

RECLAMATION

Managing Water in the West

October 5, 2017

Dear Customer:

Attached is the monthly water supply outlook and projected operations for Yellowtail Dam and Powerplant. Streamflows into Bighorn Lake during September were 135% of average. The October inflow into Bighorn Lake is expected to equal 277,300 acre-feet (174% of average). If you have any questions or concerns, please feel free to call me at 406-247-7334 or Stephanie Micek 406-247-7320.

Clayton R. Jordan
Reservoir and River Operations



U. S. Department of the Interior
Bureau of Reclamation
Montana Area Office
River and Reservoir Operations

YELLOWTAIL RESERVOIR OPERATIONS
 Water Supply Forecasts and Reservoir Operations
 October 1, 2017

Present Elevations & Storages:

	Elevation (feet)	Storage (acre-feet)	Percent of Average	Percent Full
Boysen	4723.73	717,007	125	97
Buffalo Bill	5378.23	528,150	118 *	82
Bighorn Lake	3639.52	1,014,564	115	99

Actual Inflows (1,000's of Acre-Feet):

Water Year 2017	Inflow	Percent of Average
October	202.6	127
November	139.9	116
December	109.2	106
January	120.5	117
February	212.9	200
March	306.7 (highest of record)	216
April	603.4 (highest of record)	411
May	813.0 (highest of record)	296
June	920.4 (3 rd highest of record)	217
July	616.3 (6 th highest of record)	249
August	216.4	147
September	219.0	135
April-July	2,953.1 (highest of record)	270
Water Year 2016	Inflow	Percent of Average
September	180.9	111
April-July	1,031.8	93

Actual Gains between Boysen and Buffalo Bill to Yellowtail (1,000's of Acre-Feet):

Water Year 2017	Gains	Percent of Average
October	116.9	177
November	77.5	136
December	40.2	106
January	51.8	129
February	144.0 (highest of record)	293
March	98.0	137
April	136.5 (highest of record)	411
May	143.7	272
June	162.1	184
July	-96.8 (avg. -62.1)	-
August	-37.1 (avg. -51.9)	-
September	31.6	319
Water Year 2016	Gains	Percent of Average
September	47.9	504
April-July	-78.1 (avg. 117.8)	-

October 1 Runoff Forecast (October Inflows - 1,000's of Acre-Feet):

Inflows	Percent of Average
277,300	174

Average based on past 30 years

*This does not reflect the 30 year average because in 1992 the capacity of the reservoir was increased to approximately 646,565 acre-feet as a result of raising the dam. The average used here reflects data from 1993 through 2016.

Based on Most Probable Inflow Forecast

BIGHORN LAKE MONTHLY OPERATIONS

Bighorn Reservoir		Initial Cont Elev 3639.52 ft				Maximum Cont Elev 3657.00 ft				Minimum Cont Elev 3547.00 ft				Total
	2017	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Boysen Release	kaf	120.8	65.5	67.6	67.6	61.1	67.6	79.2	123.0	119.0	121.1	107.6	74.6	1074.7
Boysen Release	cfs	1965	1101	1099	1099	1100	1099	1331	2000	2000	1970	1750	1254	
Buffalo Bill Release	kaf	79.7	31.5	21.8	21.8	19.8	63.9	80.5	120.2	124.9	129.5	120.6	88.2	902.4
Buffalo Bill Release	cfs	1296	529	355	355	357	1039	1353	1955	2099	2106	1961	1482	
Station Gain	kaf	76.8	61.7	42.3	47.7	56.1	73.5	39.9	62.2	119.0	-61.3	-45.3	16.4	489.0
Monthly Inflow	kaf	277.3	158.7	131.7	137.1	137.0	205.0	199.6	305.4	362.9	189.3	182.9	179.2	2466.1
Monthly Inflow	cfs	4510	2667	2142	2230	2467	3334	3354	4967	6099	3079	2975	3012	
Turbine Release	kaf	287.8	191.8	198.3	198.3	179.0	198.3	205.4	222.8	227.0	223.6	207.2	176.9	2516.4
Bypass/Spill/Waste	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Release	kaf	287.8	191.8	198.3	198.3	179.0	198.3	205.4	222.8	227.0	223.6	207.2	176.9	2516.4
Total Release	cfs	4681	3223	3225	3225	3223	3225	3452	3623	3815	3637	3370	2973	
Spring Flow	kaf	4.3	4.2	4.3	4.3	3.9	4.3	4.2	4.3	4.2	4.3	4.3	4.2	50.8
Irrigation Reqmnt	kaf	0.0	0.0	0.0	0.0	0.0	0.0	1.3	11.9	22.8	28.1	27.0	17.5	108.6
Afterbay Rels	kaf	292.1	196.0	202.6	202.6	182.9	202.6	209.6	227.1	231.2	227.9	211.5	181.1	2567.2
Afterbay Rels	cfs	4751	3294	3295	3295	3293	3295	3522	3693	3885	3706	3440	3043	
River Release	kaf	292.1	196.0	202.6	202.6	182.9	202.6	208.3	215.2	208.4	199.8	184.5	163.6	2458.6
River Release	cfs	4751	3294	3295	3295	3293	3295	3501	3500	3502	3249	3001	2749	
Min Release	kaf	292.1	89.3	92.2	92.2	83.3	92.2	208.3	215.2	89.3	199.8	184.5	163.6	1802.0
End-Month Content	kaf	1004.1	971.0	904.4	843.2	801.2	807.9	802.1	884.7	1020.6	986.3	962.0	964.3	
End-Month Elevation	ft	3638.67	3635.84	3629.23	3621.86	3616.00	3617.00	3616.14	3626.99	3640.00	3637.18	3635.03	3635.24	
Net Change Content	kaf	-10.5	-33.1	-66.6	-61.2	-42.0	6.7	-5.8	82.6	135.9	-34.3	-24.3	2.3	-50.3
Yellowtail Power	2017	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Turbine Release	kaf	287.8	191.8	198.3	198.3	179.0	198.3	205.4	222.8	227.0	223.6	207.2	176.9	2516.4
Generation	gwh	118.489	76.325	78.089	76.800	67.460	75.949	78.837	88.374	92.825	90.755	83.076	69.507	996.486
End-Month Power Cap	mw	286.3	283.6	277.3	270.3	264.7	265.7	264.9	275.2	287.5	284.8	282.8	283.0	
% Max Gen		55	37	36	36	35	35	38	41	45	42	39	34	
Ave kwh/af		412	398	394	387	377	383	384	397	409	406	401	393	396
Upstream Generation	gwh	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Generation	gwh	118.489	76.325	78.089	76.800	67.460	75.949	78.837	88.374	92.825	90.755	83.076	69.507	996.486

