

# RECLAMATION

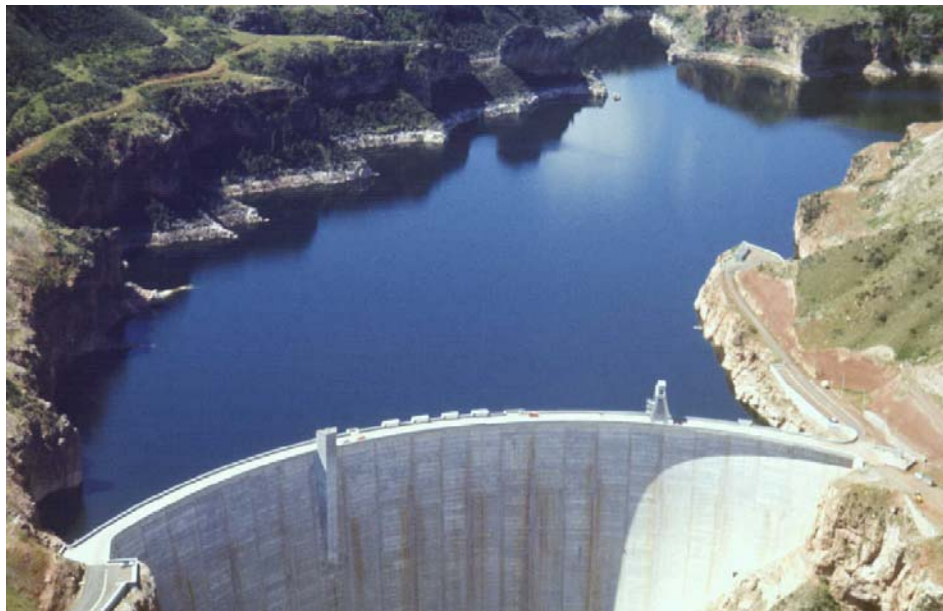
## *Managing Water in the West*

June 3, 2010

Dear Customer:

Attached are the monthly water supply outlook and projected reservoir and river operating plans prepared in June. Storage in Bighorn Lake on June 1 was 112 percent of average and 8.1 feet below the top of the joint-use pool. It was also 1.5 feet higher than on April 1. Snowpack conditions in the Bighorn Basin were 115 percent of average on June 1. Based on the high elevation snowpack, streamflow accretions, and the planned releases out of Boysen and Buffalo Bill Reservoirs, the water supply forecast prepared in June indicates the June-July inflow to Bighorn Lake to be 801,100 acre-feet (114 percent of average). If you have any questions or concerns, please feel free to call me at (406) 247-7318.

Tim H. Felchle  
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  
 June 1, 2010

**Present Elevations & Storages:**

<u>Reservoir</u>	<u>Elevation</u>	<u>Storage</u>	<u>Percent of Normal</u>
Boysen	4715.83	578,609	105
Buffalo Bill	5358.04	387,276	89
Bighorn Lake	3631.90	978,282	112

**Actual Inflows (1,000 Acre-Feet):**

<u>Month</u>	<u>Inflow</u>	<u>Percent of Normal</u>
<i>April-July, 2009</i>	<i>1,656.6</i>	<i>149</i>
<i>WY-2009 Total</i>	<i>2,729.7</i>	<i>116</i>
October	180.7	99
November	141.4	92
December	111.8	81
January	134.4	101
February	120.8	89
March	137.7	81
April	121.4	74
May	340.9	138

**Actual Gains Between Boysen and Buffalo Bill to Yellowtail (1,000 Acre-Feet):**

<u>Month</u>	<u>Gains</u>	<u>Percent of Normal</u>
<i>April-July, 2009</i>	<i>343.0</i>	<i>119</i>
<i>WY-2009 Total</i>	<i>703.2</i>	<i>104</i>
October	69.0	97
November	61.1	98
December	34.2	79
January	56.9	123
February	53.8	101
March	66.0	89
April	28.3	81
May	47.5	79

**June 1 Runoff Forecast (June-July Flows - 1,000 Acre-Feet):**

<u>Agency</u>	<u>Inflows</u>	<u>Percent of Normal</u>
<b>USBR</b>	<b>801.1</b>	<b>114</b>

