

YELLOWSTONE RIVER COMPACT COMMISSION

408 Federal Building

Helena, Montana

December 3, 1956

His Excellency Milward L. Simpson
Governor of the State of Wyoming
Cheyenne, Wyoming

His Excellency J. Hugo Aronson
Governor of the State of Montana
Helena, Montana

His Excellency Norman Brunsdale
Governor of the State of North Dakota
Bismarck, North Dakota

Sirs:

Pursuant to Article III of the Yellowstone River Compact, the Commission created according to the terms of said Compact makes the following fifth annual report.

The Fifth Annual Meeting of the Yellowstone River Compact Commission was held at Sheridan, Wyoming on November 20, 1956. The duly constituted members were in attendance.

Your Commissioners did not determine the allocable uses of the several states during the report period ending September 30, 1956. These determinations were not considered necessary under the present state of water-resources development and we are in agreement that allocable water uses were not exceeded by the upstream State or States during this period. No questions of water use were referred to the Commission.



The administrative expenses of the Commission during the fiscal year ending June 30, 1956 were \$6,000, of which \$3,000 was borne by the federal government. The remaining \$3,000 was borne by contributions of \$1,500 each by the States of Montana and Wyoming. A budget of \$6,000 for the fiscal year ending June 30, 1957 was approved. It is anticipated that budgets of a like amount, namely \$6,000 per year, will be adequate for the administrative expense of the Commission during the fiscal years ending June 30, 1958 and 1959. This is contingent upon the present level of data collection and administration.

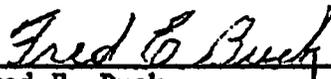
The Commission has directed it's activity to the collection of stream-flow data for the specified points of measurement and the assembly of information on water-right filings to actively administer the Compact when the need arises. Records of stream flow collected through the support of the Commission and data on storage in reservoirs as supplied by various governmental agencies are summarized in this report.

Pertinent data and records are available in the files of the Commission maintained in the office of the U.S. Geological Survey at Helena, Montana.

Respectfully submitted,



L. C. Bishop
Commissioner for Wyoming



Fred E. Buck
Commissioner for Montana



Frank Stermitz
Federal Representative

GENERAL REPORT

Cost:

The work of the Commission continues to be financed by cooperative arrangements between the State of Wyoming and Montana and the United States of America.

The expense of the Commission during the fiscal year ending June 30, 1956 is given:

	<u>Total Cost</u>	<u>Borne by United States</u>	<u>Borne by</u>	
			<u>Wyoming</u>	<u>Montana</u>
Gaging station operation	\$3500	\$1750	\$875	\$675
Improvement or installation of gaging stations	\$1500	\$ 750	\$375	\$375
Collection and assembly of data and administration	<u>\$1000</u>	<u>\$ 500</u>	<u>\$250</u>	<u>\$250</u>
	\$6000	\$3000	\$1500	\$1500

The budget for the current fiscal year ending June 30, 1957 is given:

	<u>Total Cost</u>	<u>Borne by United States</u>	<u>Borne by</u>	
			<u>Wyoming</u>	<u>Montana</u>
Gaging station operation and maintenance	\$4900	\$2450	\$1225	\$1225
Collection and assembly of data and administration	<u>\$1100</u>	<u>\$ 550</u>	<u>\$ 275</u>	<u>\$ 275</u>
	\$6000	\$3000	\$1500	\$1500

The above tabulation of incurred and contemplated cost do not include the salaries and necessary expenses of the State representatives which are borne by the respective states, nor the cost of collection of hydrologic data now being made available from other sources.

Gaging stations:

Records of stream-flow were collected at the designated points of measurement as described in the Compact or as near thereto as the Commission deemed practical. The recorder installation on the Bighorn River at Bighorn, Montana was placed in operation on October 7, 1956. The relocation of this station from the site 4 miles upstream was made to avoid the recurring and shifting silt deposits in the channel which were aggravated by the Manning Dam. The new location is below the mouth of Tullock Creek and fully complies with terms of the Compact. Occasional backwater from the Yellowstone River was evident at the new location as anticipated. Adequate coverage by discharge measurements kept the record within allowable accuracy. An auxiliary gage for slope observations will be installed to determine the backwater effect with greater precision.

