

RECLAMATION

Managing Water in the West

April 8, 2011

Dear Customer:

Attached are the monthly water supply outlook and projected reservoir and river operating plans as prepared in April. Mountain snowpack conditions in the Bighorn Basin on April 1 were 113 percent of average. Based on current hydrologic and climatic conditions and the planned releases out of Boysen and Buffalo Bill Reservoirs, the April-July runoff into Bighorn Lake is estimated to be about 1,400,000 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
 April 1, 2011

Present Elevations & Storages:

<u>Reservoir</u>	<u>Elevation</u>	<u>Storage</u>	<u>Percent of Average</u>	<u>Percent Full</u>
Boysen	4716.88	595,410	111	80
Buffalo Bill	5365.05	433,323	106	67
Bighorn Lake	3620.91	836,009	106	82

Actual Inflows (1,000 Acre-Feet):

<u>Month</u>	<u>Inflow</u>	<u>Percent of Average</u>
March	137.7	81
April	121.4	74
May	340.9	138
June	761.3	184
July	280.8	97
August	122.7	77
September	119.6	70
April-July, 2010	1,504.4	135
WY-2010 Total	2,573.5	109
October	122.2	67
November	122.6	80
December	122.7	89
January	121.9	91
February	111.9	83
March	167.4	99

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

<u>Month</u>	<u>Gains</u>	<u>Percent of Average</u>
March	66.0	89
April	28.3	81
May	47.5	79
June	228.3	215
July	-50.8	---
August	-71.7	---
September	-9.7	---
April-July, 2010	254.2	163
WY-2010 Total	513.9	107
October	28.7	40
November	54.2	89
December	52.1	121
January	50.9	110
February	47.9	90
March	95.6	128

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

<u>Agency</u>	<u>Inflows</u>	<u>Percent of Average</u>
USBR	1,400.0	126

Snowpack Conditions:

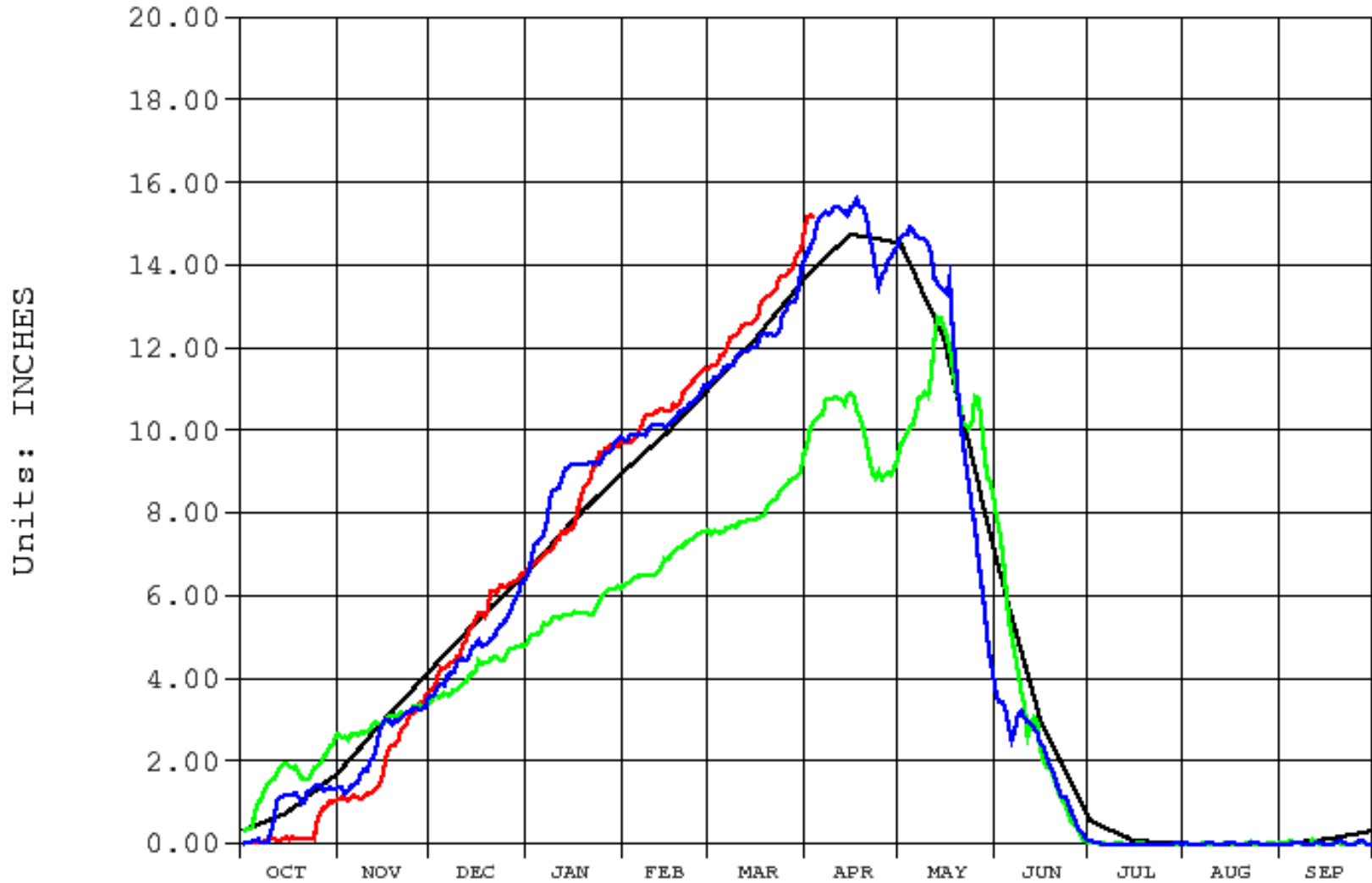
S N O W - P R E C I P I T A T I O N U P D A T E
 Based on Mountain Data from NRCS SNOTEL Sites
 As of FRIDAY: APRIL 1 , 2011

