

# RECLAMATION

## *Managing Water in the West*

August 3, 2012

Dear Customer:

Attached is the monthly water supply outlook and projected operations for Yellowtail Dam and Powerplant. Mountain snowpack in the Bighorn Basin above Yellowtail Dam has melted out. Streamflows into Bighorn Lake during July declined to 35% of average. Based on the August 1 water supply forecast and the planned releases out of Boysen and Buffalo Bill Reservoirs, the August runoff into Bighorn Lake is expected to equal 99,800 acre-feet (63% 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  
 August 1, 2012

**Present Elevations & Storages:**

<u>Reservoir</u>	<u>Elevation</u>	<u>Storage</u>	<u>Percent of Average</u>	<u>Percent Full</u>
Boysen	4715.57	574,523	89	77
Buffalo Bill	5388.33	605,219	106	94
Bighorn Lake	3631.75	927,877	94	91

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

<u>Month</u>	<u>Inflow</u>	<u>Percent of Average</u>
<i>April-July, 2011</i>	<i>2,572.3</i>	<i>226</i>
<i>WY-2011 Total</i>	<i>3,817.0</i>	<i>163</i>
October	213.6	123
November	142.3	98
December	132.4	103
January	136.2	108
February	137.5	106
March	177.2	107
April	149.7	93
May	204.7	78
June	238.5	54
July	100.2	35
<i>April-July, 2012</i>	<i>693.1</i>	<i>61</i>

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

<u>Month</u>	<u>Gains</u>	<u>Percent of Average</u>
<i>April-July, 2011</i>	<i>717.7</i>	<i>460</i>
<i>WY-2011 Total</i>	<i>996.7</i>	<i>207</i>
October	91.7	129
November	64.6	104
December	52.3	121
January	56.8	123
February	63.3	119
March	92.1	124
April	35.0	100
May	13.5	23
June	23.7	----
July	-95.8	----
<i>April-July, 2012</i>	<i>-23.6</i>	<i>----</i>

