

RECLAMATION

Managing Water in the West

July 6, 2010

Dear Customer:

Attached are the monthly water supply outlook and projected reservoir and river operating plans prepared in July. Cool weather and generous precipitation during June resulted in abnormally high runoff into Bighorn Lake during June. Streamflows into Bighorn Lake increased from 138% of average during May to 184% of average during June. Storage in Bighorn Lake on July 1 was 111 percent of average and 5.5 feet above the top of the joint-use pool and 13.6 feet higher than on June 1. Based on current hydrologic and climatic conditions and the planned releases out of Boysen and Buffalo Bill Reservoirs, the July runoff into Bighorn Lake is estimated to be about 365.6 acre-feet (126% 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
 July 1, 2010

Present Elevations & Storages:

<u>Reservoir</u>	<u>Elevation</u>	<u>Storage</u>	<u>Percent of Normal</u>
Boysen	4723.91	720,458	110
Buffalo Bill	5388.06	603,139	107
Bighorn Lake	3645.49	1,144,600	111

Actual Inflows (1,000 Acre-Feet):

<u>Month</u>	<u>Inflow</u>	<u>Percent of Normal</u>
April-July, 2009	1,656.6	149
WY-2009 Total	2,729.7	116
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
June	761.3	184

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

<u>Month</u>	<u>Gains</u>	<u>Percent of Normal</u>
April-July, 2009	343.0	119
WY-2009 Total	703.2	104
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	228.3	215

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

<u>Agency</u>	<u>Inflows</u>	<u>Percent of Normal</u>
USBR	365.6	126

Snowpack Conditions:

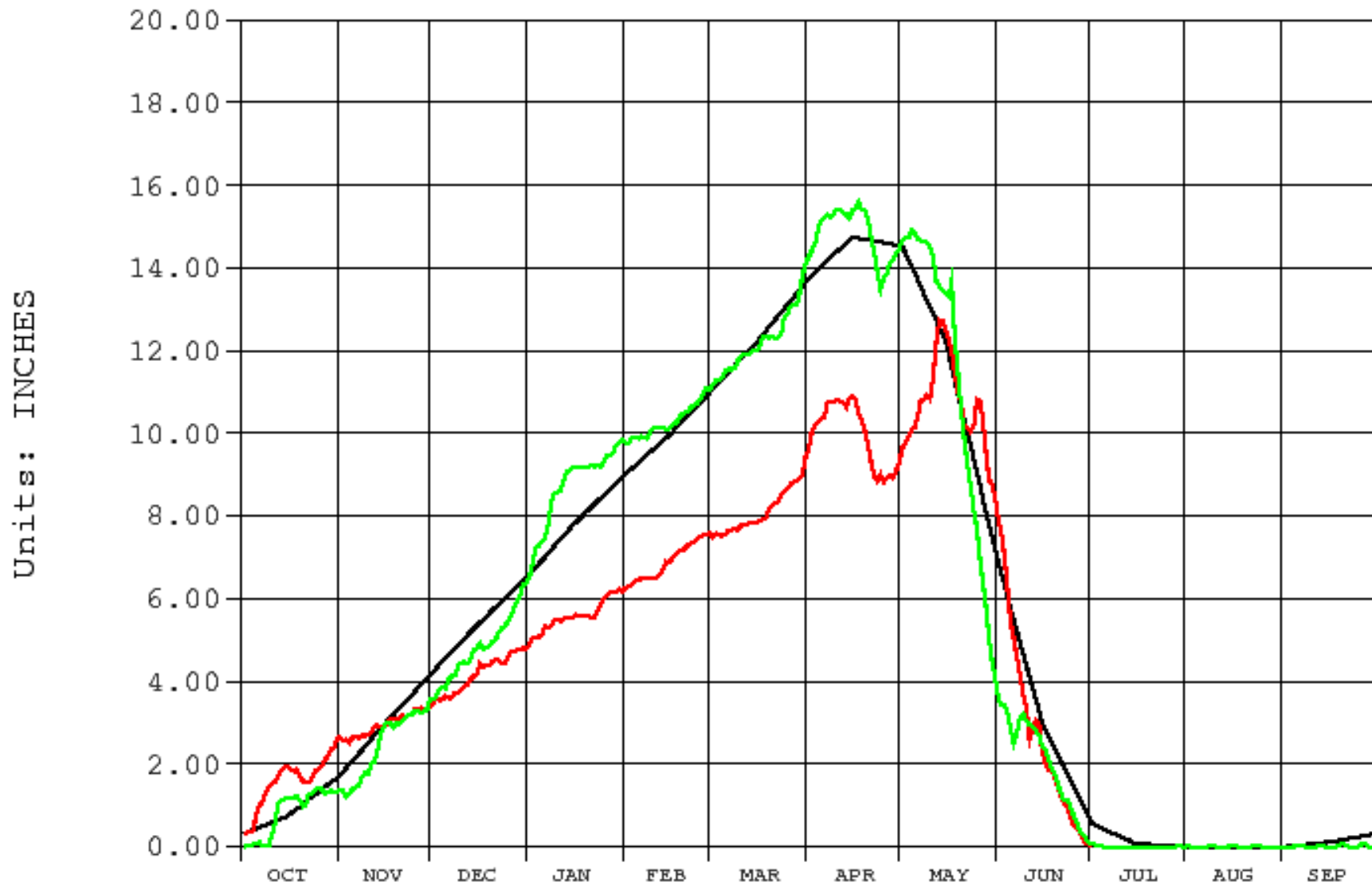
S N O W - P R E C I P I T A T I O N U P D A T E
 Based on Mountain Data from NRCS SNOTEL Sites
 As of THURSDAY: JULY 1, 2010