Based on Minimum Probable Inflow Forecast

BIGHORN LAKE MONTHLY OPERATIONS

Bighorn Reservoir		Initial Cont Elev 3639.52 ft				Maximum Cont Elev 3657.00 ft				Minimum Cont Elev 3547.00 ft				Total
	2017	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Boysen Release	kaf	120.8	65.5	67.6	67.6	61.1	49.2	47.6	63.0	71.4	70.7	63.0	44.6	792.1
Boysen Release	cfs	1965	1101	1099	1099	1100	800	800	1025	1200	1150	1025	750	
Buffalo Bill Release	kaf	79.7	28.8	21.8	21.8	19.8	21.8	31.7	101.2	105.0	118.7	104.3	78.3	732.9
Buffalo Bill Release	cfs	1296	484	355	355	357	355	533	1646	1765	1930	1696	1316	
Station Gain	kaf	59.6	61.3	41.9	47.2	55.6	73.0	20.3	10.0	1.3	-70.0	-52.3	-0.8	247.1
Monthly Inflow	kaf	260.1	155.6	131.3	136.6	136.5	144.0	99.6	174.2	177.7	119.4	115.0	122.1	1772.1
Monthly Inflow	cfs	4230	2615	2135	2222	2458	2342	1674	2833	2986	1942	1870	2052	
Turbine Release	kaf	275.4	177.9	183.8	183.8	166.0	183.9	116.1	115.2	122.7	131.4	130.3	117.4	1903.9
Bypass/Spill/Waste	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Release	kaf	275.4	177.9	183.8	183.8	166.0	183.9	116.1	115.2	122.7	131.4	130.3	117.4	1903.9
Total Release	cfs	4479	2990	2989	2989	2989	2991	1951	1874	2062	2137	2119	1973	
Spring Flow	kaf	4.3	4.2	4.3	4.3	3.9	4.3	4.2	4.3	4.2	4.3	4.3	4.2	50.8
Irrigation Reqmnt	kaf	3.0	0.0	0.0	0.0	0.0	0.0	1.3	11.9	22.8	28.1	27.0	17.5	111.6
Afterbay Rels	kaf	279.7	182.1	188.1	188.1	169.9	188.2	120.3	119.5	126.9	135.7	134.6	121.6	1954.7
Afterbay Rels	cfs	4549	3060	3059	3059	3059	3061	2022	1943	2133	2207	2189	2044	
River Release	kaf	276.7	182.1	188.1	188.1	169.9	188.2	119.0	107.6	104.1	107.6	107.6	104.1	1843.1
River Release	cfs	4500	3060	3059	3059	3059	3061	2000	1750	1749	1750	1750	1749	
Min Release	kaf	276.7	89.3	92.2	92.2	83.3	92.2	119.0	107.6	104.1	107.6	107.6	104.1	1375.9
End-Month Content	kaf	999.3	977.0	924.5	877.3	847.8	807.9	791.4	850.4	905.4	893.4	878.1	882.8	
End-Month Elevation	ft	3638.27	3636.37	3631.40	3626.11	3622.45	3617.00	3614.50	3622.79	3629.34	3627.99	3626.21	3626.76	
Net Change Content	kaf	-15.3	-22.3	-52.5	-47.2	-29.5	-39.9	-16.5	59.0	55.0	-12.0	-15.3	4.7	-131.8
Yellowtail Power	2017	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Turbine Release	kaf	275.4	177.9	183.8	183.8	166.0	183.9	116.1	115.2	122.7	131.4	130.3	117.4	1903.9
Generation	gwh	113.250	70.134	72.006	71.157	62.752	69.738	40.292	40.682	44.543	48.210	47.537	41.995	722.296
End-Month Power Cap	mw	285.9	284.1	279.4	274.3	270.9	265.7	263.3	271.2	277.4	276.1	274.4	274.9	
% Max Gen		53	34	34	33	32	33	19	19	21	22	22	20	
Ave kwh/af		411	394	392	387	378	379	347	353	363	367	365	358	379
Upstream Generation	gwh	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Generation	gwh	113.250	70.134	72.006	71.157	62.752	69.738	40.292	40.682	44.543	48.210	47.537	41.995	722.296