**Snowpack Conditions:**

S N O W - P R E C I P I T A T I O N U P D A T E

Based on Mountain Data from NRCS SNOTEL Sites

As of TUESDAY: JUNE 1 , 2010

<u>BASIN</u> Data Site Name	<u>ELEV.</u> (Ft)	<u>SNOW WATER EQUIVALENT</u>			<u>TOTAL PRECIPITATION</u>		
		<u>Current</u>	<u>Average</u>	<u>Avg</u>	<u>Current</u>	<u>Average</u>	<u>Avg</u>
-----							
UPPER YELLOWSTONE RIVER BASIN							
BEARTOOTH LAKE	9360	16.4	20.6	80	19.5	26.9	72
BOX CANYON	6670	.0	.0	100*	16.0	18.1	88
BRACKETT CREEK	7320	16.9	5.5	307	38.9	36.7	106
BURNT MTN	5880	.0	.0	100*	20.4	25.2	81
CANYON	7870	.0	1.7	0	16.3	20.4	80
COLE CREEK	7850	17.4	11.4	153	20.9	27.2	77
EAST BOULDER MINE	6335	.0	-M	*	17.0	-M	*
EVENING STAR	9200	18.0	27.1	66	28.5	34.3	83
FISHER CREEK	9100	27.9	30.4	92	33.0	46.5	71
MONUMENT PEAK	8850	15.8	16.4	96	24.8	28.9	86
NORTHEAST ENTRANCE	7350	.0	.5	0*	13.9	17.5	79
PARKER PEAK	9400	16.1	18.9	85	19.2	23.1	83

PLACER BASIN	8830	16.1	15.1	107	26.1	28.9	90
PORCUPINE	6500	.0	.0	100*	19.0	18.7	102
SACAJAWEA	6550	2.1	.0	*	36.4	33.0	110
SHOWER FALLS	8100	25.4	20.9	122	32.8	36.6	90
S FORK SHIELDS	8100	17.3	12.7	136	32.9	31.0	106
SYLVAN LAKE	8420	9.9	12.1	82	25.4	28.9	88
SYLVAN ROAD	7120	.0	.1	0*	18.0	23.2	78
THUMB DIVIDE	7980	.0	2.4	0	18.2	24.7	74
TWO OCEAN PLATEAU	9240	24.6	25.6	96	24.8	36.2	69
WHITE MILL	8700	16.2	18.6	87	23.3	35.1	66
WOLVERINE	7650	.0	.0	100*	10.5	18.2	58
YOUNTS PEAK	8350	5.5	7.6	72	14.4	22.0	65
				-----			-----
Basin wide percent of average				99			83

WIND RIVER BASIN (WYOMING)

BURROUGHS CREEK	8750	5.5	3.8	145	14.5	22.5	64
COLD SPRINGS	9630	1.8	1.1	164	19.2	17.0	113
DEER PARK	9700	17.9	8.5	211	28.9	30.8	94
HOBBS PARK	10100	23.3	10.5	222	28.7	20.9	137
KIRWIN	9550	7.4	5.8	128	17.3	17.4	99
LITTLE WARM	9370	3.5	2.2	159	15.7	19.9	79
OWL CREEK	8975	.0	.6	0	13.2	11.0	120
SOUTH PASS	9040	11.7	6.8	172	26.6	25.9	103
ST. LAWRENCE ALT	8620	.0	.7	0*	20.4	15.1	135
TOGWOTEE PASS	9580	22.3	22.4	100	26.8	32.6	82
TOWNSEND CREEK	8700	7.4	1.9	389	25.4	18.7	136
YOUNTS PEAK	8350	5.5	7.6	72	14.4	22.0	65
				-----			-----
Basin wide percent of average				148			99