**August 1 Runoff Forecast (August Inflows - 1,000 Acre-Feet):**

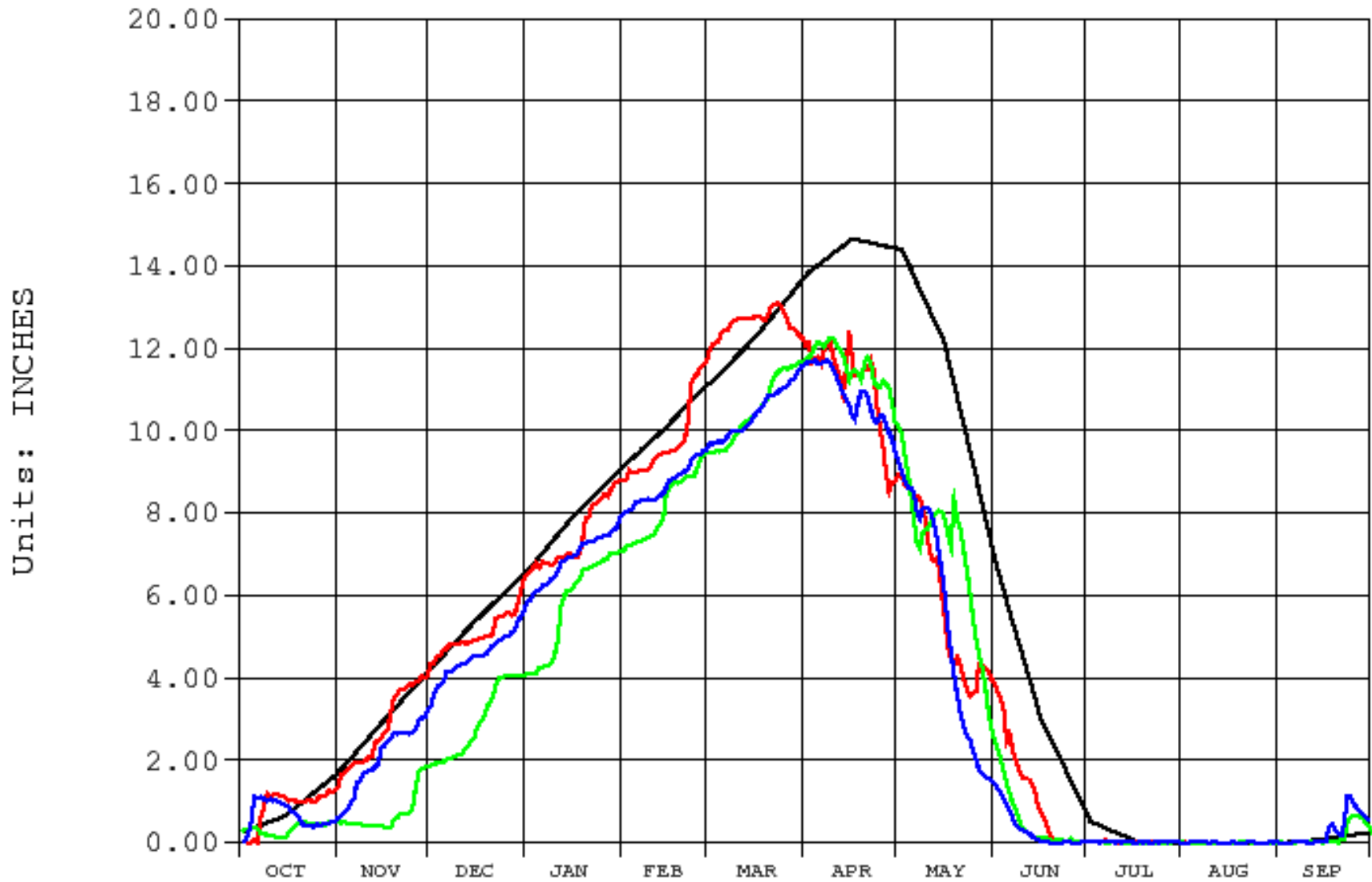
<u>Agency</u>	<u>Inflows</u>	<u>Percent of Average</u>
<b>USBR</b>	<b>99.8</b>	<b>63</b>

**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  
 NRCS SNOTEL DATA UNAVAILABLE DURING JUNE-OCTOBER

Archive Data From 1-OCT Through 30-SEP

Plotted 08/03/2012 08:58 (Provisional Data Subject to Revision)



BHR Bighorn Lake (Yellowtail), Bighorn River near Fort Smith, MT

SE\_AVG Snow Water Equivalent Average (inches)

