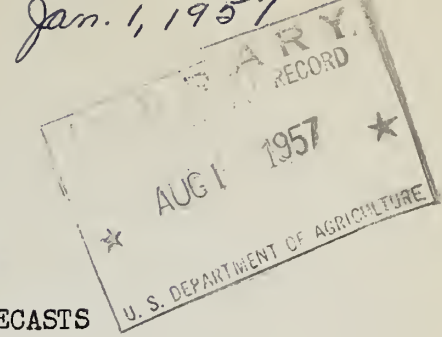


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Cap. 2



FEDERAL - STATE COOPERATIVE  
SNOW SURVEYS and WATER SUPPLY FORECASTS  
for  
MONTANA AND NORTHERN WYOMING  
(Upper Missouri and Upper Columbia River Basins)

Report Prepared by:

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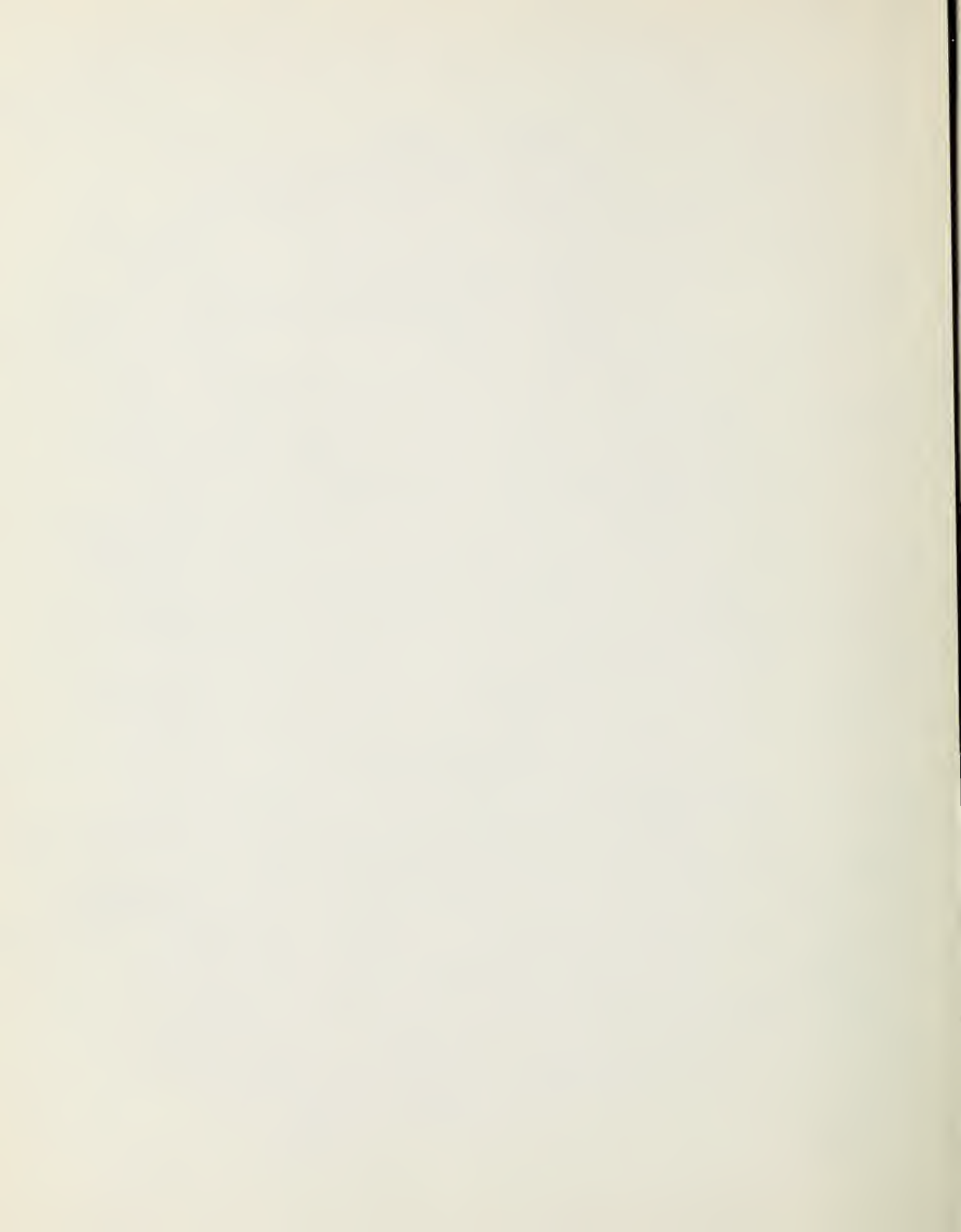
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WATER SUPPLY OUTLOOK  
from  
SNOW SURVEYS  
January 1, 1957