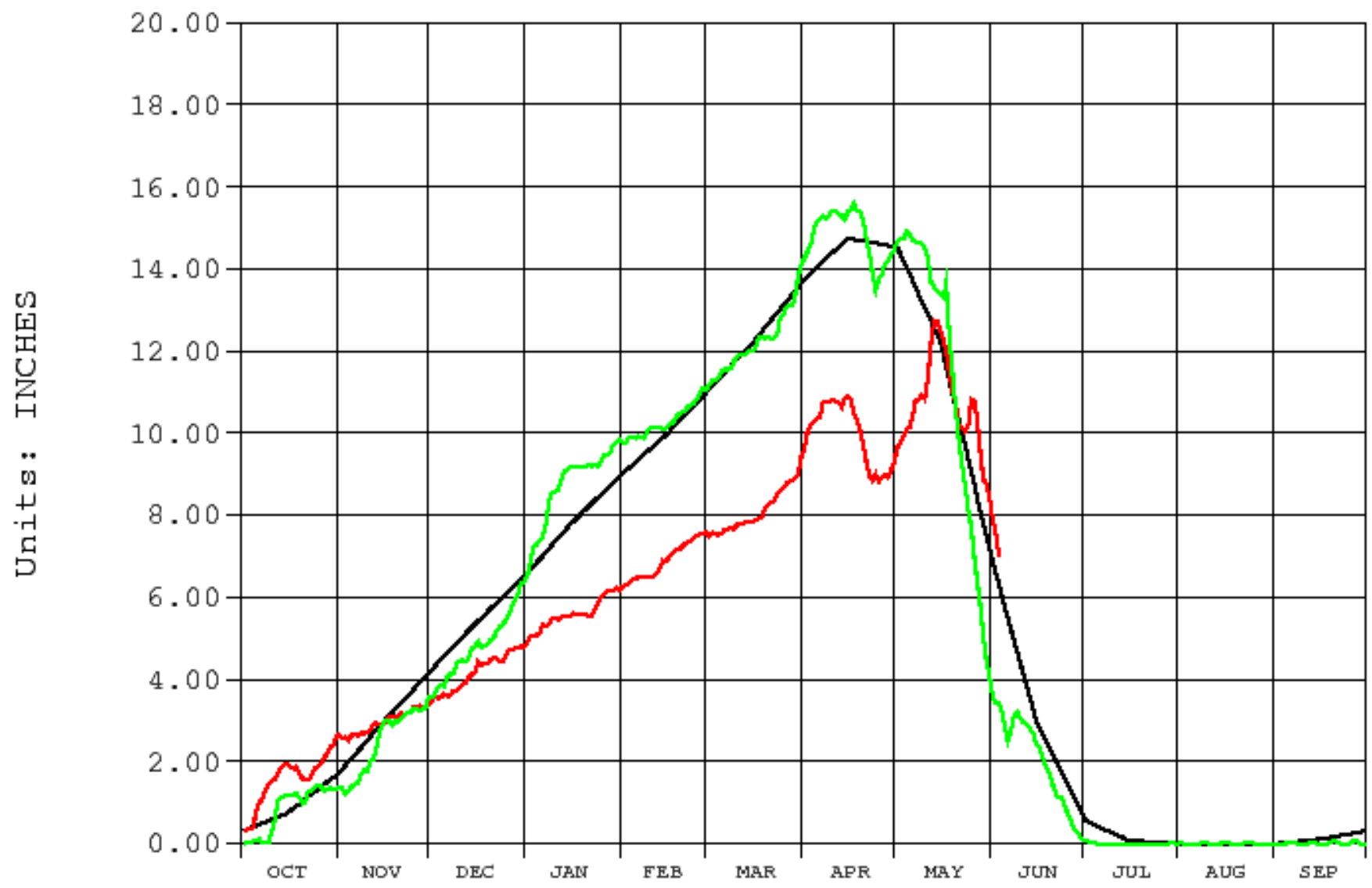
SHOSHONE RIVER BASIN (WYOMING)

BLACKWATER	9780	21.7	25.1	86	23.7	28.8	82
EVENING STAR	9200	18.0	27.1	66	28.5	34.3	83
MARQUETTE	8760	9.1	4.5	202	18.5	17.9	103
SYLVAN LAKE	8420	9.9	12.1	82	25.4	28.9	88
SYLVAN ROAD	7120	.0	.1	0*	18.0	23.2	78
YOUNTS PEAK	8350	5.5	7.6	72	14.4	22.0	65
				-----			-----
Basin wide percent of average				84			83

BIGHORN RIVER BASIN (WYOMING)