BASIN Data Site Name	ELEV. (Ft)	SNOW WATER EQUIVALENT			TOTAL PRECIPITATION		
		Current	Average	Avg %	Current	Average	Avg %

UPPER YELLOWSTONE RIVER BASIN							
BEARTOOTH LAKE	9360	.1	2.5	4*	23.9	29.7	80
BOX CANYON	6670	.0	.0	100*	17.9	20.5	87
BRACKETT CREEK	7320	.0	.0	100*	48.6	42.0	116
BURNT MTN	5880	.0	.0	100*	22.1	28.5	78
CANYON	7870	.0	.0	100*	20.1	22.6	89
COLE CREEK	7850	.0	.9	0*	22.6	30.8	73
EAST BOULDER MINE	6335	.0	-M	*	20.2	-M	*
EVENING STAR	9200	.0	5.2	0	35.7	37.8	94
FISHER CREEK	9100	.6	6.8	9	-M	50.4	*
MONUMENT PEAK	8850	.1	.6	17*	29.8	32.0	93
NORTHEAST ENTRANCE	7350	.1	.0	*	19.1	20.1	95

PARKER PEAK	9400	2.6	2.3	113*	24.7	26.0	95
PLACER BASIN	8830	.1	1.3	8*	30.6	32.5	94
PORCUPINE	6500	.0	.0	100*	24.0	21.8	110
SACAJAWEA	6550	.0	.0	100*	44.9	37.7	119
SHOWER FALLS	8100	.1	3.0	3	37.8	42.0	90
S FORK SHIELDS	8100	.0	.0	100*	39.5	35.6	111
SYLVAN LAKE	8420	.1	.0	*	34.1	32.0	107
SYLVAN ROAD	7120	.0	.0	100*	24.1	25.8	93
THUMB DIVIDE	7980	.2	.0	*	24.1	26.8	90
TWO OCEAN PLATEAU	9240	.0	6.8	0	31.8	39.1	81
WHITE MILL	8700	.1	1.6	6*	31.5	38.4	82
WOLVERINE	7650	.0	.0	100*	13.7	20.4	67
YOUNTS PEAK	8350	.0	.0	100*	19.3	24.6	78
				-----			-----
Basin wide percent of average				13*			93
WIND RIVER BASIN (WYOMING)							
BURROUGHS CREEK	8750	.1	.0	*	-M	24.7	*
COLD SPRINGS	9630	.0	.0	100*	22.0	19.4	113
DEER PARK	9700	.0	.0	100*	33.0	33.3	99
HOBBS PARK	10100	.0	.9	0*	32.7	23.3	140
KIRWIN	9550	.0	.0	100*	20.8	20.3	102
LITTLE WARM	9370	.0	.0	100*	19.6	22.1	89
OWL CREEK	8975	.0	.0	100*	15.1	13.5	112
SOUTH PASS	9040	.1	.0	*	30.2	28.0	108
ST. LAWRENCE ALT	8620	.0	.0	100*	23.5	17.5	134
TOGWOTEE PASS	9580	1.2	3.7	32	-M	34.9	*
TOWNSEND CREEK	8700	.0	.0	100*	28.5	20.9	136
YOUNTS PEAK	8350	.0	.0	100*	19.3	24.6	78
				-----			-----
Basin wide percent of average				30*			110
SHOSHONE RIVER BASIN (WYOMING)							
BLACKWATER	9780	.4	6.0	7	29.4	32.2	91
EVENING STAR	9200	.0	5.2	0	35.7	37.8	94
MARQUETTE	8760	.0	.0	100*	22.1	21.1	105
SYLVAN LAKE	8420	.1	.0	*	34.1	32.0	107
SYLVAN ROAD	7120	.0	.0	100*	24.1	25.8	93
YOUNTS PEAK	8350	.0	.0	100*	19.3	24.6	78
				-----			-----
Basin wide percent of average				4*			95
BIGHORN RIVER BASIN (WYOMING)							
BALD MTN.	9380	.2	1.1	18*	24.4	28.2	87
BEAR TRAP MEADOW	8200	.0	.0	100*	18.0	16.9	107
BLACKWATER	9780	.4	6.0	7	29.4	32.2	91
BONE SPRINGS DIV	9350	.0	.0	100*	21.6	25.5	85
EVENING STAR	9200	.0	5.2	0	35.7	37.8	94
GRAVE SPRINGS	8550	.0	.0	100*	20.9	18.7	112
KIRWIN	9550	.0	.0	100*	20.8	20.3	102
MARQUETTE	8760	.0	.0	100*	22.1	21.1	105
MIDDLE POWDER	7760	.0	.0	100*	17.7	21.7	82
OWL CREEK	8975	.0	.0	100*	15.1	13.5	112
POWDER RIVER PASS	9480	.0	.0	100*	22.4	22.4	100
SHELL CREEK	9580	.1	.1	100*	22.6	23.8	95
SYLVAN LAKE	8420	.1	.0	*	34.1	32.0	107
SYLVAN ROAD	7120	.0	.0	100*	24.1	25.8	93
TIMBER CREEK	7950	.1	.0	*	19.3	16.7	116
YOUNTS PEAK	8350	.0	.0	100*	19.3	24.6	78
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Basin wide percent of average				7*			96