\* \* \* \* \*  
\*  
\*           The 1957 January first water supply outlook \*  
\* is only fair. Both Missouri and Columbia Basins show \*  
\* less snow-pack than last year, more than 1955, and \*  
\* about 80 per cent of average for the few key snow \*  
\* survey courses measured on January first. Irrigation \*  
\* reservoirs show a slight gain but could be considered \*  
\* less than average. \*  
\* \* \* \* \*

MISSOURI BASIN

The 1957 January first snow-pack in the higher elevations is average or better, with the lower elevation courses showing considerably below average. In general, this year's snow-pack is roughly 75 per cent of last year and about twice that of 1955.

This year the Upper Yellowstone River is covered with a snow-pack slightly below average. This year's pack is about twice that of 1955 and about a third less than last year.

COLUMBIA BASIN

In the Flathead River Basin the 1957 January first snow-pack is considerably lighter than 1956 and about 20 per cent less than the average of a short record. Only six courses were measured this season. This year's snow-pack is considerably better than January, 1955. Fall (Sept-Nov) precipitation was below average by 1.78 inches with close to average precipitation during December.

The 1957 January snow-pack on the Clark Fork Basin is only 58 per cent of last year's pack, and about 75 per cent average. The 1955 January snow-pack was considerably less than this year. Fall (Sept-Nov) precipitation this year was 1.54 inches less than average, with close to normal precipitation during December.



MONTANA SNOW SURVEYS - JANUARY 1, 1957

MISSOURI BASIN DRAINAGE BASIN AND SNOW COURSE			Date of Survey	1957 Snow Depth (In.)	SNOW COVER MEASUREMENTS				Total Years of Record
					Water Content (In.)	Past Record Water Content			
						1956	1955	15-Year Average 1938-52	
<u>JEFFERSON RIVER</u>									
(Rock-Beaverhead)									
*Kilgore	11E12	6200	1/2	20	3.8	3.6	-	4.6	17
*Camp Creek (Big Hole)	12E3	6800	1/7	27	3.5	4.5	-	4.0*	19
Gibbons Pass	13D2	7100	12/31	42	11.2	19.5	5.5	11.2*	7
<u>MADISON RIVER</u>									
Hebgen	11E5	6500	1/2	31	6.6	7.1	1.8	5.6	22
W. Yellowstone	11E7	6700	1/2	24	5.6	8.9	2.1	4.1*	19
21-Mile	11E6	7150	1/3	35	9.0	15.0	3.0	7.7*	18
**Big Springs	11E9	6500	1/29	37	9.5	11.8	3.3	7.4	21
**Island Park	11E10	3600	12/30	31	7.2	9.0	2.4	6.0	21
**Valley View	11E8	6500	12/30	30	6.7	9.7	1.2	5.2*	20
Norris Basin	10E2	7500	12/31	21	4.9	7.7	-	3.6*	3
<u>GALLATIN RIVER</u>									
21-Mile	11E6	7150	1/3	35	9.0	15.0	3.0	7.7*	18
<u>MISSOURI RIVER MAIN STEM</u>									
Chessman Res.	12C5	6200	12/31	0.5	0.1	3.6	0.9	2.1	21
Tenmile, Lower	12C2	6250	12/28	10	2.2	5.4	1.5	2.8	21
Tenmile, Middle	12C3	6800	12/28	16	3.9	8.3	2.7	5.0	22
Tenmile, Upper (Marias River)	12C4	8000	12/28	20	5.2	9.8	3.7	6.5	22
Marias Pass	13A5	5250	1/2	30	8.4	8.8	4.2	7.8	22
<u>UPPER YELLOWSTONE</u>									
Canyon	10E3	7750	12/31	29	6.5	13.5	3.8	7.1*	11
Cooke City	10D7	7400	12/30	19	3.5	5.9	3.2	4.5*	10
Lake Camp	10E4	7850	1/1	17	3.4	10.2	1.8	5.0*	8
**Astor Creek	10E8	7700	12/31	40	11.3	27.3	6.4	-	5
**Tom Thumb Summit	10E7	7900	12/31	30	8.3	-	-	13.6*	5
<u>LOWER YELLOWSTONE (Shoshone River)</u>									
East Entrance	10E6	7000	12/29	24	5.5	6.2	1.3	-	3
Sylvan Pass	10E5	7100	12/28	27	6.6	10.3	2.4	-	3

