, and reach agreements voluntarily. The facilitator is not empowered to vote or render a decision.

D. The facilitator shall assist the representatives from Montana and Wyoming in developing appropriate ground rules for each facilitated session including establishing a deadline for completion of the facilitation process, setting an appropriate agenda, identifying issues, collecting and analyzing technical information, developing options, packaging agreements, and preparing a written agreement. The facilitator reserves the right to meet privately with each representative during the facilitation process.

Section VI. Voting

A. If, and only if, the representatives from Montana and Wyoming are unable to reach consensus with the assistance of a facilitator, then a dispute may be settled by voting.

B. The representatives from Montana and Wyoming, along with the representative appointed by the director of the USGS, are each entitled to one vote.

C. If the USGS representative does not vote in accordance with Article III, then the director of the USGS will select, with concurrence from Wyoming and Montana, a neutral third party to vote.

D. If the representative appointed by the director of the USGS is not involved in the steps outlined in Sections IV and V, each state shall have the opportunity to present appropriate information to that representative. This information may be presented through both oral presentations and written documents. All information will be shared with the other state.

The representative of the USGS may also consult the facilitator referenced in Section V in an attempt to resolve any disputes.

E. The USGS shall pay the expenses of the representative appointed by the director of the USGS.

F. Points of disagreement shall be resolved by a majority vote.

Section VII. Funding

A. The USGS will pay one-half and the states of Montana and Wyoming shall each pay one-quarter of the expenses of the facilitator, which shall not exceed $10,000, unless agreed to by both states and the USGS.

Section VIII. Amendments

A. These rules may be amended or revised by a unanimous vote of the Commission.

Section IX. Execution

These rules for the resolution of disputes over the administration of the Yellowstone River Compact are hereby executed on the date indicated below.

Gary Fritz
Commissioner for Montana

Gordon W. Fassett
Commissioner for Wyoming

William F. Horak
Federal Representative

July 22, 1996
Date

RULES FOR ADJUDICATING WATER RIGHTS ON INTERSTATE DITCHES

Article I. Purpose

The purpose of this rule is to determine and adjudicate, in accordance with the laws of Montana and Wyoming, those pre-Compact (January 1, 1950) water rights diverting from the Powder, Tongue, Bighorn and Clarks Fork Rivers and their tributaries where the point of diversion is in one State and the place of use is in the other State which have not yet been adjudicated.

Article II. Authority

In accordance with the Yellowstone River Compact, the State of Montana and the State of Wyoming, being moved by consideration of interstate comity, desire to remove all causes of present and future controversy between the States and between persons in one State and persons in another State with respect to these interstate ditches. Article III (E) of the Compact provides the Yellowstone River Compact Commission with the authority "...to formulate rules and regulations and to perform any act which they may find necessary to carry out the provisions of this Compact...."

Article III. Definitions

The terms defined in the Yellowstone River Compact apply as well as the following definitions:

1. "Acre-feet" means the volume of water that would cover 1 acre of land to a depth of 1 foot.

2. "Cfs" means a flow of water equivalent to a volume of 1 cubic foot that passes a point in 1 second of time and is equal to 40 miners inches in Montana.

3. "Interstate Ditches" shall include ditches and canals which convey waters of the Bighorn, Tongue, Powder, and Clarks Fork Rivers and their tributaries across the Wyoming-Montana State line where the water is diverted in one State and the place of use is in the other State.

4. "Department of Natural Resources and Conservation," hereafter called the "Department," means the administrative agency and Department of the Executive Branch of the Government of Montana created under Title II, Chapter 15, MCA which has the responsibility for water administration in that State.

5. "Water Court" means a Montana District Court presided over by a water judge, as provided for in Title III, Chapter 7, MCA.

6. "State Engineer" shall be the current holder of the position created by the Wyoming Constitution as Chief Water Administration Official for the State of Wyoming.

7. "Board of Control," hereinafter called the "Board," is defined as the constitutionally created water management agency in Wyoming composed of the four Water Division Superintendents and the State Engineer.

8. "Superintendent" is the member of the Board who is the water administration official for the Water Division where the interstate ditch is located. (The two Water Divisions in the Yellowstone River drainage are Water Division Numbers Two and Three.)

9. "Date of Priority" shall mean the earliest date of actual beneficial use of water, unless evidence and circumstances pertaining to a particular claim establish an earlier date.

10. "Point of Diversion" is defined to be the legal land description by legal subdivision, section, township, and range of the location of the diversion structure for an interstate ditch from a natural stream channel.

11. "Place of Use" is defined to be the legal land description (legal subdivision, section, township, and range) of the lands irrigated by an interstate ditch.

12. "Person" is defined as an individual, a partnership, a corporation, a municipality or any other legal entity, public or private.

13. "Claimant" is defined as any person claiming the use of water from an interstate ditch as herein defined.