BALD MTN.	9380	18.3	17.0	108	19.5	25.2	77
BEAR TRAP MEADOW	8200	.0	.0	100*	15.2	14.1	108
BLACKWATER	9780	21.7	25.1	86	23.7	28.8	82
BONE SPRINGS DIV	9350	12.2	8.8	139	18.5	22.2	83
EVENING STAR	9200	18.0	27.1	66	28.5	34.3	83
GRAVE SPRINGS	8550	4.1	2.0	205	19.0	16.0	119
KIRWIN	9550	7.4	5.8	128	17.3	17.4	99
MARQUETTE	8760	9.1	4.5	202	18.5	17.9	103
MIDDLE POWDER	7760	3.6	3.0	120	15.7	19.0	83
OWL CREEK	8975	.0	.6	0	13.2	11.0	120
POWDER RIVER PASS	9480	3.9	2.6	150	18.5	19.5	95
SHELL CREEK	9580	14.2	10.9	130	19.6	20.4	96
SYLVAN LAKE	8420	9.9	12.1	82	25.4	28.9	88
SYLVAN ROAD	7120	.0	.1	0*	18.0	23.2	78
TIMBER CREEK	7950	.0	.6	0	16.0	14.3	112
YOUNTS PEAK	8350	5.5	7.6	72	14.4	22.0	65
				-----			-----
Basin wide percent of average				100			90

Archive Data From 1-OCT Through 30-SEP  
Plotted 06/03/2010 15:03



BHR Bighorn Lake (Yellowtail), Bighorn River near Fort Smith, MT  
SE\_AVG Snow Water Equivalent Average (inches) 2010  
SE Snow Water Equivalent (inches) 2010 2009

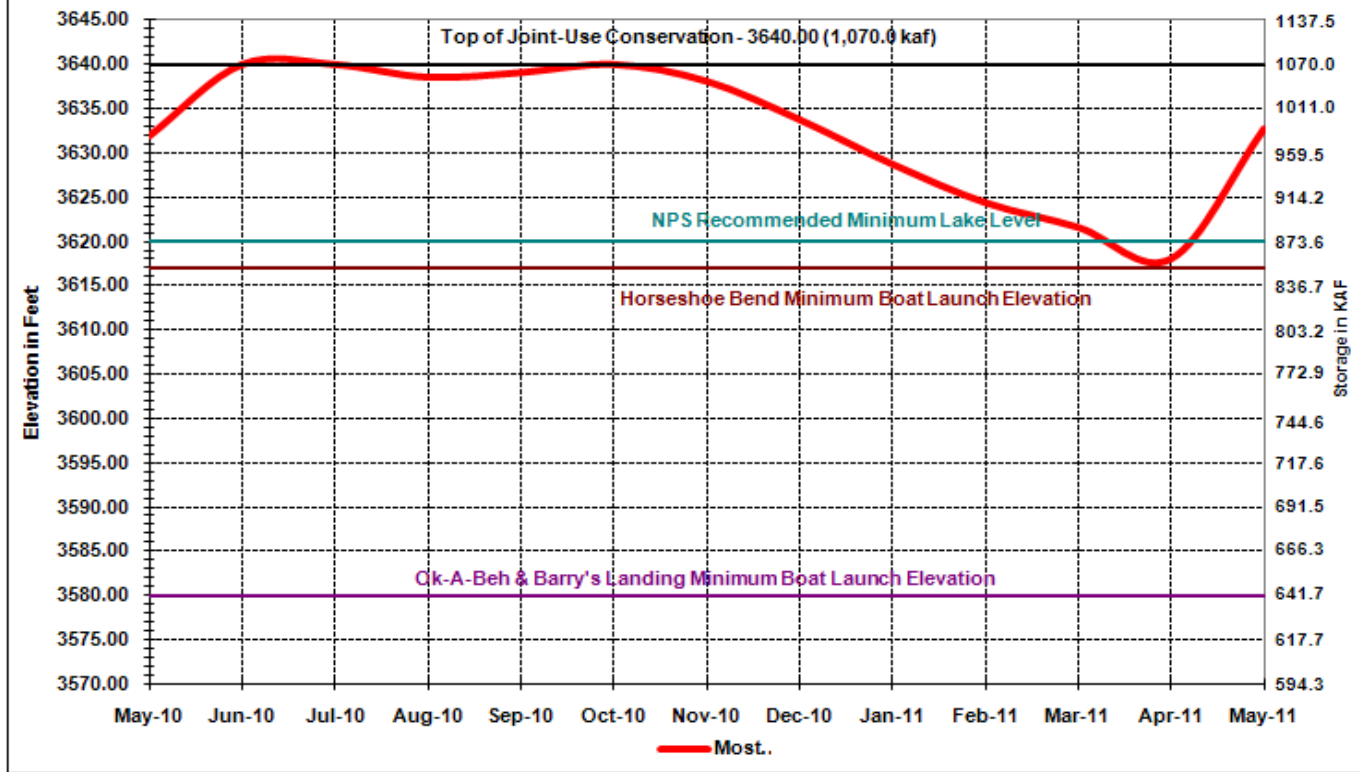
BHXAOP V1.12 Run: 03-Jun-2010 15:17  
 Based on Most Probable Inflow Forecast