<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	27.2	23.6	115	25.9	20.3	128
BOX CANYON	6670	16.3	10.4	157	17.7	12.5	142
BRACKETT CREEK	7320	27.0	21.5	126	30.3	25.2	120

BURNT MTN	5880	5.9	6.2	95	10.8	15.4	70
CANYON	7870	17.5	13.9	126	18.8	15.6	121
COLE CREEK	7850	12.1	16.4	74	10.0	16.7	60
EAST BOULDER MINE	6335	6.8	-M	*	13.7	-M	*
EVENING STAR	9200	33.2	30.1	110	35.3	25.5	138
FISHER CREEK	9100	42.9	35.4	121	40.7	36.8	111
MONUMENT PEAK	8850	28.4	21.0	135	30.0	21.3	141
NORTHEAST ENTRANCE	7350	15.0	11.3	133	16.2	12.8	127
PARKER PEAK	9400	29.8	21.9	136	25.9	16.4	158
PLACER BASIN	8830	22.3	17.8	125	23.0	19.1	120
PORCUPINE	6500	8.5	6.9	123	13.5	11.9	113
SACAJAWEA	6550	18.3	14.8	124	27.4	22.7	121
SHOWER FALLS	8100	24.7	22.7	109	27.6	24.6	112
S FORK SHIELDS	8100	18.0	17.7	102	25.7	20.3	127
SYLVAN LAKE	8420	25.2	22.8	111	28.7	21.1	136
SYLVAN ROAD	7120	16.4	12.9	127	21.1	17.8	119
THUMB DIVIDE	7980	22.6	19.2	118	20.5	19.1	107
TWO OCEAN PLATEAU	9240	-M	28.4	*	-M	28.0	*
WHITE MILL	8700	29.5	24.6	120	29.6	27.3	108
WOLVERINE	7650	15.4	11.6	133	15.0	12.9	116
YOUNTS PEAK	8350	18.1	17.3	105	15.8	16.3	97
Basin wide percent of average				119			118
WIND RIVER BASIN (WYOMING)							
BURROUGHS CREEK	8750	15.8	14.8	107	16.5	16.4	101
CASTLE CREEK	8400	6.8	-M	*	8.0	-M	*
COLD SPRINGS	9630	8.4	9.0	93	8.5	10.7	79
DEER PARK	9700	19.1	17.1	112	22.2	22.1	100
HOBBS PARK	10100	14.6	15.1	97	13.0	12.9	101
KIRWIN	9550	11.9	11.5	103	13.2	11.3	117
LITTLE WARM	9370	12.7	12.0	106	12.9	13.5	96
OWL CREEK	8975	5.8	5.6	104	6.0	5.9	102
SOUTH PASS	9040	17.5	16.7	105	15.2	18.6	82
ST. LAWRENCE ALT	8620	4.9	7.4	66	7.0	8.9	79
TOGWOTEE PASS	9580	29.5	25.2	117	31.0	24.9	124
TOWNSEND CREEK	8700	8.8	8.8	100	11.2	11.7	96
YOUNTS PEAK	8350	18.1	17.3	105	15.8	16.3	97
Basin wide percent of average				104			100
SHOSHONE RIVER BASIN (WYOMING)							
BLACKWATER	9780	26.9	24.8	108	25.8	20.7	125
EVENING STAR	9200	33.2	30.1	110	35.3	25.5	138
MARQUETTE	8760	3.1	-M	*	6.4	9.8	65
SYLVAN LAKE	8420	25.2	22.8	111	28.7	21.1	136
SYLVAN ROAD	7120	16.4	12.9	127	21.1	17.8	119
YOUNTS PEAK	8350	18.1	17.3	105	15.8	16.3	97
Basin wide percent of average				111			120
BIGHORN RIVER BASIN (WYOMING)							
BALD MTN.	9380	24.0	19.9	121	19.3	17.5	110
BEAR TRAP MEADOW	8200	8.8	5.2	169	8.2	8.3	99
BLACKWATER	9780	26.9	24.8	108	25.8	20.7	125
BONE SPRINGS DIV	9350	20.3	16.4	124	16.8	14.7	114
EVENING STAR	9200	33.2	30.1	110	35.3	25.5	138
GRAVE SPRINGS	8550	9.2	9.4	98	9.2	9.7	95
KIRWIN	9550	11.9	11.5	103	13.2	11.3	117
MARQUETTE	8760	3.1	-M	*	6.4	9.8	65
MIDDLE POWDER	7760	10.9	11.8	92	11.5	12.4	93
OWL CREEK	8975	5.8	5.6	104	6.0	5.9	102
POWDER RIVER PASS	9480	15.0	10.9	138	17.4	12.4	140
SHELL CREEK	9580	18.2	14.9	122	16.4	13.4	122
SYLVAN LAKE	8420	25.2	22.8	111	28.7	21.1	136
SYLVAN ROAD	7120	16.4	12.9	127	21.1	17.8	119
TIMBER CREEK	7950	4.3	5.8	74	5.1	7.4	69
YOUNTS PEAK	8350	18.1	17.3	105	15.8	16.3	97
Basin wide percent of average				113			114