Article IV. Procedures

The procedures for determining and adjudicating water rights associated with interstate ditches shall be categorized as follows: (A) Where the point of diversion is in Wyoming and place of use in Montana, and (B) Where the point of diversion is in Montana and place of use in Wyoming.

A. Wyoming Procedure

1. The Yellowstone River Compact Commission will provide a claim form to be completed by the claimant that will describe the location and point of diversion and land being irrigated, the priority date claimed, method of irrigation and such other information required to describe the claim. (A sample form for this purpose is attached.)

2. The Yellowstone River Compact Commission will send the claim form to water users on the interstate ditches.

3. Water users will complete the claim form and file it with the Yellowstone Compact Commission, which, when found to be correct and complete, will be forwarded to the Board for verification.

4. Upon receipt of the form, the Board shall forward it to the appropriate Superintendent, who, in cooperation with the Department, will validate the information including the use that has been made of the water, the number of acres and location of lands being irrigated, the priority date, and all other relevant information. The Superintendent and the Department will utilize aerial photography and other information to have prepared a reproducible map showing the location of the ditch system, lands irrigated, point of diversion, etc., of the claim.

5. After the validation procedure, the Superintendent will hold a hearing, after appropriate notice and advertisement, at which time the claimant shall describe, in detail, the use that has been made of the water and the lands that are being irrigated, establish a priority date, etc. Costs incurred in advertising shall be paid by the claimant. If a single hearing is held to consider several claims, the costs of advertising shall be shared equally among the claimants. Anyone who opposes the claim shall appear and state the reasons, if any, for opposition to the claim. If there is no opposition to the claim, cost incurred in holding the hearing shall be paid by the claimant. If protestants do appear and oppose the claim, hearing costs will be paid 50 percent by the claimant and 50 percent by the protestant, or if there is more than one protestant, the remaining 50 percent shall be shared equally among the protestants.

6. At the conclusion of the hearing, the Superintendent shall forward the record to the Yellowstone River Compact Commission with his findings and recommendations. The Yellowstone River Compact Commission will make the

determination of the amount of the right, the location, and the priority date, and then send the record to the Board.

7. The Board shall review the record and integrate it into its water rights system. Upon entry of the record by the Board, the information shall be forwarded to the Department and the Chairman of the Yellowstone River Compact Commission.

8. Upon the entry of the right into the Board's records, it will have the following attributes:

   a. The right will be a Wyoming water right with a priority date as established by this procedure.

   b. The amount of the right will be determined as provided by Wyoming law.

B. Montana Procedure

1. The Yellowstone River Compact Commission will provide a claim form to be completed by the claimant that will describe the location and point of diversion and land being irrigated, the priority date claimed, method of irrigation and such other information required to describe the claim.

2. The Commission will send the claim form to water users on the interstate ditches.

3. Water users will complete the claim form and file it with the Yellowstone River Compact Commission, which, when found to be correct and complete, will be forwarded to the Department for verification.

4. Upon receipt of the form, the Department, in cooperation with the Wyoming State Engineer's Office, will validate the information, including the use that has been made of the water, the number of acres and location of lands being irrigated, the priority date, and all other relevant information. The appropriate Superintendent and the Department will utilize aerial photographs and other information to have prepared a reproducible map showing the location of the ditch system, land irrigated, point of diversion, etc., of the claim.

5. The Department will then forward the record to the Yellowstone River Compact Commission with its findings and recommendations. Upon approval by the Commission, the record shall be submitted to the Montana Water Court for adjudication. A duplicate record will be forwarded to the Wyoming State Engineer's Office, the Board, and the Chairman of the Yellowstone River Compact Commission upon adjudication.

6. Upon adjudication of the right by the Montana Water Court, it will have the following attributes:

   a) The right will be a Montana water right with a priority date as established by this procedure.

   b) The amount of the right will be determined as provided by Montana law.

Article V. Exclusions

A. These rules recognize the limitation in Article VI of the Yellowstone River Compact regarding Indian water rights.

B. These rules shall not be construed to determine or interpret the rights of the States of Wyoming and Montana to the waters of the Little Bighorn River.

Article VI. Claim Form Submission Period

All claims must be submitted to the Yellowstone River Compact Commission, c/o District Chief, United States Geological Survey, 821 E. Interstate, Bismarck, ND 58501, within 90 calendar days after the claimant has received the claim form from the Commission. The blank claim form will be sent certified mail to the water user and the submission period of 90 calendar days will begin with the next day following receipt of the form, as evidenced by the certified mail receipt card. For good cause shown in writing, an extension of time beyond the 90 days for submittal may be obtained from the Commission.