2012

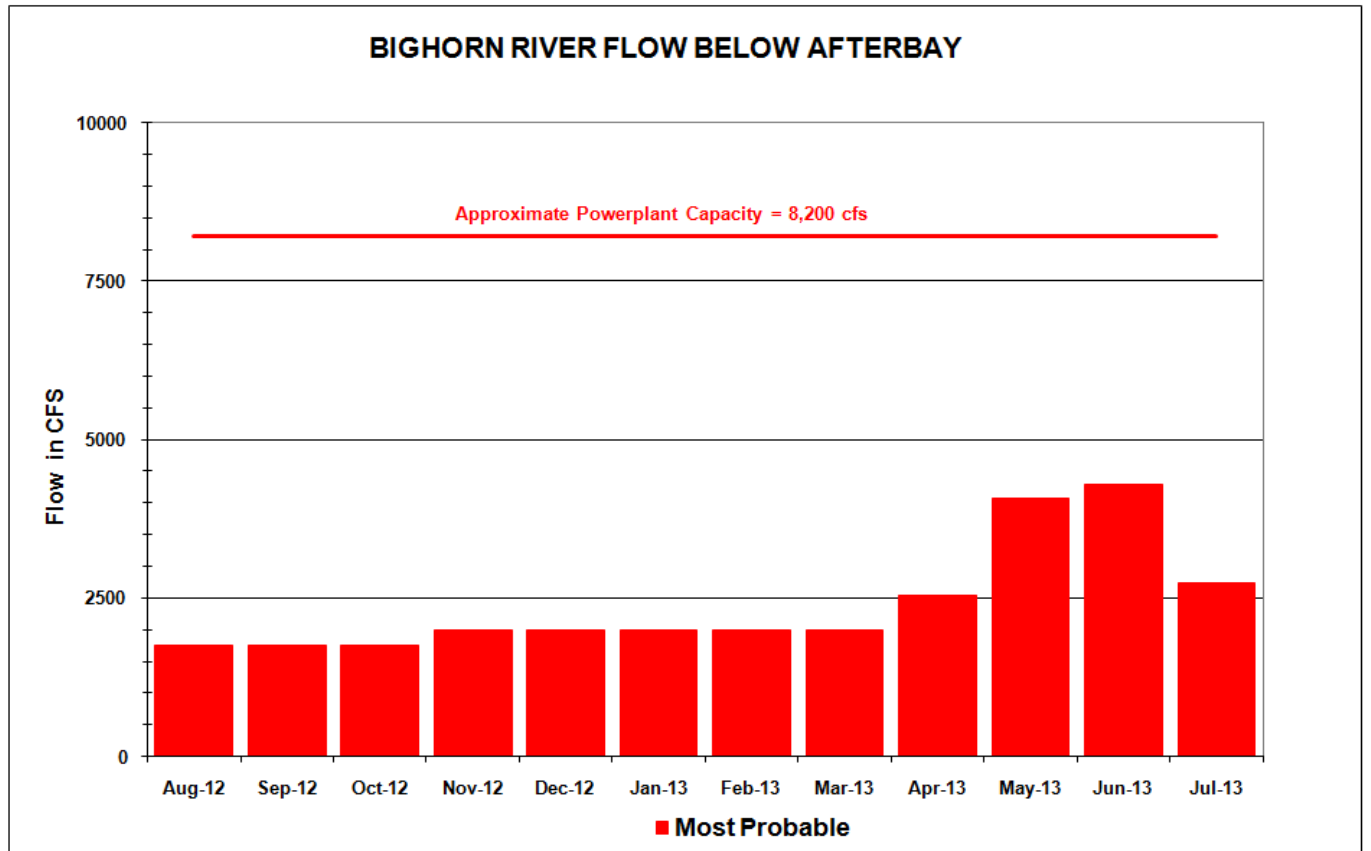