Supplementary data collection considered desirable by the Commission consisted of miscellaneous measurements of the Whitehorse Canal near Edgar, discharge records of the Little Bighorn River near Crow Agency and the Agency Canal at Crow Agency. These miscellaneous data and discharge records at designated points of measurement are given in Appendix B.

Diversions:

The Commissioners for Montana and Wyoming are in full agreement that allocable uses under the Compact did not approach the pro rata share in either state during the year. Available information on new water-right filings, general knowledge of developments completed since January 1, 1950 and records of stream-flow supported that opinion.

The assembly of information on new water right filings is being carried on by the Commission in preparation for the time when allocable uses will be necessary for administration of the Compact. The major expense of quantitative determination will be spared until the need is strongly evident.

Storage:

In reservoirs completed after January 1, 1950:

Boysen Reservoir on the Bighorn River is the principal reservoir in this category, records for which are tabulated in Appendix C. The remaining reservoirs completed since January 1, 1950 are, in the aggregate, relatively small. Details of their operations have not been collected.

In reservoirs existing on January 1, 1950:

Compact allocations are affected by storage in these reservoirs only in so far as utilized for new developments. The extent of that use is known to be minor or relatively negligible. As a matter of information the quantities in storage on month-ends in the larger reservoirs in this category, namely Bull Lake, Pilot Butte, Buffalo Bill and Tongue River Reservoirs are tabulated in Appendix D.

**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, the following rules and regulations are adopted 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 stream flow 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 at Edgar, Montana and which is located in SW $\frac{1}{4}$ sec. 24, T. 4 S., R. 24 E., shall temporarily be the point of measurement for the Clarks Fork, subject to whatever mutually agreeable corrections to the stream-flow records at this point as may be deemed practical to meet the terms of the Compact.

2. **Bighorn River (exclusive of Little Bighorn River)**

The gaging station known as the Bighorn River near Custer, Montana and located near the center of sec. 10, 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 S $\frac{1}{2}$, SE $\frac{1}{4}$ sec. 18, 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 SE $\frac{1}{4}$ 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 NE $\frac{1}{4}$ sec. 26, 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 specified 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 is 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, and be that of the United States Geological Survey in Helena, Montana.
- 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 to cooperative agreements for such purpose, shall employ the U. S. Geological Survey on a yearly basis to render such engineering and clerical aid as may reasonably be necessary for the administration of the Compact. Said agreement 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.
4. 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.

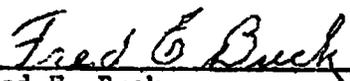
An annual meeting of the Commission shall be held on the third Tuesday of each November at some mutually agreeable point in the Yellowstone River Basin for consideration of the annual report for the water year ending the preceding September 30th, and for

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.

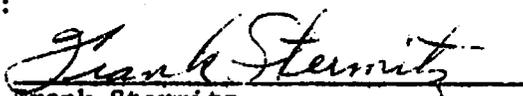


Fred E. Buck
Commissioner for Montana



L. C. Bishop
Commissioner for Wyoming

Attested:



Frank Stermitz
Federal Representative.

MONTHLY SUMMARY OF DISCHARGE

Clarks Fork at Edgar, Montana

Location.--Lat $45^{\circ}28'$, long $108^{\circ}51'$, in SW $\frac{1}{4}$ sec. 24, T. 4 S., R. 23 E., on right bank just downstream from highway bridge half a mile east of Edgar and 6 miles upstream from Rock Creek.

Records available.-- July 1921 to September 1956.

Gage.--Water-stage recorder. July 29, 1921, to Sept. 17, 1940, chain gage and Sept. 18, 1940, to Aug. 31, 1953, wire-weight gage, at same site and datum.

Average discharge.--23 years (1930-31, 1934-56), 1,028 cfs (744,200 acre-ft per year).

Extremes.--Maximum discharge during year, 9,080 cfs June 2 (gage height, 7.99 ft); minimum 218 cfs Oct. 22.

1921-56: Maximum discharge observed, 10,900 cfs June 2, 1936 (gage height, 8.62 ft); minimum observed, 41 cfs July 25, 1931.