Archive Data From 1-OCT Through 30-SEP
Plotted 04/03/2011 16:45



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

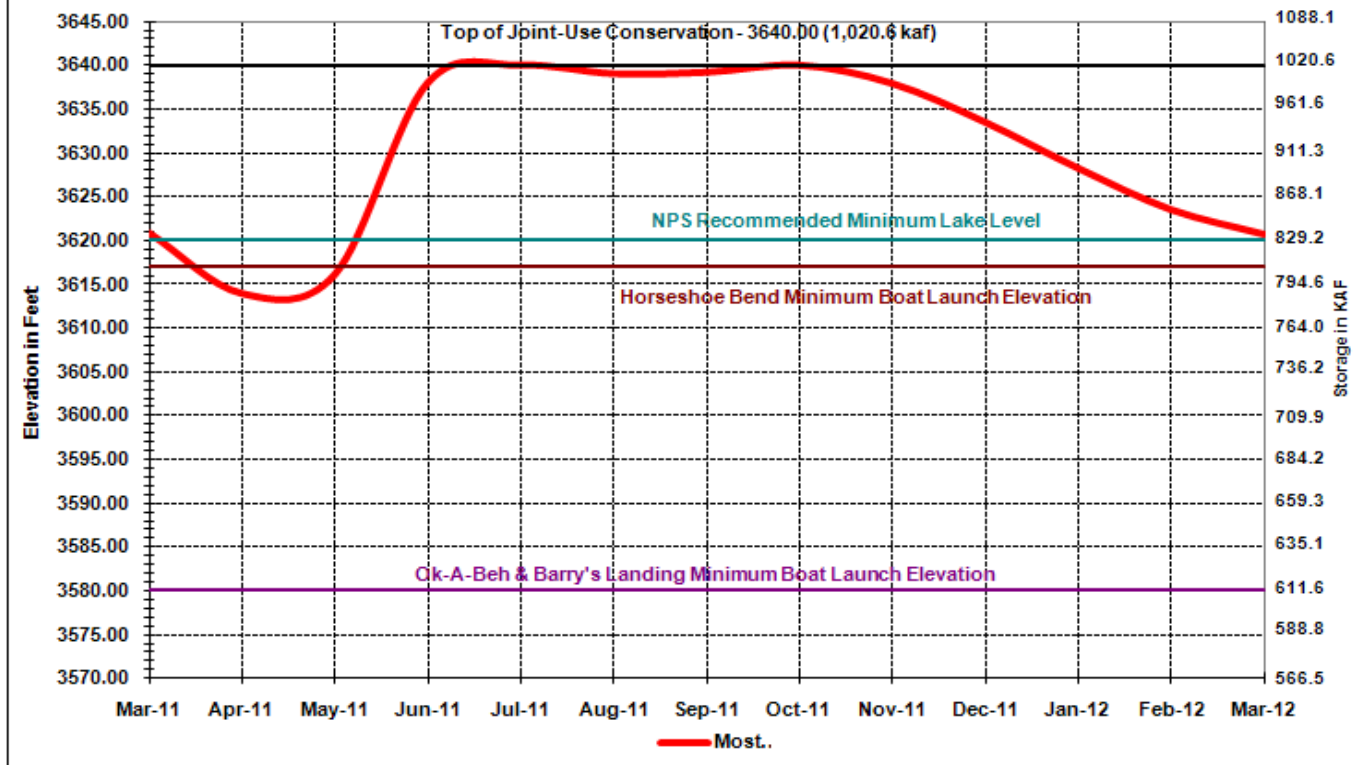
—	SE_AVG	Snow Water Equivalent Average (inches)	2011
—	SE	Snow Water Equivalent (inches)	2011 2010 2009