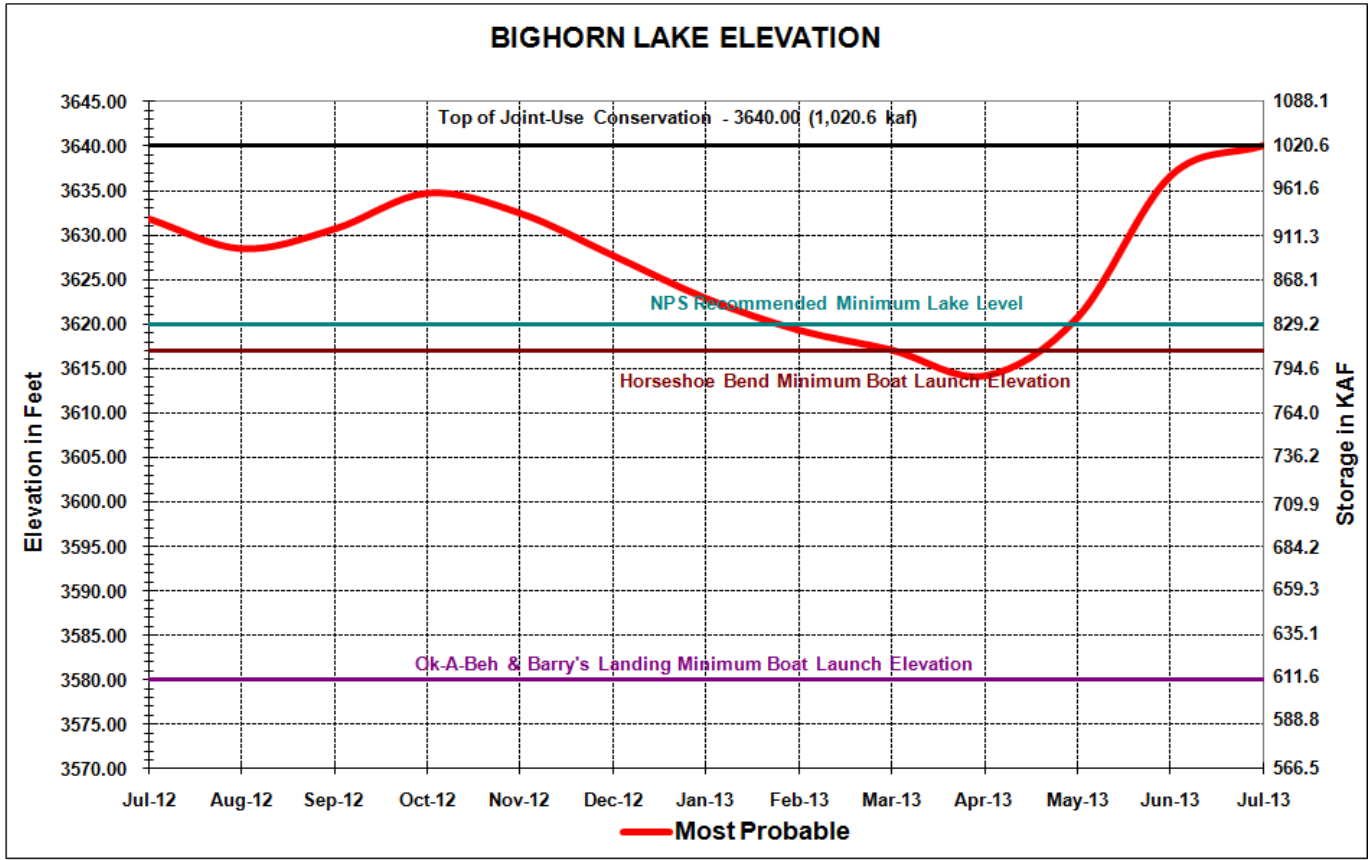
SE Snow Water Equivalent (inches)