Remarks.--The following discharge measurements were made of the Whitehorse Canal near point of diversion about 3 miles downstream in SW $\frac{1}{4}$ sec. 1, T. 4 S., R. 23 E: July 3, 1956, 31.2 cfs; Aug. 1, 1956, 21.9 cfs; Sept. 6, 1956, 21.8 cfs.

<u>Month</u>	<u>Second-foot days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1955	9,234	384	228	298	18,320
November	13,091	480	360	436	25,970
December	14,060	540	370	454	27,890
January 1956	10,800	400	250	348	21,420
February	11,090	460	300	382	22,000
March	15,914	942	340	513	31,560
April	19,527	1,090	392	651	38,730
May	92,455	7,910	658	2,982	183,400
June	175,760	8,730	3,190	5,859	348,600
July	64,340	3,640	1,360	2,075	127,600
August	23,932	1,430	535	772	47,470
September 1956	<u>13,932</u>	610	351	464	<u>27,630</u>
Water year 1955-56	464,135	8,730	228	1,268	920,600

MONTHLY SUMMARY OF DISCHARGE

Little Bighorn River near Crow Agency, Montana

Location.--Lat $45^{\circ}34'$, long $107^{\circ}27'$, in E $\frac{1}{2}$ SE $\frac{1}{4}$ sec. 13, T. 3 S., R. 34 E., on right bank at Chicago, Burlington & Quincy Railroad bridge, 2 miles south of Crow Agency and 14 miles upstream from mouth.

Drainage area.--1,190 sq mi, approximately.

Records available.--April 1912 to September 1924, August 1928 to December 1932, April 1938 to September 1956 (few winter records in earlier year March 1905 to June 1906 at site at Crow Agency, 2 miles downstream, records not equivalent because Crow Agency ditch diverts water between the two sites. October 1915 to September 1940, published as Little Horn River near Crow Agency.

Gage.--Water-stage recorder. April 11, 1912 to Sept. 30, 1918, staff or chain gages: Oct. 1, 1918, to Sept. 30, 1924, Aug. 26, 1928, to Sept. 30, 1930, water-stage recorder: Oct. 1, 1931, to Dec. 5, 1932, Apr. 1938 to May 6, 1947, wire-weight or chain gages; all at same site and datum.

Average discharge.--20 years (1928-29, 1931-32, 1938-56). 260 cfs (188,200 acre-ft per year).

Extremes.--Maximum discharge during year, 1,960 cfs Mar. 22 (gage height 8.33 ft); maximum gage height 10.60 ft Mar. 22 (ice jam); minimum discharge 35 cfs Aug. 27 (gage height, 3.92 ft).

1912-24, 1928-32, 1938-56: Maximum discharge observed, about 8,200 cfs July 23, 1923 (gage height, 14.0 ft); no flow July 28 to Aug. 6, 1921.

<u>Month</u>	<u>Second-foot days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1955	3,031	129	73	97.8	6,010
November	3,699	150	90	123	7,340
December	3,735	160	80	120	7,410
January 1956	3,360	120	85	108	6,660
February	3,730	170	95	129	7,400
March	12,066	1,430	105	389	23,930
April	5,784	289	156	193	11,470
May	13,703	1,500	156	442	27,180
June	10,961	1,040	98	365	21,740
July	2,231	159	40	72.0	4,430
August	1,783	93	37	57.5	3,540
September 1956	<u>2,063</u>	96	43	68.8	<u>4,090</u>
Water year 1955-56	66,146	1,500	37	181	131,200

MONTHLY SUMMARY OF DISCHARGE

Agency Canal at Crow Agency, Montana

Location.--Lat $45^{\circ}35'55''$, long $107^{\circ}27'15''$, near center of sec. 1. T. 3 S., R. 34 E., on downstream right abutment of bridge at intersection of U. S. Highway No. 87 and the main street of Crow Agency, a third of a mile downstream from headgate.

Records available.--Fragmentary records for 1953-56.

Gage.--Staff gage read twice daily during canal operation. Some recorded record during 1953.

Extremes.--Maximum daily discharge during year, 105 cfs June 9; no flow Oct. 23 to May 22.