BIGHORN LAKE MONTHLY OPERATIONS

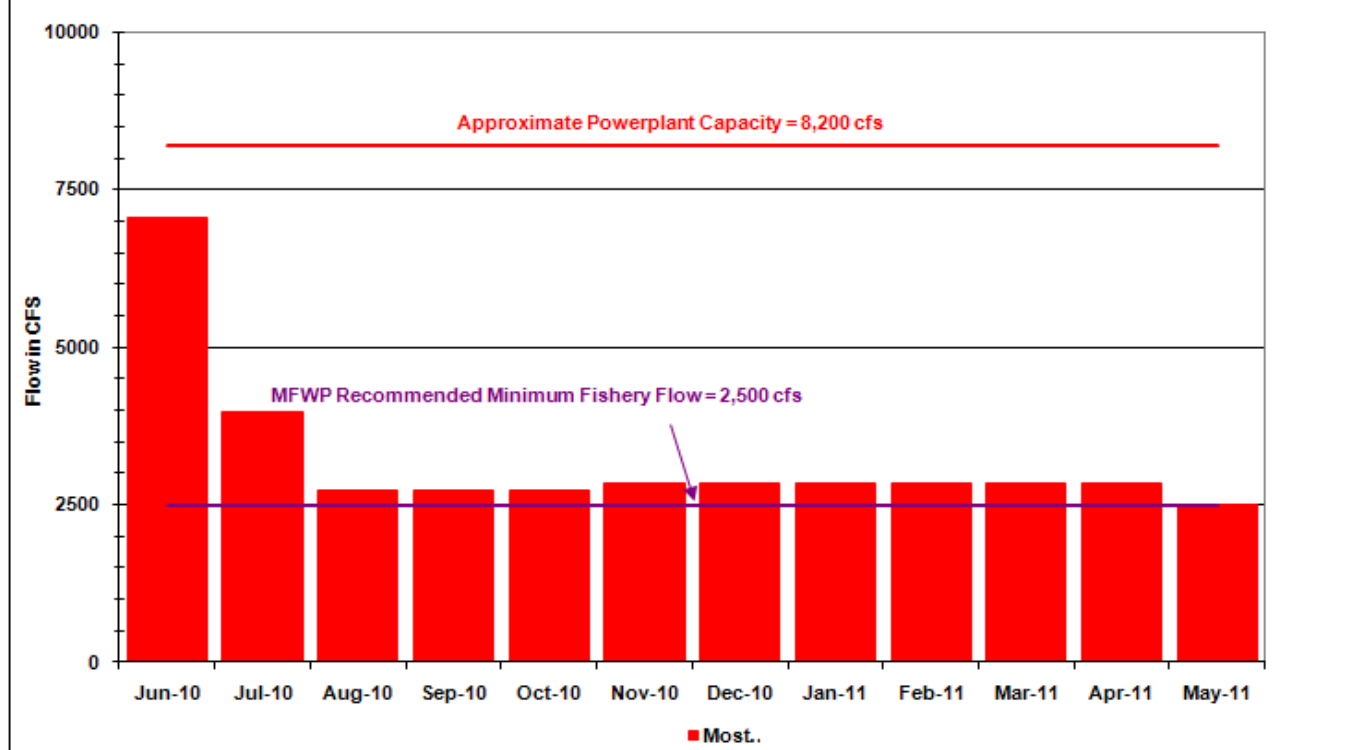
Bighorn Reservoir		Initial Cont 978.3 kaf Elev 3631.90 ft				Maximum Cont 1328.4 kaf Elev 3657.00 ft				Minimum Cont 493.6 kaf Elev 3547.00 ft				Total
	2010	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
Boysen Release	kaf	315.3	193.9	93.9	62.5	61.5	59.5	61.5	61.6	55.6	61.5	77.6	157.4	1261.8
Boysen Release	cfs	5299	3153	1527	1050	1000	1000	1000	1002	1001	1000	1304	2560	
Buffalo Bill Riv Flo	kaf	106.2	118.7	118.6	107.2	43.2	26.8	21.8	21.8	19.7	21.8	31.7	101.2	738.7
Buffalo Bill Riv Flo	cfs	1785	1930	1929	1802	703	450	355	355	355	355	533	1646	
Station Gain	kaf	112.2	-45.2	-40.0	13.9	74.5	55.3	37.8	36.7	39.9	64.3	28.6	43.5	421.5
Monthly Inflow	kaf	533.7	267.4	172.5	183.6	179.2	141.6	121.1	120.1	115.2	147.6	137.9	302.1	2422.0
Monthly Inflow	cfs	8969	4349	2805	3086	2914	2380	1970	1953	2074	2400	2317	4913	
Turbine Release	kaf	442.0	267.4	190.4	177.1	167.8	164.8	170.3	170.3	153.8	170.4	165.4	174.0	2413.7
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	442.0	267.4	190.4	177.1	167.8	164.8	170.3	170.3	153.8	170.4	165.4	174.0	2413.7
Total Release	cfs	7428	4349	3097	2976	2729	2770	2770	2770	2769	2771	2780	2830	
Spring Flow	kaf	4.2	4.3	4.3	4.2	4.3	4.2	4.3	4.3	3.9	4.3	4.2	4.3	50.8
Irrigation Reqmnt	kaf	26.8	27.7	26.8	18.8	4.1	0.0	0.0	0.0	0.0	0.0	0.6	24.6	129.4
Afterbay Rels	kaf	446.2	271.7	194.7	181.3	172.1	169.0	174.6	174.6	157.7	174.7	169.6	178.3	2464.5