BIGHORN LAKE MONTHLY OPERATIONS

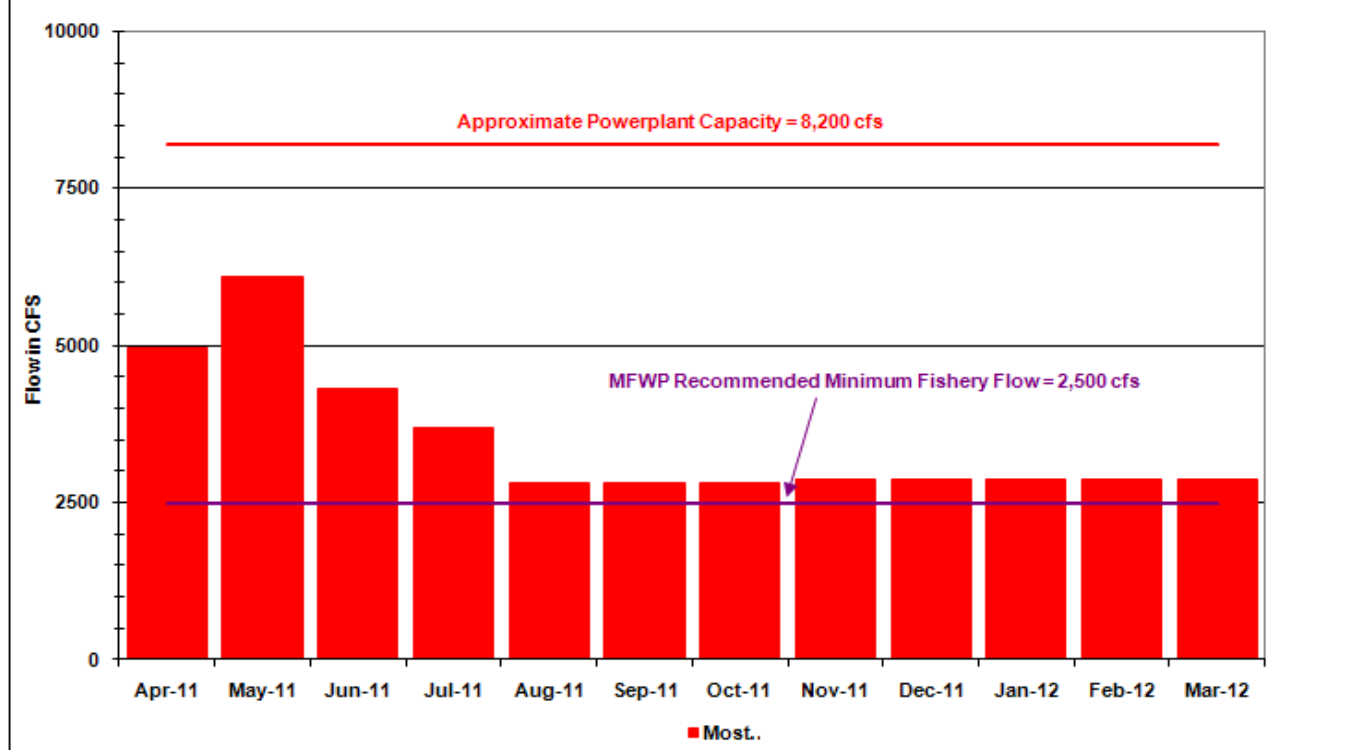
Bighorn Reservoir		Initial Cont 836.0 kaf Elev 3620.91 ft				Maximum Cont 1278.9 kaf Elev 3657.00 ft				Minimum Cont 469.9 kaf Elev 3547.00 ft				Total
	2011	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Boysen Release	kaf	77.4	172.9	150.6	132.7	96.9	59.6	61.5	59.6	61.5	61.6	57.6	61.5	1053.4
Boysen Release	cfs	1301	2812	2531	2158	1576	1002	1000	1002	1000	1002	1001	1000	
Buffalo Bill Riv Flo	kaf	127.5	165.1	181.2	171.1	122.2	98.8	46.5	24.7	21.8	21.8	20.4	21.8	1022.9
Buffalo Bill Riv Flo	cfs	2143	2685	3045	2783	1987	1660	756	415	355	355	355	355	
Station Gain	kaf	38.6	71.4	140.7	-29.2	-35.8	25.4	70.6	57.5	40.1	39.7	44.4	67.9	531.3
Monthly Inflow	kaf	243.5	409.4	472.5	274.6	183.3	183.8	178.6	141.8	123.4	123.1	122.4	151.2	2607.6
Monthly Inflow	cfs	4092	6658	7941	4466	2981	3089	2905	2383	2007	2002	2128	2459	
Turbine Release	kaf	293.2	393.2	278.9	250.1	195.3	181.9	168.5	167.3	172.9	172.9	161.7	172.9	2608.8
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	293.2	393.2	278.9	250.1	195.3	181.9	168.5	167.3	172.9	172.9	161.7	172.9	2608.8
Total Release	cfs	4927	6395	4687	4067	3176	3057	2740	2812	2812	2812	2811	2812	
Spring Flow	kaf	4.2	4.3	4.2	4.3	4.3	4.2	4.3	4.2	4.3	4.3	4.0	4.3	50.9
Irrigation Reqmnt	kaf	0.6	24.6	26.8	27.7	26.8	18.8	0.0	0.0	0.0	0.0	0.0	0.0	125.3
Afterbay Rels	kaf	297.4	397.5	283.1	254.4	199.6	186.1	172.8	171.5	177.2	177.2	165.7	177.2	2659.7