2012 2000 2006

BIGHORN LAKE MONTHLY OPERATIONS

Bighorn Reservoir		Initial Cont Elev 3631.75 ft				Maximum Cont Elev 3657.00 ft				Minimum Cont Elev 3547.00 ft				Total
	2012	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	
Boysen Release	kaf	69.2	59.5	46.1	29.8	30.8	30.8	27.8	30.7	62.5	132.7	129.8	131.4	781.1
Boysen Release	cfs	1125	1000	750	501	501	501	501	499	1050	2158	2181	2137	
Buffalo Bill Release	kaf	104.3	82.3	38.0	12.2	12.6	12.6	11.4	12.6	31.7	120.4	205.1	168.4	811.6
Buffalo Bill Release	cfs	1696	1383	618	205	205	205	205	205	533	1958	3447	2739	
Station Gain	kaf	-73.7	-3.1	63.0	49.3	31.6	35.8	41.3	59.8	35.0	49.2	89.6	-63.5	314.3
Monthly Inflow	kaf	99.8	138.7	147.1	91.3	75.0	79.2	80.5	103.1	129.2	302.3	424.5	236.3	1907.0
Monthly Inflow	cfs	1623	2331	2392	1534	1220	1288	1449	1677	2171	4916	7134	3843	
Turbine Release	kaf	130.7	118.5	106.5	115.0	118.9	118.9	107.3	118.9	148.2	256.7	279.4	195.3	1814.3
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	130.7	118.5	106.5	115.0	118.9	118.9	107.3	118.9	148.2	256.7	279.4	195.3	1814.3
Total Release	cfs	2126	1991	1732	1933	1934	1934	1932	1934	2491	4175	4695	3176	
Spring Flow	kaf	4.3	4.2	4.3	4.2	4.3	4.3	3.9	4.3	4.2	4.3	4.2	4.3	50.8
Irrigation Reqmnt	kaf	27.4	18.6	3.2	0.0	0.0	0.0	0.0	0.0	0.8	11.0	28.6	30.7	120.3
Afterbay Rels	kaf	135.0	122.7	110.8	119.2	123.2	123.2	111.2	123.2	152.4	261.0	283.6	199.6	1865.1
Afterbay Rels	cfs	2196	2062	1802	2003	2004	2004	2002	2004	2561	4245	4766	3246	
River Release	kaf	107.6	104.1	107.6	119.2	123.2	123.2	111.2	123.2	151.6	250.0	255.0	168.9	1744.8
River Release	cfs	1750	1749	1750	2003	2004	2004	2002	2004	2548	4066	4285	2747	
Min Release	kaf	107.6	104.1	107.6	119.0	123.0	123.0	111.1	123.0	119.0	153.7	148.8	153.7	1493.6
End-Month Targets	kaf			1020.6				807.9					1020.6	
End-Month Content	kaf	897.0	917.2	957.8	934.1	890.2	850.5	823.7	807.9	788.9	834.5	979.6	1020.6	
End-Month Elevation	ft	3628.40	3630.63	3634.65	3632.37	3627.62	3622.80	3619.24	3617.00	3614.11	3620.71	3636.60	3640.00	
Net Change Content	kaf	-30.9	20.2	40.6	-23.7	-43.9	-39.7	-26.8	-15.8	-19.0	45.6	145.1	41.0	92.7
Yellowtail Power	2012	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Total
Turbine Release	kaf	130.7	118.5	106.5	115.0	118.9	118.9	107.3	118.9	148.2	256.7	279.4	195.3	1814.3
Generation	gwh	47.947	42.839	37.999	41.480	42.724	42.262	37.038	41.705	53.894	101.294	114.493	78.614	682.289
End-Month Power Cap	mw	276.5	278.6	282.4	280.3	275.8	271.2	267.8	265.7	262.9	269.2	284.3	287.5	
% Max Gen		22	21	18	20	20	20	19	19	26	47	55	37	
Ave kwh/af		367	362	357	361	359	355	345	351	364	395	410	403	376
Upstream Generation	gwh	25.900	21.395	13.064	5.444	5.669	5.687	5.143	5.728	12.779	33.869	33.577	35.156	203.411
Total Generation	gwh	73.847	64.234	51.063	46.924	48.393	47.949	42.181	47.433	66.673	135.163	148.070	113.770	885.700