Afterbay Rels	cfs	7499	4419	3166	3047	2799	2840	2840	2840	2840	2841	2850	2900	
River Release	kaf	419.4	244.0	167.9	162.5	168.0	169.0	174.6	174.6	157.7	174.7	169.0	153.7	2335.1
River Release	cfs	7048	3968	2731	2731	2732	2840	2840	2840	2840	2841	2840	2500	
Min Release	kaf	148.8	153.7	153.7	148.8	153.7	148.8	153.7	153.7	138.8	153.7	148.8	153.7	1809.9
End-Month Targets	kaf	1070.0	1070.0			1070.0						858.5		
End-Month Content	kaf	1070.0	1070.0	1052.1	1058.6	1070.0	1046.8	997.6	947.4	908.8	886.0	858.5	986.6	
End-Month Elevation	ft	3640.00	3640.00	3638.55	3639.08	3640.00	3638.11	3633.76	3628.72	3624.37	3621.58	3618.01	3632.71	
Net Change Content	kaf	91.7	0.0	-17.9	6.5	11.4	-23.2	-49.2	-50.2	-38.6	-22.8	-27.5	128.1	8.3
Yellowtail Power	2010	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
Turbine Release	kaf	442.0	267.4	190.4	177.1	167.8	164.8	170.3	170.3	153.8	170.4	165.4	174.0	2413.7
Generation	gwh	178.767	109.641	77.864	72.303	68.688	67.343	68.837	67.772	60.318	66.129	63.621	68.113	969.396
End-Month Power Cap	mw	287.5	287.5	286.1	286.6	287.5	285.6	281.3	276.4	272.3	269.7	266.4	280.3	
% Max Gen		86	51	36	35	32	32	32	32	31	31	31	32	
Ave kwh/af		404	410	409	408	409	409	404	398	392	388	385	391	402
Upstream Generation	gwh	30.678	33.670	31.838	27.948	16.194	12.316	10.992	10.920	9.782	10.979	13.979	31.412	240.708
Total Generation	gwh	209.445	143.311	109.702	100.251	84.882	79.659	79.829	78.692	70.100	77.108	77.600	99.525	1210.104