Afterbay Rels	cfs	4998	6465	4758	4137	3246	3128	2810	2882	2882	2882	2881	2882	
River Release	kaf	296.8	372.9	256.3	226.7	172.8	167.3	172.8	171.5	177.2	177.2	165.7	177.2	2534.4
River Release	cfs	4988	6065	4307	3687	2810	2812	2810	2882	2882	2882	2881	2882	
Min Release	kaf	148.8	153.7	148.8	153.7	153.7	148.8	153.7	148.8	153.7	145.7	136.3	151.0	1796.7
End-Month Targets	kaf				1020.6			1020.6						834.8
End-Month Content	kaf	786.3	802.5	996.1	1020.6	1008.6	1010.5	1020.6	995.1	945.6	895.8	856.5	834.8	
End-Month Elevation	ft	3613.70	3616.20	3638.01	3640.00	3639.04	3639.19	3640.00	3637.92	3633.50	3628.27	3623.56	3620.75	
Net Change Content	kaf	-49.7	16.2	193.6	24.5	-12.0	1.9	10.1	-25.5	-49.5	-49.8	-39.3	-21.7	-1.2
Yellowtail Power	2011	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
Turbine Release	kaf	293.2	393.2	278.9	250.1	195.3	181.9	168.5	167.3	172.9	172.9	161.7	172.9	2608.8
Generation	gwh	110.247	146.887	108.308	100.663	78.758	73.240	67.970	67.326	68.760	67.640	62.285	65.865	1017.949
End-Month Power Cap	mw	256.6	258.9	281.1	283.4	282.3	282.5	283.4	281.1	276.2	270.8	266.1	263.3	
% Max Gen		53	69	52	47	37	35	32	32	32	32	31	31	
Ave kwh/af		376	374	388	402	403	403	403	402	398	391	385	381	390
Upstream Generation	gwh	21.395	34.017	33.484	35.151	32.064	25.848	17.327	11.926	11.212	11.141	10.332	10.988	254.885
Total Generation	gwh	131.642	180.904	141.792	135.814	110.822	99.088	85.297	79.252	79.972	78.781	72.617	76.853	1272.834