Archive Data From 1-OCT Through 30-SEP
Plotted 07/01/2010 16:26



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

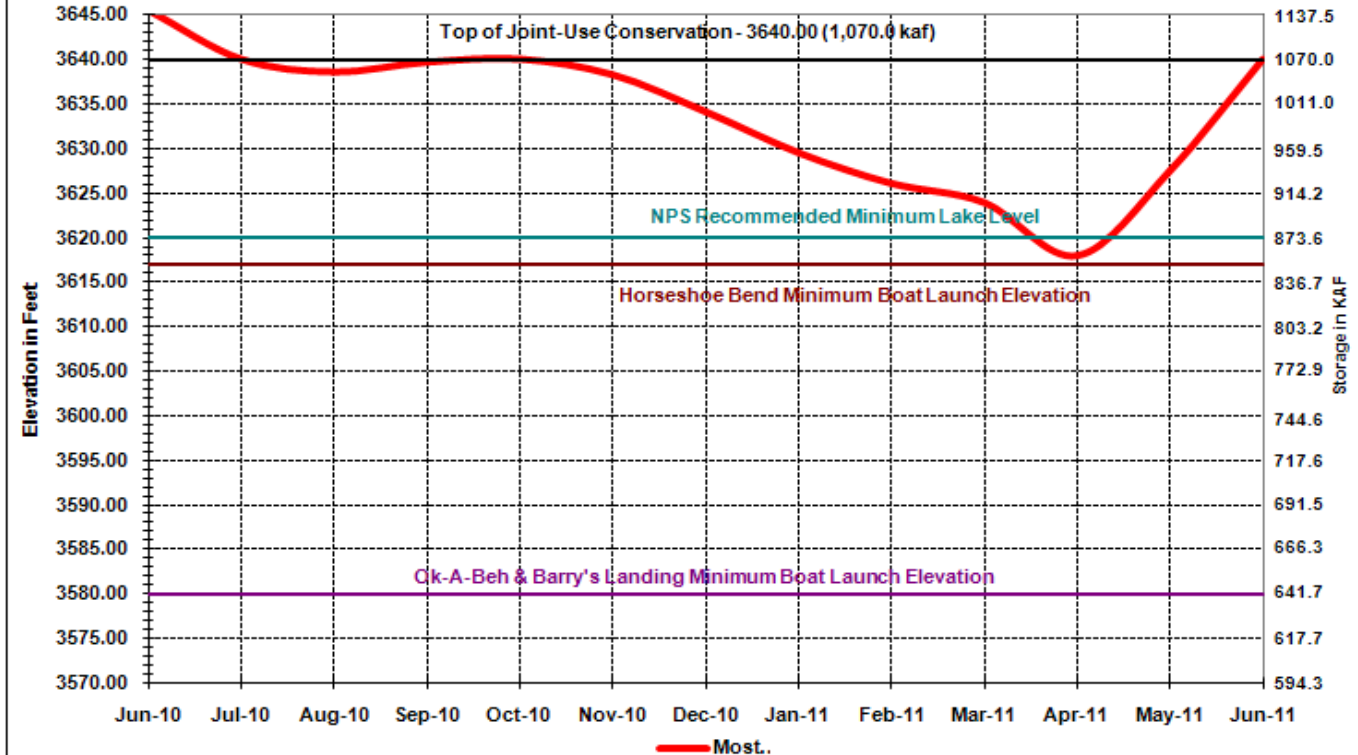
BHXAOP V1.12 Run: 04-Jul-2010 13:05
 Based on Most Probable Inflow Forecast