Remarks.-- Canal operated Oct. 1-22 and May 23 to Sept. 30 for irrigation of about 3500 acres of land. Records fair due to operation of check gates downstream from gage.

<u>Month</u>	<u>Second-foot days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1955	791.2	59	0	25.5	1,570
May	337	42	0	10.9	668
June	2,574	105	40	85.8	5,110
July	1,693	82	34	54.6	3,360
August	1,474	53	40	47.5	2,920
September 1956	<u>1,074</u>	46	27	35.8	<u>2,130</u>
Water year 1955-56	7,943.2	105	0	21.7	15,760

MONTHLY SUMMARY OF DISCHARGE

Little Bighorn River near Hardin, Montana

Location.--Lat $45^{\circ}44'20''$, long $107^{\circ}33'20''$, on line between $S\frac{1}{2}$ $SE\frac{1}{2}$ sec. 18 and $NE\frac{1}{2}$ sec. 19, T. 1 S., R. 34 E., on right bank 425 ft upstream from county road bridge, about a quarter of a mile upstream from mouth and 2.4 miles east of Hardin.

Records available.--June 1953 to September 1956.

Gage.--Water-stage recorder. June 4, 1953, to October 6, 1953, wire-weight gage on bridge 425 ft downstream at different datum.

Extremes.--Maximum discharge during year, 1,780 cfs March 23 (gage height 7.17 ft); minimum, 4.2 cfs August 10.

1953-56: Maximum discharge, that of March 23, 1956, maximum gage height, 11.16 ft March 23, 1955 (backwater from ice); minimum daily discharge, that of August 10, 1956.

Revisions.--Revised figures of discharge for the water year ending September 30, 1956 superseding those published in the previous annual report are given:

April 1956 - 17,609 second-foot days; 55 cfs, minimum; 587 cfs, mean; 34,900 acre-feet, runoff.

Water year 1954-55 - 78,931 second-foot days; 216 cfs, mean; 156,600 acre-feet, runoff.

<u>Month</u>	<u>Second-Foot days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1955	3,457	148	75	112	6,860
November	3,887	154	100	130	7,710
December	3,855	160	85	124	7,650
January 1956	3,415	125	95	110	6,770
February	3,720	170	75	128	7,380
March	12,780	1,400	110	412	25,350
April	6,365	306	163	212	12,620
May	12,057	1,270	148	389	23,910
June	11,322	1,080	89	377	22,460
July	1,394.4	126	6.0	45.0	2,770
August	850.8	70	5.4	27.4	1,690
September 1956	<u>1,835</u>	91	26	61.2	<u>3,640</u>
Water year 1955-56	64,938.2	1,400	5.4	177	128,800

MONTHLY SUMMARY OF DISCHARGE

Bighorn River at Bighorn, Montana

Location.--Lat $46^{\circ}08'50''$, long $107^{\circ}27'20''$, in NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 33 T. 5 N., R. 34 E., on right bank just downstream from bridge on U. S. Highway 10, three-quarters of a mile upstream from mouth, 1 mile southwest of Bighorn, and 4 miles east of Custer.

Records available.--May 1945 to September 1956.

Gage.--Water-stage recorder. Prior to Oct. 7, 1955, water-stage recorder at site 4 miles upstream at different datum (May 1945 to Dec. 6, 1945 wire-weight gage at same datum).

Average discharge.--11 years, 3,778 cfs (2,735,000 acre-ft per year).

Extremes.-- Maximum daily discharge during year, 9,490 cfs May 30; maximum gage height observed 6.83 ft Mar. 7 (backwater from ice); minimum discharge 1,020 cfs July 29 (gage height, 1.89 ft, backwater from Yellowstone River).

1945-56: Maximum discharge, 26,200 cfs June 24, 1947 (gage height 8.79 ft, site and datum, then in use), from rating curve extended above 12,500 cfs by logarithmic plotting; maximum gage height recorded 10.65 ft, site and datum, then in use, Mar. 20, 1947 (ice jam); minimum discharge, 756 cfs Dec. 13, 1949 (corrected), (gage height, 0.89, site and datum then in use).