YELLOWSTONE RIVER COMPACT COMMISSION

WYOMING

GORDON W. FASSETT
STATE ENGINEER
HERSCHLER BUILDING
4TH FLOOR EAST
CHEYENNE, WYOMING 82002
(307) 777-7354

UNITED STATES

WILLIAM F. HORAK
CHAIRMAN
U.S. GEOLOGICAL SURVEY
821 E. INTERSTATE AVENUE
BISMARCK, NORTH DAKOTA 58501
(701) 250-4601

MONTANA

GARY FRITZ
ADMINISTRATOR, WATER RESOURCES DIVISION
DEPT. OF NATURAL RESOURCES & CONSERVATION
1520 EAST SIXTH AVENUE
HELENA, MONTANA 59620
(406) 444-6603

YELLOWSTONE RIVER COMPACT COMMISSION

CLAIM FORM FOR INTERSTATE DITCHES

1. Name of ditch or canal: _____

2. Source of water supply: _____

   Tributary of _____

3. Name of claimant: _____

   Address _____

   City _____ State _____ Zip Code _____

   Home Phone No. _____ Business Phone No. _____

4. Person completing form: _____

   Address _____

   City _____ State _____ Zip Code _____

   Home Phone No. _____ Business Phone No. _____

5. Method of irrigation: _____

6. Point of diversion: County _____ State _____

   Headgate located in the ___¼ ___¼, Section ____, T.___R.____

   (a) Description of headgate: (Briefly describe the materials and general features, date constructed or last known work, general condition.) _____

   _____

   _____

(b) Describe water measuring device: _____

_____

_____

(c) If the point of diversion is in Montana:

1. What flow rate has been claimed?

_____ ☐ cubic feet per second

☐ gallons per minute

☐ miner's inches

2. What volume of water has been claimed?

_____ acre-feet

7. Dimensions of ditch at headgate: Width at top (at waterline) _____ feet; width at bottom _____ feet; side slopes (vertical:horizontal) _____:_____; depth of water _____ feet; grade _____ feet per mile.

8. Place of use and acres irrigated: County_____ State ____ Give legal subdivisions of land owned by you on which water is being used (acres claimed): An example field is shown in the first line.

T.	R.	SEC.	NE¼				NW¼				SW¼				SE¼				TOTAL
			NE¼	NW¼	SW¼	SE¼	NE¼	MW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
58N	95W	18			25.1											10.2			35.3

9. Describe any additional uses of water claimed from the ditch: _____

10. Date of first beneficial use of water (priority date) on lands described above for _____ Ditch is _____ (mo/day/yr) and shall be the same for all lands claimed on this form.

11. Has irrigation water been diverted onto all lands shown in the above tabulation each year since completion of works? __ If not, state exceptions and reasons therefore: _____

_____

_____

12. Attach documentary evidence or affidavits showing your ownership or control of the above lands, as well as the historic use of water on these lands. _____

_____

_____

13. What permit or claim numbers have been assigned to known records filed with either the Wyoming State Engineer's Office or the Montana Department (DNRC) for irrigating the above lands? _____

_____

_____

14. Have personnel in the Wyoming State Engineer's Office or the Montana Department (DNRC) been contacted to obtain the information given in No. 13? ( ) Yes ( ) No

15. Describe any flumes or pipelines in the ditch conveyance system: _____

_____

_____

16. Describe ordinary annual period of use: _____ to _____
(mo/day) (mo/day)

_____.

17. Attach copies of aerial photographs, U. S. Geological Survey maps or other such documents showing the ditch and lands irrigated that give evidence to this claim and may be useful to the Commission.

* * * * * * * * * *

State of _____)
) SS
State of _____)

I, _____, having been duly sworn, depose and say that I, being of legal age and being the claimant of this claim for a water right, and the person whose name is signed to it as the claimant, know the contents of this claim and the matters and things stated there are correct.

_____

_____

Subscribed and sworn before me, this ____day of _____, 19__.