BIGHORN LAKE MONTHLY OPERATIONS

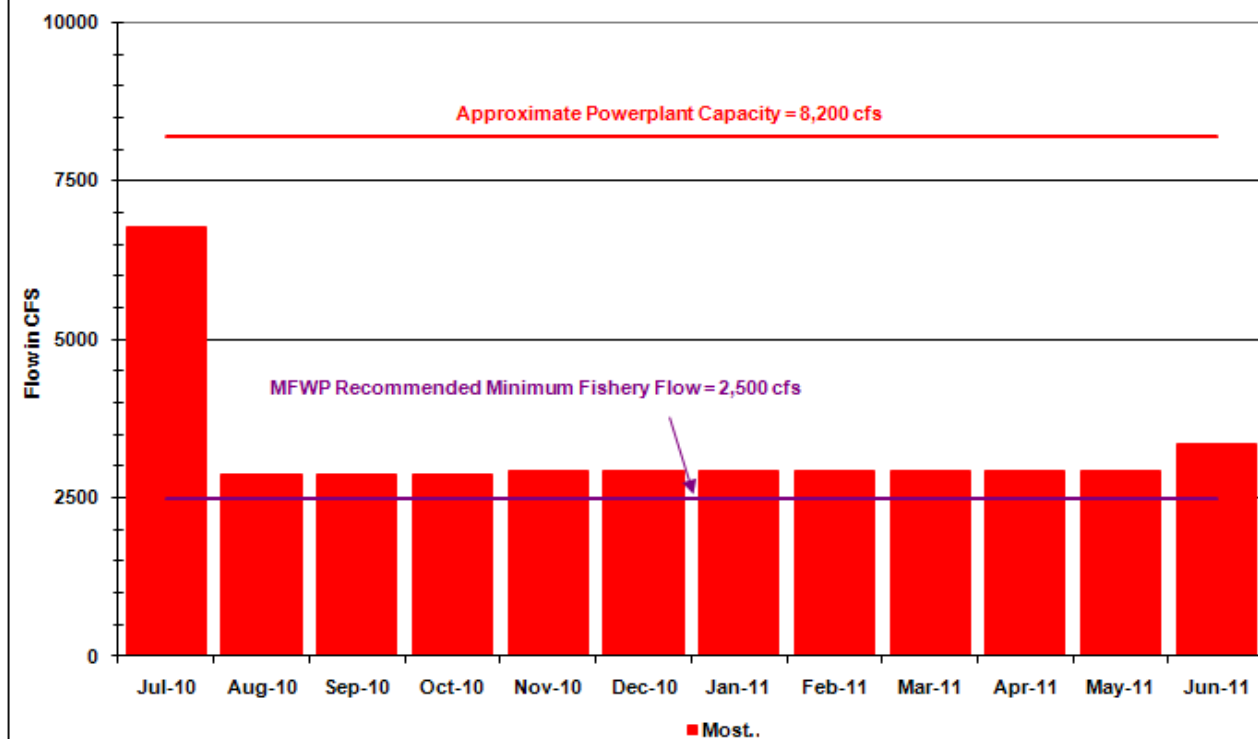
Bighorn Reservoir		Initial Cont 1143.7 kaf Elev 3645.43 ft				Maximum Cont 1328.4 kaf Elev 3657.00 ft				Minimum Cont 493.6 kaf Elev 3547.00 ft				Total
	2010	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
Boysen Release	kaf	174.7	93.9	62.5	64.6	62.5	64.5	64.6	58.3	64.5	62.5	128.1	131.1	1031.8
Boysen Release	cfs	2841	1527	1050	1051	1050	1049	1051	1050	1049	1050	2083	2203	
Buffalo Bill Riv Flo	kaf	194.7	116.1	104.7	43.2	26.8	21.8	21.8	19.7	21.8	31.7	113.8	184.3	900.4
Buffalo Bill Riv Flo	cfs	3166	1888	1760	703	450	355	355	355	355	533	1851	3097	
Station Gain	kaf	-3.8	-28.7	31.5	72.6	58.8	41.9	42.4	48.8	70.6	29.2	35.8	40.8	439.9
Monthly Inflow	kaf	365.6	181.3	198.7	180.4	148.1	128.2	128.8	126.8	156.9	123.4	277.7	356.2	2372.1
Monthly Inflow	cfs	5946	2949	3339	2934	2489	2085	2095	2283	2552	2074	4516	5986	
Turbine Release	kaf	439.3	198.9	185.3	176.2	169.6	175.2	175.2	158.3	175.2	170.2	199.8	222.6	2445.8
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	439.3	198.9	185.3	176.2	169.6	175.2	175.2	158.3	175.2	170.2	199.8	222.6	2445.8
Total Release	cfs	7145	3235	3114	2866	2850	2849	2849	2850	2849	2860	3249	3741	
Spring Flow	kaf	4.3	4.3	4.2	4.3	4.2	4.3	4.3	3.9	4.3	4.2	4.3	4.2	50.8
Irrigation Reqmnt	kaf	27.7	26.8	18.8	4.1	0.0	0.0	0.0	0.0	0.0	0.6	24.6	26.8	129.4
Afterbay Rels	kaf	443.6	203.2	189.5	180.5	173.8	179.5	179.5	162.2	179.5	174.4	204.1	226.8	2496.6