<u>Month</u>	<u>Second-foot days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1955	66,320	2,690	1,920	2,139	131,500
November	72,150	3,400	1,600	2,405	143,100
December	90,050	5,000	2,300	2,905	178,600
January 1956	91,100	3,600	2,320	2,939	180,700
February	93,250	4,800	1,800	3,216	185,000
March	115,160	6,000	2,500	3,715	228,400
April	82,940	3,240	2,220	2,765	164,500
May	128,260	9,490	1,920	4,137	254,400
June	205,180	8,860	5,350	6,839	407,000
July	81,530	5,250	1,020	2,630	161,700
August	54,470	2,660	1,340	1,757	108,000
September 1956	<u>80,480</u>	2,830	2,520	2,683	<u>159,600</u>
Water year 1955-56	1,160,890	9,490	1,020	3,172	2,302,000

MONTHLY SUMMARY OF DISCHARGE

Tongue River at Miles City, Montana

Location.--Lat $46^{\circ}21'$, long $105^{\circ}48'$, in SE $\frac{1}{4}$ sec. 23, T. 7 N., R. 47 E., on right bank 4 miles south of Miles City and 8 miles upstream from mouth.

Records available.--April 1938 to April 1942, April 1946 to September 1956. Published as "near Miles City" April 1938 to April 1942. Not equivalent to records published as "near Miles City" May 1929 to September 1932.

Gage.--Water-stage recorder. April 1938 to April 1942, wire-weight gage at site 8 miles upstream at different datum.

Average discharge.--12 years (1938-39, 1940-41, 1946-56). 388 cfs (280,900 acre-ft per year).

Extremes.-- Maximum discharge during year, 3,080 cfs June 3 (gage height 4.87 ft); maximum gage height observed 9.00 ft Mar. 23 (backwater from ice); minimum daily discharge, 4.6 cfs Oct. 1.

1938-42, 1946-56: Maximum discharge, 12,000 cfs Mar. 6, 1949 (gage height, 10.6 ft), float measurement; maximum gage height, 11.80 ft Mar. 6, 1949 (ice jam); no flow July 9-19, Aug. 13, 14, Sept. 28, 1940.

<u>Month</u>	<u>Second-foot days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1955	1,273.2	65	4.6	41.1	2,530
November	3,934	178	44.	131	7,800
December	4,760	170	140	154	9,440
January 1956	4,920	170	150	159	9,760
February	4,595	170	150	158	9,110
March	15,040	1,500	180	485	29,830
April	26,719	1,180	222	891	53,000
May	19,598	1,960	168	632	38,870
June	31,755	3,060	222	1,058	62,990
July	2,648.7	474	7.5	85.4	5,250
August	3,557.8	1,042	6.0	115	7,060
September 1956	<u>2,040</u>	273	44	68.0	<u>4,050</u>
Water year 1955-56	120,840.7	3,060	4.6	330	239,700

MONTHLY SUMMARY OF DISCHARGE

Powder River near Locate, Montana

Location.--Lat $46^{\circ}26'$, long $105^{\circ}18'$, in NE $\frac{1}{4}$ sec. 26, T. 8 N., R. 51 E., on right bank 50 ft downstream from bridge on U. S. Highway 12 at present site of Locate (5 miles west of former site of Locate), 3 miles upstream from Locate Creek, and 25 miles east of Miles City.

Records available.-- March 1938 to September 1956.

Gage.-- Water-stage recorder and wire-weight gage. Prior to July 11, 1947, wire-weight gage at bridge 50 ft upstream at same datum.

Average discharge.--18 years, 639 cfs (462,600 acre-ft per year).

Extremes.-- Maximum discharge during year, 24,000 cfs Mar. 23 (float measurement); maximum gage height observed, 12.3 ft Mar. 23 (backwater from ice); minimum daily, 2.6 cfs Sept. 23.

1938-56: Maximum discharge observed, 31,000 cfs Feb. 19, 1943 (gage height, 11.23 ft), from rating curve extended above 14,000 cfs; no flow Jan. 16 to Feb. 12, Feb. 22-24, 1950.