\*Average is for less than 15 years of record in the 1938-52 period.

\*\*Adjacent Basin.





MONTANA SNOW SURVEYS - JANUARY 1, 1957

SNOW COVER MEASUREMENTS									
COLUMBIA BASIN DRAINAGE BASIN AND SNOW COURSE	No.	Elev.	Date of Survey	1957 Snow Depth (In.)	Water Content (In.)	Past Record Water Content			Total Years of Record
						1956	1955	15-Year Average 1938-52	
<u>FLATHEAD RIVER</u>									
Coyote Hill	13B10	4200	1/3	19	4.8	7.0	2.8	8.0*	5
Desert Mountain	13A2	5600	1/6	30	6.4	8.5	2.7	7.2*	7
Marias Pass	13A5	5250	1/2	30	8.4	8.8	4.2	7.8	22
Spotted Bear Mt.	13B2	7000	1/4	25	5.9	7.9	-	-	1
Trout Lake	13A12	3600	1/3	23	4.9	6.6	-	13.3*	2
Twin Creeks	13B11	3580	1/3	18	3.5	4.8	-	-	1
<u>CLARK FORK BASIN</u>									
Coyote Hill	13B10	4200	1/3	19	4.8	7.0	2.8	8.0*	5
Chessman Res.	12C5	6200	12/31	0.5	0.1	3.6	0.9	2.1	21
Lubrecht Forest #6	13C8	5400	1/2	4.0	1.1	3.7	0.8	4.0*	6
Storm Lake #2	13C7	7780	1/4	27	6.0	10.6	-	-	1
Tenmile, Lower	12C2	6250	12/28	10	2.2	5.4	1.5	2.8	21
Tenmile, Middle	12C3	6800	12/28	16	3.9	8.3	2.7	5.0	22
Tenmile, Upper	12C4	8000	12/28	20	5.2	9.8	3.7	6.5	22
**Lookout	15B2	5250	1/2	53	15.6	27.0	10.9	21.1*	7
TV Mountain	14B1	6800	12/31	31	8.2	-	-	-	1
<u>BITTERROOT BASIN</u>									
Gibbons Pass	13D2	7100	12/31	42	11.2	19.5	5.5	12.0*	7

\*Average is for less than 15 years of record in the 1938-52 period.

\*\*Adjacent Basin.