Afterbay Rels	cfs	7214	3305	3185	2936	2921	2919	2919	2921	2919	2931	3319	3812	
River Release	kaf	415.9	176.4	170.7	176.4	173.8	179.5	179.5	162.2	179.5	173.8	179.5	200.0	2367.2
River Release	cfs	6764	2869	2869	2869	2921	2919	2919	2921	2919	2921	2919	3361	
Min Release	kaf	153.7	153.7	148.8	153.7	148.8	153.7	153.7	138.8	153.7	148.8	179.5	148.8	1835.7
End-Month Targets	kaf	1070.0			1070.0						858.5		1070.0	
End-Month Content	kaf	1070.0	1052.4	1065.8	1070.0	1048.5	1001.5	955.1	923.6	905.3	858.5	936.4	1070.0	
End-Month Elevation	ft	3640.00	3638.57	3639.66	3640.00	3638.25	3634.12	3629.53	3626.09	3623.95	3618.01	3627.52	3640.00	
Net Change Content	kaf	-73.7	-17.6	13.4	4.2	-21.5	-47.0	-46.4	-31.5	-18.3	-46.8	77.9	133.6	-73.7
Yellowtail Power	2010	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
Turbine Release	kaf	439.3	198.9	185.3	176.2	169.6	175.2	175.2	158.3	175.2	170.2	199.8	222.6	2445.8
Generation	gwh	182.042	81.344	75.735	72.202	69.321	70.878	69.852	62.318	68.394	65.693	77.540	89.451	984.770
End-Month Power Cap	mw	287.5	286.1	287.2	287.5	285.8	281.6	277.2	273.9	271.9	266.4	275.3	287.5	
% Max Gen		85	38	37	34	33	33	33	32	32	32	36	43	
Ave kwh/af		414	409	409	410	409	405	399	394	390	386	388	402	403
Upstream Generation	gwh	35.232	31.383	27.373	16.468	12.758	11.441	11.356	10.156	11.184	12.703	32.878	33.691	246.623
Total Generation	gwh	217.274	112.727	103.108	88.670	82.079	82.319	81.208	72.474	79.578	78.396	110.418	123.142	1231.393