# BIGHORN LAKE



**WATER YEAR 2012**

# Supplemental Information

BHXAOP V1.14 Run: 03-Aug-2012 08:19  
 Based on Minimum Probable Inflow Forecast

BIGHORN LAKE MONTHLY OPERATIONS

Bighorn Reservoir		Initial Cont Elev 3631.75 ft				Maximum Cont Elev 3657.00 ft				Minimum Cont Elev 3547.00 ft				Total
2012		Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Total
Boysen Release	kaf	69.2	59.5	46.1	29.8	30.7	30.7	27.8	30.7	44.6	67.6	69.9	76.9	583.5
Boysen Release	cfs	1125	1000	750	501	499	499	501	499	750	1099	1175	1251	
Buffalo Bill Release	kaf	104.3	82.3	28.3	12.2	12.6	12.6	11.4	12.6	31.7	101.2	105.0	118.7	632.9
Buffalo Bill Release	cfs	1696	1383	460	205	205	205	205	205	533	1646	1765	1930	
Station Gain	kaf	-85.0	-11.6	41.7	42.5	25.7	29.2	33.1	52.2	23.5	29.6	1.3	-70.0	112.2
Monthly Inflow	kaf	88.5	130.2	116.1	84.5	69.0	72.5	72.3	95.5	99.8	198.4	176.2	125.6	1328.6
Monthly Inflow	cfs	1439	2188	1888	1420	1122	1179	1302	1553	1677	3227	2961	2043	
Turbine Release	kaf	130.7	118.7	103.3	101.1	104.6	104.5	94.4	104.6	100.8	129.1	125.7	131.5	1349.0
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	130.7	118.7	103.3	101.1	104.6	104.5	94.4	104.6	100.8	129.1	125.7	131.5	1349.0
Total Release	cfs	2126	1995	1680	1699	1701	1700	1700	1701	1694	2100	2112	2139	
Spring Flow	kaf	4.3	4.2	4.3	4.2	4.3	4.3	3.9	4.3	4.2	4.3	4.2	4.3	50.8
Irrigation Reqmnt	kaf	27.4	18.8	0.0	0.0	0.0	0.0	0.0	0.0	0.9	25.8	25.8	28.2	126.9
Afterbay Rels	kaf	135.0	122.9	107.6	105.3	108.9	108.8	98.3	108.9	105.0	133.4	129.9	135.8	1399.8
Afterbay Rels	cfs	2196	2065	1750	1770	1771	1769	1770	1771	1765	2170	2183	2209	
River Release	kaf	107.6	104.1	107.6	105.3	108.9	108.8	98.3	108.9	104.1	107.6	104.1	107.6	1272.9
River Release	cfs	1750	1749	1750	1770	1771	1769	1770	1771	1749	1750	1749	1750	
Min Release	kaf	107.6	104.1	107.6	104.1	107.6	107.6	97.2	107.6	104.1	107.6	104.1	107.6	1266.8
End-Month Targets	kaf			997.0					794.6				1020.6	
End-Month Content	kaf	885.7	897.2	910.0	893.4	857.8	825.8	803.7	794.6	793.6	862.9	913.4	907.5	
End-Month Elevation	ft	3627.10	3628.42	3629.85	3627.99	3623.72	3619.53	3616.37	3615.00	3614.84	3624.36	3630.22	3629.58	
Net Change Content	kaf	-42.2	11.5	12.8	-16.6	-35.6	-32.0	-22.1	-9.1	-1.0	69.3	50.5	-5.9	-20.4
Yellowtail Power	2012	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Total
Turbine Release	kaf	130.7	118.7	103.3	101.1	104.6	104.5	94.4	104.6	100.8	129.1	125.7	131.5	1349.0
Generation	gwh	47.808	42.714	36.235	35.157	36.283	35.897	31.515	35.566	33.997	46.817	45.945	48.426	476.360
End-Month Power Cap	mw	275.3	276.5	277.9	276.1	272.1	268.1	265.1	263.8	263.6	272.7	278.2	277.6	
% Max Gen		22	21	17	17	17	17	16	17	16	22	22	23	
Ave kwh/af		366	360	351	348	347	344	334	340	337	363	366	368	353
Upstream Generation	gwh	25.616	20.910	10.279	5.425	5.627	5.634	5.091	5.658	11.199	25.469	25.454	27.799	174.161
Total Generation	gwh	73.424	63.624	46.514	40.582	41.910	41.531	36.606	41.224	45.196	72.286	71.399	76.225	650.521