# BIGHORN LAKE

## BIGHORN LAKE ELEVATION



## BIGHORN RIVER FLOW BELOW AFTERBAY



**WATER YEAR 2010**

**Supplemental**

**Information**

BHXAOP V1.12 Run: 03-Jun-2010 15:22  
 Based on Minimum Probable Inflow Forecast

BIGHORN LAKE MONTHLY OPERATIONS

Bighorn Reservoir		Initial Cont 978.3 kaf Elev 3631.90 ft				Maximum Cont 1328.4 kaf Elev 3657.00 ft				Minimum Cont 300.0 kaf Elev 3547.00 ft				Total	
		2010	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
Boysen Release	kaf	314.7	139.1	90.0	59.5	55.3	53.5	55.3	55.3	50.0	55.3	53.6	67.6	1049.2	
Boysen Release	cfs	5289	2262	1464	1000	899	899	899	899	900	899	901	1099		
Buffalo Bill Riv Flo	kaf	105.0	118.7	104.3	82.3	26.7	9.2	9.5	9.5	8.6	9.5	31.7	101.2	616.2	
Buffalo Bill Riv Flo	cfs	1765	1930	1696	1383	434	155	155	155	155	155	533	1646		
Station Gain	kaf	46.8	-74.5	-56.9	11.9	70.1	52.0	35.5	34.9	37.5	60.4	24.1	34.3	276.1	
Monthly Inflow	kaf	466.5	183.3	137.4	153.7	152.1	114.7	100.3	99.7	96.1	125.2	109.4	203.1	1941.5	
Monthly Inflow	cfs	7840	2981	2235	2583	2474	1928	1631	1621	1730	2036	1839	3303		
Turbine Release	kaf	374.8	183.3	176.2	163.4	149.4	134.3	138.8	138.8	125.4	138.9	134.9	143.3	2001.5	
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	374.8	183.3	176.2	163.4	149.4	134.3	138.8	138.8	125.4	138.9	134.9	143.3	2001.5	
Total Release	cfs	6299	2981	2866	2746	2430	2257	2257	2257	2258	2259	2267	2331		
Spring Flow	kaf	4.2	4.3	4.3	4.2	4.3	4.2	4.3	4.3	3.9	4.3	4.2	4.3	50.8	
Irrigation Reqmnt	kaf	26.8	27.7	26.8	18.8	0.0	0.0	0.0	0.0	0.0	0.0	0.6	24.6	125.3	
Afterbay Rels	kaf	379.0	187.6	180.5	167.6	153.7	138.5	143.1	143.1	129.3	143.2	139.1	147.6	2052.3	
Afterbay Rels	cfs	6369	3051	2936	2817	2500	2328	2327	2327	2328	2329	2338	2400		
River Release	kaf	352.2	159.9	153.7	148.8	153.7	138.5	143.1	143.1	129.3	143.2	138.5	123.0	1927.0	
River Release	cfs	5919	2601	2500	2501	2500	2328	2327	2327	2328	2329	2328	2000		
Min Release	kaf	148.8	153.7	153.7	148.8	153.7	119.0	123.0	123.0	111.1	123.0	119.0	123.0	1599.8	
End-Month Targets	kaf	1070.0	1070.0			1070.0						858.5			
End-Month Content	kaf	1070.0	1070.0	1031.2	1021.5	1024.2	1004.6	966.1	927.0	897.7	884.0	858.5	918.3		
End-Month Elevation	ft	3640.00	3640.00	3636.78	3635.94	3636.17	3634.41	3630.67	3626.47	3623.03	3621.33	3618.01	3625.48		
Net Change Content	kaf	91.7	0.0	-38.8	-9.7	2.7	-19.6	-38.5	-39.1	-29.3	-13.7	-25.5	59.8	-60.0	
Yellowtail Power	2010	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total	
Turbine Release	kaf	374.8	183.3	176.2	163.4	149.4	134.3	138.8	138.8	125.4	138.9	134.9	143.3	2001.5	
Generation	gwh	151.588	75.158	71.835	66.132	60.401	54.156	55.464	54.772	48.918	53.782	51.871	55.437	799.514	
End-Month Power Cap	mw	287.5	287.5	284.3	283.4	283.7	281.9	278.3	274.3	271.0	269.5	266.4	273.3		
% Max Gen		73	35	34	32	28	26	26	26	25	25	25	26		
Ave kwh/af		404	410	408	405	404	403	400	395	390	387	385	387	399	
Upstream Generation	gwh	30.165	33.030	27.722	21.395	10.574	6.614	6.804	6.752	6.053	6.880	11.945	25.341	193.275	
Total Generation	gwh	181.753	108.188	99.557	87.527	70.975	60.770	62.268	61.524	54.971	60.662	63.816	80.778	992.789	