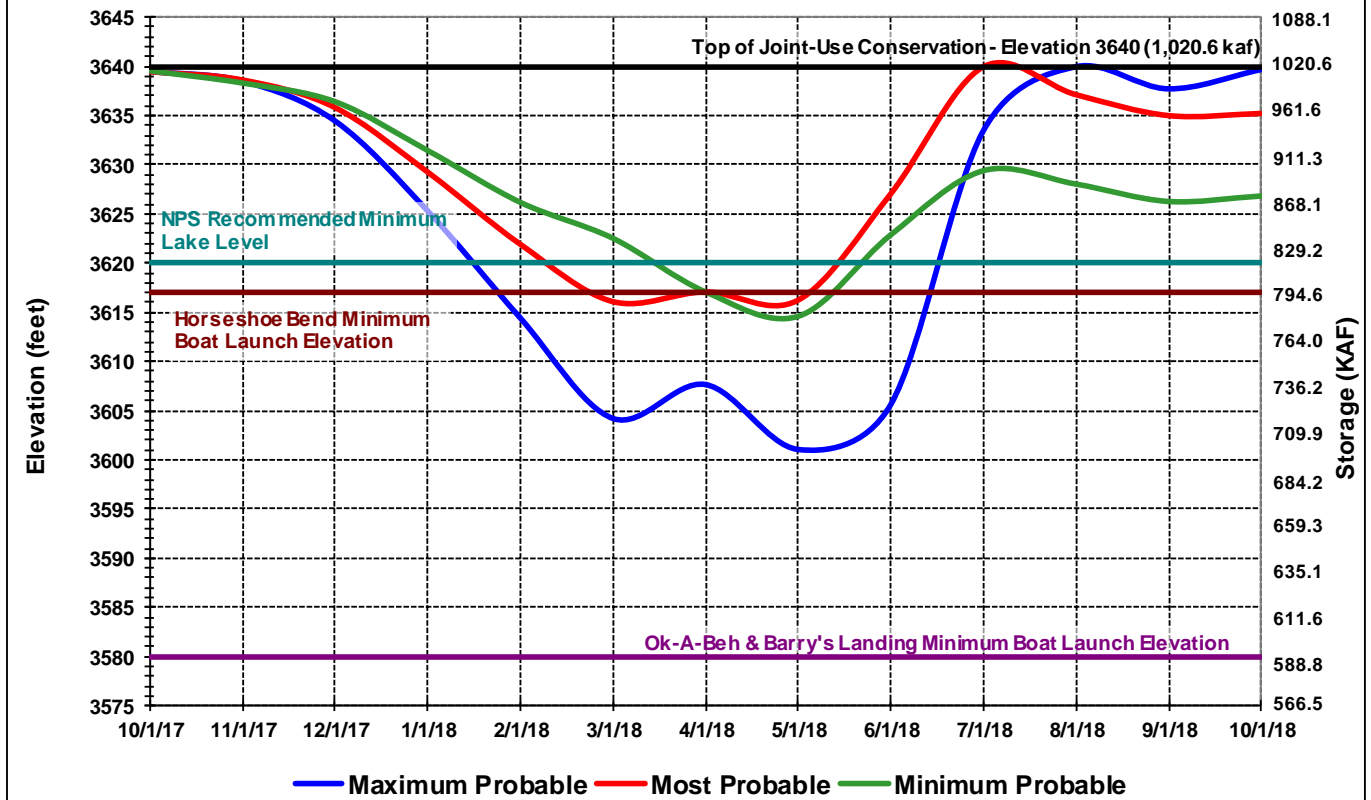
Based on Maximum Probable Inflow Forecast