BHXAOP V1.14 Run: 03-Aug-2012 08:20  
 Based on Maximum Probable Inflow Forecast

BIGHORN LAKE MONTHLY OPERATIONS

Bighorn Reservoir		Initial Cont 927.9 kaf Elev 3631.75 ft					Maximum Cont 1278.9 kaf Elev 3657.00 ft					Minimum Cont 469.9 kaf Elev 3547.00 ft			Total
2012		Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul		
Boysen Release	kaf	69.2	59.5	46.1	29.7	30.7	30.7	27.8	97.0	105.8	183.0	281.0	290.3	1250.8	
Boysen Release	cfs	1125	1000	750	499	499	499	501	1578	1778	2976	4722	4721		
Buffalo Bill Release	kaf	104.3	82.3	45.6	21.1	21.8	21.8	19.7	21.8	58.5	220.4	264.5	284.8	1166.6	
Buffalo Bill Release	cfs	1696	1383	742	355	355	355	355	355	983	3584	4445	4632		
Station Gain	kaf	-40.4	7.8	69.7	56.1	37.5	42.3	49.4	67.3	33.3	78.8	211.1	-22.9	590.0	
Monthly Inflow	kaf	133.1	149.6	161.4	106.9	90.0	94.8	96.9	186.1	197.6	482.2	756.6	552.2	3007.4	
Monthly Inflow	cfs	2165	2514	2625	1797	1464	1542	1745	3027	3321	7842	12715	8981		
Turbine Release	kaf	130.7	118.7	103.3	153.3	158.5	158.5	143.2	158.5	287.1	490.8	476.0	478.0	2856.6	
Bypass/Spill/Waste	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	58.1	0.0	58.1	
Total Release	kaf	130.7	118.7	103.3	153.3	158.5	158.5	143.2	158.5	287.1	490.8	534.1	478.0	2914.7	
Total Release	cfs	2126	1995	1680	2576	2578	2578	2578	2578	4825	7982	8976	7774		
Spring Flow	kaf	4.3	4.2	4.3	4.2	4.3	4.3	3.9	4.3	4.2	4.3	4.2	4.3	50.8	
Irrigation Reqmnt	kaf	27.4	18.8	0.0	0.0	0.0	0.0	0.0	0.0	0.9	25.8	25.8	28.2	126.9	
Afterbay Rels	kaf	135.0	122.9	107.6	157.5	162.8	162.8	147.1	162.8	291.3	495.1	538.3	482.3	2965.5	
Afterbay Rels	cfs	2196	2065	1750	2647	2648	2648	2649	2648	4895	8052	9046	7844		
River Release	kaf	107.6	104.1	107.6	157.5	162.8	162.8	147.1	162.8	290.4	469.3	512.5	454.1	2838.6	
River Release	cfs	1750	1749	1750	2647	2648	2648	2649	2648	4880	7632	8613	7385		
Min Release	kaf	107.6	104.1	107.6	148.8	153.7	153.7	138.8	153.7	148.8	153.7	148.8	153.7	1673.0	
End-Month Targets	kaf			1020.6					822.0					1020.6	
End-Month Content	kaf	930.3	961.2	1019.3	972.9	904.4	840.7	794.4	822.0	732.5	723.9	946.4	1020.6		
End-Month Elevation	ft	3632.00	3634.96	3639.90	3636.01	3629.23	3621.53	3614.97	3619.01	3604.30	3602.67	3633.58	3640.00		
Net Change Content	kaf	2.4	30.9	58.1	-46.4	-68.5	-63.7	-46.3	27.6	-89.5	-8.6	222.5	74.2	92.7	
Yellowtail Power	2012	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Total	
Turbine Release	kaf	130.7	118.7	103.3	153.3	158.5	158.5	143.2	158.5	287.1	490.8	476.0	478.0	2856.6	
Generation	gwh	48.334	43.341	37.048	58.935	60.372	59.331	51.851	58.991	109.282	185.625	194.400	196.043	1103.553	
End-Month Power Cap	mw	279.9	282.7	287.4	283.7	277.3	270.0	263.7	267.6	253.6	252.1	281.4	287.5		
% Max Gen		23	21	17	28	28	28	27	28	53	87	94	91		
Ave kwh/af		370	365	359	384	381	374	362	372	381	378	408	410	386	
Upstream Generation	gwh	25.937	21.539	15.313	8.065	8.364	8.376	7.567	13.853	23.650	33.484	33.643	35.231	235.022	
Total Generation	gwh	74.271	64.880	52.361	67.000	68.736	67.707	59.418	72.844	132.932	219.109	228.043	231.274	1338.575	