BIGHORN LAKE

BIGHORN LAKE ELEVATION



BIGHORN RIVER FLOW BELOW AFTERBAY



WATER YEAR 2010

Supplemental Information

BHXAOP V1.12 Run: 04-Jul-2010 13:06
 Based on Minimum Probable Inflow Forecast

BIGHORN LAKE MONTHLY OPERATIONS

Bighorn Reservoir		Initial Cont 1143.7 kaf Elev 3645.43 ft				Maximum Cont 1328.4 kaf Elev 3657.00 ft				Minimum Cont 300.0 kaf Elev 3547.00 ft				Total
	2010	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
Boysen Release	kaf	159.2	69.2	59.5	55.8	54.0	55.8	55.8	50.4	55.8	54.0	67.6	69.9	807.0
Boysen Release	cfs	2589	1125	1000	908	908	908	908	908	908	908	1099	1175	
Buffalo Bill Riv Flo	kaf	150.7	104.3	82.5	37.6	28.6	21.8	21.8	19.7	21.8	31.7	101.2	105.0	726.7
Buffalo Bill Riv Flo	cfs	2451	1696	1386	612	481	355	355	355	355	533	1646	1765	
Station Gain	kaf	-48.0	-43.0	19.2	68.6	57.6	40.1	39.8	44.5	68.0	26.5	29.1	17.2	319.6
Monthly Inflow	kaf	261.9	130.5	161.2	162.0	140.2	117.7	117.4	114.6	145.6	112.2	197.9	192.1	1853.3
Monthly Inflow	cfs	4259	2122	2709	2635	2356	1914	1909	2063	2368	1886	3219	3228	
Turbine Release	kaf	335.6	176.2	163.4	149.4	153.0	158.2	158.1	142.8	158.2	153.6	143.3	141.6	2033.4
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	335.6	176.2	163.4	149.4	153.0	158.2	158.1	142.8	158.2	153.6	143.3	141.6	2033.4
Total Release	cfs	5458	2866	2746	2430	2571	2573	2571	2571	2573	2581	2331	2380	
Spring Flow	kaf	4.3	4.3	4.2	4.3	4.2	4.3	4.3	3.9	4.3	4.2	4.3	4.2	50.8
Irrigation Reqmnt	kaf	27.7	26.8	18.8	0.0	0.0	0.0	0.0	0.0	0.0	0.6	24.6	26.8	125.3
Afterbay Rels	kaf	339.9	180.5	167.6	153.7	157.2	162.5	162.4	146.7	162.5	157.8	147.6	145.8	2084.2
Afterbay Rels	cfs	5528	2936	2817	2500	2642	2643	2641	2641	2643	2652	2400	2450	
River Release	kaf	312.2	153.7	148.8	153.7	157.2	162.5	162.4	146.7	162.5	157.2	123.0	119.0	1958.9
River Release	cfs	5077	2500	2501	2500	2642	2643	2641	2641	2643	2642	2000	2000	
Min Release	kaf	153.7	153.7	148.8	153.7	119.0	123.0	123.0	111.1	123.0	119.0	123.0	119.0	1570.0
End-Month Targets	kaf	1070.0			1070.0						858.5		1070.0	
End-Month Content	kaf	1070.0	1024.3	1022.1	1034.7	1021.9	981.4	940.7	912.5	899.9	858.5	913.1	963.6	
End-Month Elevation	ft	3640.00	3636.18	3635.99	3637.09	3635.97	3632.20	3628.00	3624.80	3623.30	3618.01	3624.87	3630.42	
Net Change Content	kaf	-73.7	-45.7	-2.2	12.6	-12.8	-40.5	-40.7	-28.2	-12.6	-41.4	54.6	50.5	-180.1
Yellowtail Power	2010	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
Turbine Release	kaf	335.6	176.2	163.4	149.4	153.0	158.2	158.1	142.8	158.2	153.6	143.3	141.6	2033.4
Generation	gwh	139.070	71.761	66.068	60.503	61.959	63.541	62.685	55.976	61.582	59.229	55.387	55.725	813.486
End-Month Power Cap	mw	287.5	283.7	283.5	284.6	283.5	279.8	275.7	272.7	271.3	266.4	272.8	278.0	
% Max Gen		65	33	32	28	30	30	29	29	29	29	26	27	
Ave kwh/af		414	407	404	405	405	402	396	392	389	386	387	394	400
Upstream Generation	gwh	35.242	26.510	22.141	13.959	12.294	10.425	10.344	9.263	10.405	11.950	25.279	25.283	213.095
Total Generation	gwh	174.312	98.271	88.209	74.462	74.253	73.966	73.029	65.239	71.987	71.179	80.666	81.008	1026.581