BIGHORN LAKE MONTHLY OPERATIONS

Bighorn Reservoir		Initial Cont Elev 3639.52 ft				Maximum Cont Elev 3657.00 ft				Minimum Cont Elev 3547.00 ft				Total
	2017	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
Boysen Release	kaf	120.8	65.5	67.6	67.6	61.1	103.7	190.4	199.8	238.0	255.2	132.2	86.8	1588.7
Boysen Release	cfs	1965	1101	1099	1099	1100	1687	3200	3249	4000	4150	2150	1459	
Buffalo Bill Release	kaf	79.7	36.1	21.9	21.8	19.8	82.7	113.8	186.3	238.0	255.7	122.3	107.0	1285.1
Buffalo Bill Release	cfs	1296	607	356	355	357	1345	1912	3030	4000	4159	1989	1798	
Station Gain	kaf	93.5	62.1	42.7	48.1	56.6	74.0	51.0	128.9	266.4	0.1	-28.7	36.7	831.4
Monthly Inflow	kaf	294.0	163.7	132.2	137.5	137.5	260.4	355.2	515.0	742.4	511.0	225.8	230.5	3705.2
Monthly Inflow	cfs	4781	2751	2150	2236	2476	4235	5969	8376	12476	8311	3672	3874	
Turbine Release	kaf	306.1	210.4	217.4	217.4	196.4	241.7	357.0	368.9	357.0	368.9	253.3	206.7	3301.2
Bypass/Spill/Waste	kaf	0.0	0.0	0.0	0.0	0.0	0.0	33.6	122.1	179.5	66.5	0.0	0.0	401.7
Total Release	kaf	306.1	210.4	217.4	217.4	196.4	241.7	390.6	491.0	536.5	435.4	253.3	206.7	3702.9
Total Release	cfs	4978	3536	3536	3536	3536	3931	6564	7985	9016	7081	4120	3474	
Spring Flow	kaf	4.3	4.2	4.3	4.3	3.9	4.3	4.2	4.3	4.2	4.3	4.3	4.2	50.8
Irrigation Reqmnt	kaf	3.0	0.0	0.0	0.0	0.0	0.0	1.3	11.9	22.8	28.1	27.0	17.5	111.6
Afterbay Rels	kaf	310.4	214.6	221.7	221.7	200.3	246.0	394.8	495.3	540.7	439.7	257.6	210.9	3753.7
Afterbay Rels	cfs	5048	3606	3606	3606	3607	4001	6635	8055	9087	7151	4189	3544	
River Release	kaf	307.4	214.6	221.7	221.7	200.3	246.0	393.5	483.4	517.9	411.6	230.6	193.4	3642.1
River Release	cfs	4999	3606	3606	3606	3607	4001	6613	7862	8704	6694	3750	3250	
Min Release	kaf	307.4	214.6	221.7	221.7	200.3	246.0	89.3	92.2	89.3	92.2	230.6	193.4	2198.7
End-Month Content	kaf	1002.5	955.8	870.6	790.7	731.8	750.5	715.1	739.1	945.0	1020.6	993.1	1016.9	
End-Month Elevation	ft	3638.53	3634.46	3625.30	3614.39	3604.17	3607.62	3601.00	3605.54	3633.44	3640.00	3637.75	3639.70	
Net Change Content	kaf	-12.1	-46.7	-85.2	-79.9	-58.9	18.7	-35.4	24.0	205.9	75.6	-27.5	23.8	2.3
Yellowtail Power	2017	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Turbine Release	kaf	306.1	210.4	217.4	217.4	196.4	241.7	357.0	368.9	357.0	368.9	253.3	206.7	3301.2
Generation	gwh	125.901	84.392	85.711	83.597	72.912	92.244	145.800	150.660	145.800	150.660	103.786	83.709	1325.172
End-Month Power Cap	mw	286.1	282.3	273.6	263.2	253.5	256.8	250.5	254.8	281.3	287.5	285.4	287.2	
% Max Gen		59	41	40	39	38	43	70	70	70	70	48	40	
Ave kwh/af		411	401	394	385	371	382	408	408	408	408	410	405	401
Upstream Generation	gwh	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total Generation	gwh	125.901	84.392	85.711	83.597	72.912	92.244	145.800	150.660	145.800	150.660	103.786	83.709	1325.172

BIGHORN LAKE

BIGHORN LAKE ELEVATION



BIGHORN RIVER FLOW BELOW AFTERBAY