<u>Month</u>	<u>Second-foot days</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Mean</u>	<u>Runoff in Acre-feet</u>
October 1955	424.2	32	4.7	13.7	841
November	1,235	92	15	41.2	2,450
December	2,365	120	50	76.3	4,690
January 1956	3,620	140	70	117	7,180
February	2,760	180	70	95.2	5,470
March	38,420	7,000	200	1,239	76,200
April	15,488	882	334	516	30,720
May	24,126	2,640	314	778	47,850
June	24,262	2,620	99	809	48,120
July	4,148	828	15	134	8,230
August	4,665	1,040	33	150	9,250
September 1956	<u>1,054.0</u>	284	2.6	35.1	<u>2,090</u>
Water year 1955-56	122,567.2	7,000	2.6	335	243,100

RESERVOIRS COMPLETED AFTER JANUARY 1, 1950

BOYSEN RESERVOIR

Water-stage recorder at dam on Bighorn River, about 21 miles south of Thermopolis, Wyoming. Reservoir formed by earth-fill dam, construction of which began in 1947. Storage began on October 11, 1951. Dead storage, 62,000 acre-feet at elevation 4657.0. Usable contents, 758,000 acre-feet at elevation 4725.0 (top of gates). Crest of dam at elevation 4758.

Records given herein represent usable contents. Water is used for irrigation and power development. Allocation for flood control provided. Data collected by U. S. Bureau of Reclamation and furnished by Corps of Engineer, U. S. Army.

Extremes.--Maximum usable contents during year, 752,700 acre-feet August 5, 6; minimum, 189,800 acre-feet March 18, 19.

1953-55: Maximum usable contents, 761,700 acre-feet July 20-23, 1954; minimum, that of March 18, 19, 1956.

<u>Month</u>	<u>Water-Surface elevation in feet</u>	<u>*Contents in Acre-feet</u>	<u>Change in contents during month in acre-feet</u>
September 30, 1955	4,704.14	412,600	
October 31,	4,704.40	416,200	+3,600
November 30,	4,701.92	382,700	-33,500
December 31	4,698.75	342,900	-39,800
January 31, 1956	4,693.19	279,900	-63,000
February 29,	4,686.42	211,100	-68,800
March 31,	4,685.32	200,500	-10,600
April 30,	4,685.00	197,500	-3,000
May 31,	4,699.91	357,100	+159,600
June 30,	4,721.59	692,700	+335,600
July 31,	4,724.51	748,200	+55,500
August 31,	4,723.22	723,300	-24,900
September 30, 1956	4,719.61	656,700	-66,600
Water year 1955-56			+244,100

* Does not include dead storage of 62,000 acre-feet.

RESERVOIRS IN EXISTENCE ON JANUARY 1, 1950

The extent, if any, of the use of reservoirs in this category which may be subject to Compact allocations was not determined. As a matter of hydrologic interest, the month-end contents in acre-feet of four reservoirs are given. The first three reservoirs are in the Bighorn River Basin in Wyoming and data on contents was furnished by the U. S. Bureau of Reclamation. Tongue River Reservoir in Montana is operated under the supervision of the Montana State Water Conservation Board which agency furnished operating data.

Contents in Acre-feet

	<u>Bull Lake</u>	<u>Pilot Butte Reservoir</u>	<u>Buffalo Bill Reservoir</u>	<u>Tongue River a/ Reservoir</u>
September 30, 1955	93,300	5,000	221,900	13,400
October 31	90,400	100	199,200	10,400
November 30	86,300	6,400	202,300	<u>b/9,600</u>
December 31	79,800	8,500	206,100	-
January 31, 1956	72,600	11,700	199,200	-
February 28	62,300	14,600	181,600	-
March 31	55,300	23,300	176,700	35,800
April 30	51,900	27,300	189,900	18,900
May 31	85,900	25,300	301,900	29,400
June 30	148,900	20,800	459,200	40,900
July 31	145,300	13,600	440,500	36,800
August 31	124,400	12,000	386,100	26,800
September 30, 1956	102,400	8,300	338,800	20,900

a/ Contents based upon sedimentation surveys of October, 1948.

b/ Content on November 26, 1955; no further data available until March 31, 1956