_____
Notary Public

Residing at: _____

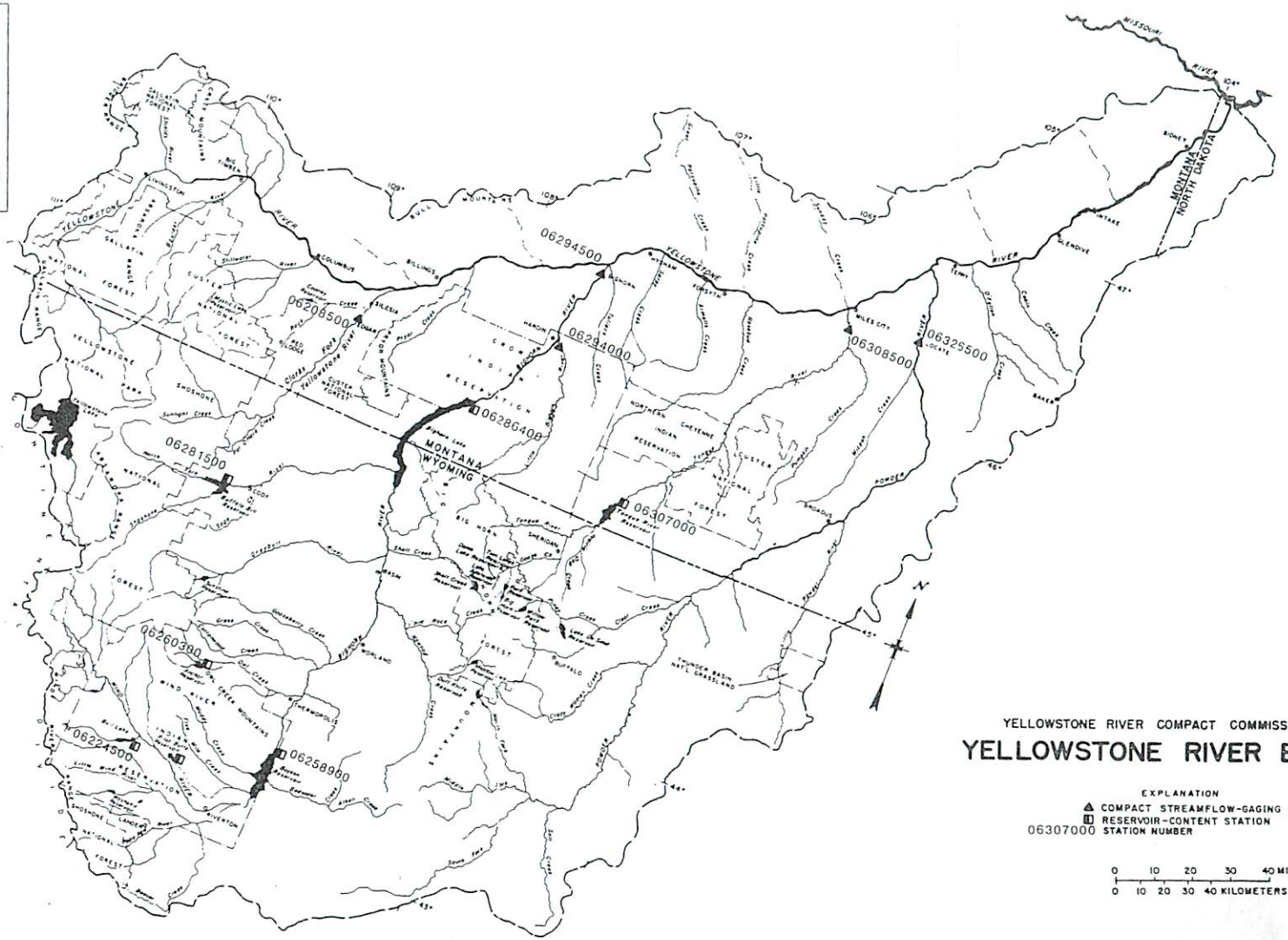
My commission expires: _____

CONVERSION TABLE

Multiply inch-pound units	By	To obtain SI units
	Length	
feet (ft)	0.3048	meters (m)
miles (mi)	1.609	kilometers (km)
	Area	
acres	4,047	square meters (m^2)
	0.4047	*hectares (ha)
	0.4047	square hectometer (hm^2)
	0.004047	square kilometers (km^2)
square miles (mi^2)	2.590	square kilometers (km^2)
	Volume	
cfs-day or second-foot day (ft^3/s-day)	2,447	cubic meters (m^3)
	0.002447	cubic hectometers (hm^3)
cubic feet	0.02832	cubic meters
acre-feet (acre-ft)	1,233	cubic meters (m^3)
	0.001233	cubic hectometers (hm^3)
	0.000001233	cubic kilometers (km^3)
	Flow	
cubic feet per second (ft^3/s)	28.32	liters per second (L/s)
	28.32	cubic decimeters per second (dm^3/s)
	0.02832	cubic meters per second (m^3/s)
acre-feet per year (acre-ft/yr)	1,233	cubic meters per year (m^3/yr)
	0.001233	cubic hectometers per year (hm^3/yr)
	0.000001233	cubic kilometers per year (km^3/yr)

*The unit hectare is approved for use with the International System (SI) for a limited time. See National Bureau of Standards Special Bulletin 330, p. 12, 1977 edition.

LOCATION MAP



YELLOWSTONE RIVER COMPACT COMMISSION

YELLOWSTONE RIVER BASIN

EXPLANATION

△ COMPACT STREAMFLOW-GAGING STATION

□ RESERVOIR-CONTENT STATION

06307000 STATION NUMBER

0 10 20 30 40 MILES

0 10 20 30 40 KILOMETERS

MAP SHOWING LOCATIONS OF COMPACT STREAMFLOW-GAGING AND RESERVOIR-CONTENT STATIONS