BIGHORN LAKE MONTHLY OPERATIONS

Bighorn Reservoir		Initial Cont 1143.7 kaf Elev 3645.43 ft				Maximum Cont 1328.4 kaf Elev 3657.00 ft				Minimum Cont 493.6 kaf Elev 3547.00 ft				Total
	2010	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
Boysen Release	kaf	182.1	128.7	85.4	64.6	62.5	64.5	64.5	58.3	64.6	105.0	226.8	282.6	1389.6
Boysen Release	cfs	2962	2093	1435	1051	1050	1049	1049	1050	1051	1765	3689	4749	
Buffalo Bill Riv Flo	kaf	211.7	135.9	111.7	44.5	28.9	21.8	21.8	19.7	21.8	31.7	165.3	268.5	1083.3
Buffalo Bill Riv Flo	cfs	3443	2210	1877	724	486	355	355	355	355	533	2688	4512	
Station Gain	kaf	25.6	-21.8	37.4	74.6	59.5	43.0	44.1	51.5	72.2	31.0	40.0	55.9	513.0
Monthly Inflow	kaf	419.4	242.8	234.5	183.7	150.9	129.3	130.4	129.5	158.6	167.7	432.1	607.0	2985.9
Monthly Inflow	cfs	6821	3949	3941	2988	2536	2103	2121	2332	2579	2818	7027	10201	
Turbine Release	kaf	493.1	244.0	222.1	194.9	178.6	184.5	184.5	166.7	184.5	179.1	394.6	433.0	3059.6
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	493.1	244.0	222.1	194.9	178.6	184.5	184.5	166.7	184.5	179.1	394.6	433.0	3059.6
Total Release	cfs	8020	3968	3733	3170	3001	3001	3001	3002	3001	3010	6418	7277	
Spring Flow	kaf	4.3	4.3	4.2	4.3	4.2	4.3	4.3	3.9	4.3	4.2	4.3	4.2	50.8
Irrigation Reqmnt	kaf	27.7	26.8	11.9	0.0	0.0	0.0	0.0	0.0	0.0	0.5	11.2	21.8	99.9
Afterbay Rels	kaf	497.4	248.3	226.3	199.2	182.8	188.8	188.8	170.6	188.8	183.3	398.9	437.2	3110.4
Afterbay Rels	cfs	8089	4038	3803	3240	3072	3071	3071	3072	3071	3080	6487	7347	
River Release	kaf	469.7	221.5	214.4	199.2	182.8	188.8	188.8	170.6	188.8	182.8	387.7	415.4	3010.5
River Release	cfs	7639	3602	3603	3240	3072	3071	3071	3072	3071	3072	6305	6981	
Min Release	kaf	153.7	153.7	148.8	153.7	148.8	153.7	153.7	138.8	123.0	148.8	153.7	148.8	1779.2
End-Month Targets	kaf	1070.0			1070.0						858.5		1070.0	
End-Month Content	kaf	1070.0	1068.8	1081.2	1070.0	1042.3	987.1	933.0	895.8	869.9	858.5	896.0	1070.0	
End-Month Elevation	ft	3640.00	3639.90	3640.87	3640.00	3637.73	3632.76	3627.15	3622.80	3619.52	3618.01	3622.82	3640.00	
Net Change Content	kaf	-73.7	-1.2	12.4	-11.2	-27.7	-55.2	-54.1	-37.2	-25.9	-11.4	37.5	174.0	-73.7
Yellowtail Power	2010	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
Turbine Release	kaf	493.1	244.0	222.1	194.9	178.6	184.5	184.5	166.7	184.5	179.1	394.6	433.0	3059.6
Generation	gwh	204.336	100.029	91.200	80.045	72.933	74.405	73.128	65.074	71.236	68.691	152.054	172.896	1226.027
End-Month Power Cap	mw	287.5	287.4	288.0	287.5	285.2	280.3	274.9	270.8	267.8	266.4	270.8	287.5	
% Max Gen		95	47	44	37	35	35	34	34	33	33	71	83	
Ave kwh/af		414	410	411	411	408	403	396	390	386	384	385	399	401
Upstream Generation	gwh	35.216	34.846	30.013	16.979	13.330	11.420	11.343	9.558	11.241	16.235	33.906	33.803	257.890
Total Generation	gwh	239.552	134.875	121.213	97.024	86.263	85.825	84.471	74.632	82.477	84.926	185.960	206.699	1483.917