BIGHORN LAKE

BIGHORN LAKE ELEVATION



BIGHORN RIVER FLOW BELOW AFTERBAY



WATER YEAR 2011

Supplemental Information

BHXAOP V1.12 Run: 08-Apr-2011 14:12
 Based on Minimum Probable Inflow Forecast

BIGHORN LAKE MONTHLY OPERATIONS

Bighorn Reservoir		Initial Cont 836.0 kaf Elev 3620.91 ft					Maximum Cont 1278.9 kaf Elev 3657.00 ft				Minimum Cont 469.9 kaf Elev 3547.00 ft				Total
2011		Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total	
Boysen Release	kaf	77.4	82.0	85.6	88.5	69.2	59.5	49.2	47.6	49.2	49.2	46.0	49.1	752.5	
Boysen Release	cfs	1301	1334	1439	1439	1125	1000	800	800	800	800	800	799		
Buffalo Bill Riv Flo	kaf	122.7	119.4	122.6	130.2	104.3	82.5	44.7	23.6	21.8	21.8	20.4	21.8	835.8	
Buffalo Bill Riv Flo	cfs	2062	1942	2060	2118	1696	1386	727	397	355	355	355	355		
Station Gain	kaf	-74.3	38.2	137.5	-23.8	-51.7	14.6	69.5	53.6	36.6	35.6	38.7	62.3	336.8	
Monthly Inflow	kaf	125.8	239.6	345.7	194.9	121.8	156.6	163.4	124.8	107.6	106.6	105.1	133.2	1925.1	
Monthly Inflow	cfs	2114	3897	5810	3170	1981	2632	2657	2097	1750	1734	1827	2166		
Turbine Release	kaf	151.9	174.0	210.6	184.9	176.2	163.4	149.4	145.2	150.1	150.1	140.4	150.1	1946.3	
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	151.9	174.0	210.6	184.9	176.2	163.4	149.4	145.2	150.1	150.1	140.4	150.1	1946.3	
Total Release	cfs	2553	2830	3539	3007	2866	2746	2430	2440	2441	2441	2441	2441		
Spring Flow	kaf	4.2	4.3	4.2	4.3	4.3	4.2	4.3	4.2	4.3	4.3	4.0	4.3	50.9	
Irrigation Reqmnt	kaf	0.6	24.6	26.8	27.7	26.8	18.8	0.0	0.0	0.0	0.0	0.0	0.0	125.3	
Afterbay Rels	kaf	156.1	178.3	214.8	189.2	180.5	167.6	153.7	149.4	154.4	154.4	144.4	154.4	1997.2	
Afterbay Rels	cfs	2623	2900	3610	3077	2936	2817	2500	2511	2511	2511	2510	2511		
River Release	kaf	155.5	153.7	188.0	161.5	153.7	148.8	153.7	149.4	154.4	154.4	144.4	154.4	1871.9	
River Release	cfs	2613	2500	3159	2627	2500	2501	2500	2511	2511	2511	2510	2511		
Min Release	kaf	148.8	153.7	148.8	153.7	153.7	148.8	153.7	119.0	123.0	123.0	115.0	123.0	1664.2	
End-Month Targets	kaf				1020.6			1020.6						814.8	
End-Month Content	kaf	809.9	875.5	1010.6	1020.6	966.2	959.4	973.4	953.0	910.5	867.0	831.7	814.8	814.8	
End-Month Elevation	ft	3617.29	3625.90	3639.20	3640.00	3635.41	3634.79	3636.06	3634.20	3629.91	3624.87	3620.33	3617.99	3617.99	
Net Change Content	kaf	-26.1	65.6	135.1	10.0	-54.4	-6.8	14.0	-20.4	-42.5	-43.5	-35.3	-16.9	-21.2	
Yellowtail Power	2011	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total	
Turbine Release	kaf	151.9	174.0	210.6	184.9	176.2	163.4	149.4	145.2	150.1	150.1	140.4	150.1	1946.3	
Generation	gwh	57.375	66.212	83.008	74.587	70.588	64.823	59.338	57.610	58.940	58.075	53.557	56.702	760.815	
End-Month Power Cap	mw	260.0	268.4	282.5	283.4	278.3	277.6	279.0	277.0	272.5	267.4	262.9	260.6		
% Max Gen		28	31	40	35	33	31	28	28	28	27	27	26		
Ave kwh/af		378	381	394	403	401	397	397	397	393	387	381	378	391	
Upstream Generation	gwh	21.503	28.846	29.496	31.235	25.660	21.756	15.507	10.480	10.066	10.007	9.291	9.894	223.741	
Total Generation	gwh	78.878	95.058	112.504	105.822	96.248	86.579	74.845	68.090	69.006	68.082	62.848	66.596	984.556	