STATUS OF RESERVOIR STORAGE  
MISSOURI RIVER IN MONTANA  
January, 1957

BASIN & STREAM	RESERVOIR	USABLE CAPACITY 1000's AF	THOUSAND ACRE FEET IN STORAGE			
			ABOUT JANUARY FIRST			15-Yr. Avg. 1938-52
			1957	1956	1955	
<u>MISSOURI RIVER BASIN</u>						
Beaverhead	Lima	84.00	8.23	18.18	11.75	36.645*
Ruby River	Ruby	38.85	-	-	-	-
Madison River	Hebgen Lake	345.00	157.1	184.90	167.50	241.652
Madison River	Ennis Lake	41.00	38.35	31.70	38.16	34.123
Hyalite Creek	Middle Creek	8.03	2.45	3.06	4.23	3.690*
Missouri River	Canyon Ferry	2,043.00	1,742.0	1,646.0	1,311.0	-
Missouri River	Hauser & Helena	62.50	61.94	60.18	55.09	46.11 *
Missouri River	Lake Helena	10.45	10.24	9.62	7.90	6.23 *
Missouri River	Holter Lake	81.92	73.97	50.58	62.19	58.44
N. Fk. Sun River	Gibson	105.00	35.04	69.21	63.95	55.07
N. Fk. Sun River	Willow Cr.	32.30	22.87	26.68	24.10	12.47
Marias	Tiber Res.	1,316.00	-	28.22	-	-
Birch Creek	Swift	30.00	19.85	20.99	24.48	18.23
Dupuyer & Birch	Lake Francis	112.00	89.96	92.46	95.31	72.53
Judith River	Ackley Lake	5.82	-	4.15	4.58	4.24
Missouri River	Ft. Peck	19,000.00	5,514.0	4,677.0	9,314.0	9,904.26
Milk River	Fresno	127.20	80.24	69.55	77.22	55.81
Milk River	Nelson	66.80	55.10	41.39	50.64	29.57
W. Rosebud Cr.	Mystic Lake	20.80	10.62	9.48	7.89	11.09
Red Lodge Cr.	Cooney	27.50	-	-	-	9.56 *
Tongue River	Tongue River	73.90	-	-	7.00	8.18 *
Swiftcurrent Cr.	Sherburne Lake	66.10	15.00	19.05	16.98	17.27
<u>MISSOURI RIVER BASIN - WYOMING</u>						
Shoshone River	Buffalo Bill	440.00	173.0	139.7	145.8	270.8
Wind River	Boysen	408.60	271.8	81.9	339.6	-
Wind River	Pilot Butte	31.6	9.1	11.7	9.2	12.88
Bull Creek	Bull Lake	152.00	84.9	72.6	66.3	63.64 *
Belle Fourche	Key Hole	190.00	11.3	18.1	-	-
<u>MISSOURI RIVER BASIN - NORTH DAKOTA</u>						
Heart River	Heart Butte	54.80	44.9	46.8	51.8	43.5 *
Heart River	Dickerson	4.30	3.2	3.0	2.5	3.97 *
Missouri River	Garrison Lk	13,805.00	595.0	524.0	239.0	-
<u>MISSOURI RIVER BASIN - SOUTH DAKOTA</u>						
Belle Fourche	Belle Fourche	185.00	23.0	69.8	-	-
Cheyenne River	Angostura	160.00	23.9	77.2	-	-
Cheyenne River	Deerfield	15.1	7.7	9.7	-	-
Grand River	Shadehill	84.00	76.4	71.0	-	-
Missouri River	Ft. Randall	2,401.60	552.7	1,629.1	-	-

\*Average is for less than 15 years of record in the 1938-52 period.



STATUS OF RESERVOIR STORAGE  
COLUMBIA RIVER IN MONTANA  
January, 1957

BASIN & STREAM	RESERVOIR	USABLE CAPACITY 1000's AF	THOUSAND ACRE FEET IN STORAGE			
			ABOUT JANUARY FIRST			15-Yr. Avg. 1938-52
			1957	1956	1955	
<u>COLUMBIA RIVER BASIN</u>						
Flint Creek	Georgetown Lk	31.00	22.75	23.77	24.38	23.49
S. Fk. Flathead <u>5/</u>	Hungry Horse	3,500.00	2,538.0	3,029.0	2,701.0	1,426.9 *
Flathead River	Flathead Lk	1,791.00	1,126.0	925.5	1,109.0	935.0
Flathead River <u>6/</u>	Camas Res.	42.80	29.04	33.80	38.10	17.12 *
Flathead River <u>7/</u>	Mission Valley	98.60	24.15	28.64	54.55	32.45 *
Jocko Creek	Lower Jocko Lk	7.6	.505	Snowbound		

5/ 4-year average

6/ Camas Reservoirs are shown as a sum of (4) small reservoirs on the west side of Flathead Lake located on Dry Creek and Little Bitterroot River.

7/ Mission Valley Reservoirs are shown as a sum of (8) small reservoirs located south and east of Flathead Lake. Both Camas and Mission Valley reservoirs are operated by the Indian Irrigation Service.

\* Average is for less than 15 years of record in the 1938-52 period.