BHXAOP V1.12 Run: 03-Jun-2010 15:27  
 Based on Maximum Probable Inflow Forecast

BIGHORN LAKE MONTHLY OPERATIONS

Bighorn Reservoir		Initial Cont 978.3 kaf Elev 3631.90 ft				Maximum Cont 1328.4 kaf Elev 3657.00 ft				Minimum Cont 493.6 kaf Elev 3547.00 ft				Total
	2010	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
Boysen Release	kaf	328.2	225.6	123.1	83.7	61.4	59.5	61.4	61.4	55.5	61.5	90.6	193.2	1405.1
Boysen Release	cfs	5516	3669	2002	1407	999	1000	999	999	999	1000	1523	3142	
Buffalo Bill Riv Flo	kaf	92.2	142.1	95.5	83.5	36.2	28.6	21.5	21.5	19.4	21.5	24.4	151.0	737.4
Buffalo Bill Riv Flo	cfs	1549	2311	1553	1403	589	481	350	350	349	350	410	2456	
Station Gain	kaf	199.0	-9.2	-33.6	34.9	76.0	58.2	41.1	41.2	46.8	69.4	32.4	60.8	617.0
Monthly Inflow	kaf	619.4	358.5	185.0	202.1	173.6	146.3	124.0	124.1	121.7	152.4	147.4	405.0	2759.5
Monthly Inflow	cfs	10409	5830	3009	3396	2823	2459	2017	2018	2191	2479	2477	6587	
Turbine Release	kaf	505.0	358.6	218.9	184.6	157.2	170.2	175.9	175.9	158.8	175.9	170.7	303.8	2755.5
Bypass/Spill/Waste	kaf	22.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.6
Total Release	kaf	527.6	358.6	218.9	184.6	157.2	170.2	175.9	175.9	158.8	175.9	170.7	303.8	2778.1
Total Release	cfs	8867	5832	3560	3102	2557	2860	2861	2861	2859	2861	2869	4941	
Spring Flow	kaf	4.2	4.3	4.3	4.2	4.3	4.2	4.3	4.3	3.9	4.3	4.2	4.3	50.8
Irrigation Reqmnt	kaf	21.8	27.7	26.8	11.9	0.0	0.0	0.0	0.0	0.0	0.0	0.5	11.2	99.9
Afterbay Rels	kaf	531.8	362.9	223.2	188.8	161.5	174.4	180.2	180.2	162.7	180.2	174.9	308.1	2828.9
Afterbay Rels	cfs	8937	5902	3630	3173	2627	2931	2931	2931	2930	2931	2939	5011	
River Release	kaf	510.0	335.2	196.4	176.9	161.5	174.4	180.2	180.2	162.7	180.2	174.4	296.9	2729.0
River Release	cfs	8571	5452	3194	2973	2627	2931	2931	2931	2930	2931	2931	4829	
Min Release	kaf	148.8	153.7	153.7	148.8	153.7	148.8	153.7	153.7	138.8	123.0	148.8	153.7	1779.2
End-Month Targets	kaf		1070.0			1070.0						858.5		
End-Month Content	kaf	1070.1	1070.0	1036.1	1053.6	1070.0	1046.1	994.2	942.4	905.3	881.8	858.5	959.7	
End-Month Elevation	ft	3640.01	3640.00	3637.21	3638.67	3640.00	3638.05	3633.43	3628.18	3623.95	3621.05	3618.01	3630.02	
Net Change Content	kaf	91.8	-0.1	-33.9	17.5	16.4	-23.9	-51.9	-51.8	-37.1	-23.5	-23.3	101.2	-18.6
Yellowtail Power	2010	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Total
Turbine Release	kaf	505.0	358.6	218.9	184.6	157.2	170.2	175.9	175.9	158.8	175.9	170.7	303.8	2755.5
Generation	gwh	204.245	147.038	89.308	75.130	64.301	69.542	71.056	69.906	62.190	68.172	65.610	118.378	1104.876
End-Month Power Cap	mw	287.5	287.5	284.7	286.2	287.5	285.6	281.0	275.9	271.9	269.2	266.4	277.6	
% Max Gen		98	69	42	36	30	34	33	33	32	32	32	55	
Ave kwh/af		404	410	408	407	409	409	404	397	392	388	384	390	401
Upstream Generation	gwh	33.660	35.257	34.393	29.920	16.735	13.111	11.205	11.142	9.389	11.064	15.232	34.695	255.803
Total Generation	gwh	237.905	182.295	123.701	105.050	81.036	82.653	82.261	81.048	71.579	79.236	80.842	153.073	1360.679