BHXAOP V1.12 Run: 08-Apr-2011 14:12
 Based on Maximum Probable Inflow Forecast

BIGHORN LAKE MONTHLY OPERATIONS

Bighorn Reservoir		Initial Cont 836.0 kaf Elev 3620.91 ft					Maximum Cont 1278.9 kaf Elev 3657.00 ft				Minimum Cont 469.9 kaf Elev 3547.00 ft				Total
		2011	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	
Boysen Release	kaf		77.4	237.7	242.4	176.0	117.8	81.4	61.5	59.5	61.5	61.5	57.6	61.5	1295.8
Boysen Release	cfs		1301	3866	4074	2862	1916	1368	1000	1000	1000	1000	1001	1000	
Buffalo Bill Riv Flo	kaf		128.0	187.9	237.1	241.9	147.4	100.2	48.4	26.0	21.8	21.8	20.4	21.8	1202.7
Buffalo Bill Riv Flo	cfs		2151	3056	3985	3934	2397	1684	787	437	355	355	355	355	
Station Gain	kaf		43.1	-14.6	321.0	122.7	-32.3	39.0	76.3	63.1	46.1	49.8	59.5	77.9	851.6
Monthly Inflow	kaf		248.5	411.0	800.5	540.6	232.9	220.6	186.2	148.6	129.4	133.1	137.5	161.2	3350.1
Monthly Inflow	cfs		4176	6684	13453	8792	3788	3707	3028	2497	2104	2165	2390	2622	
Turbine Release	kaf		318.7	443.5	500.5	483.8	239.5	217.5	182.7	176.7	182.7	182.7	170.9	182.6	3281.8
Bypass/Spill/Waste	kaf		0.0	0.0	69.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	69.5
Total Release	kaf		318.7	443.5	570.0	483.8	239.5	217.5	182.7	176.7	182.7	182.7	170.9	182.6	3351.3
Total Release	cfs		5356	7213	9579	7868	3895	3655	2971	2970	2971	2971	2971	2970	
Spring Flow	kaf		4.2	4.3	4.2	4.3	4.3	4.2	4.3	4.2	4.3	4.3	4.0	4.3	50.9
Irrigation Reqmnt	kaf		0.5	11.2	21.8	27.7	26.8	11.9	0.0	0.0	0.0	0.0	0.0	0.0	99.9
Afterbay Rels	kaf		322.9	447.8	574.2	488.1	243.8	221.7	187.0	180.9	187.0	187.0	174.9	186.9	3402.2
Afterbay Rels	cfs		5427	7283	9650	7938	3965	3726	3041	3040	3041	3041	3041	3040	
River Release	kaf		322.4	436.6	552.4	460.4	217.0	209.8	187.0	180.9	187.0	187.0	174.9	186.9	3302.3
River Release	cfs		5418	7101	9283	7488	3529	3526	3041	3040	3041	3041	3041	3040	
Min Release	kaf		148.8	153.7	148.8	153.7	153.7	148.8	153.7	148.8	153.7	153.7	136.3	151.0	1804.7
End-Month Targets	kaf					1020.6			1020.6						834.8
End-Month Content	kaf		765.8	733.3	963.8	1020.6	1014.0	1017.1	1020.6	992.5	939.2	889.6	856.2	834.8	
End-Month Elevation	ft		3610.31	3604.45	3635.20	3640.00	3639.47	3639.72	3640.00	3637.70	3632.88	3627.55	3623.52	3620.75	
Net Change Content	kaf		-70.2	-32.5	230.5	56.8	-6.6	3.1	3.5	-28.1	-53.3	-49.6	-33.4	-21.4	-1.2
Yellowtail Power		2011	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
Turbine Release	kaf		318.7	443.5	500.5	483.8	239.5	217.5	182.7	176.7	182.7	182.7	170.9	182.6	3281.8
Generation	gwh		119.360	162.695	190.885	193.744	96.663	87.736	73.773	71.080	72.551	71.320	65.752	69.556	1275.115
End-Month Power Cap	mw		253.4	248.1	278.1	283.4	282.8	283.0	283.4	280.8	275.6	270.1	266.1	263.3	
% Max Gen			58	76	92	90	45	42	34	34	34	33	33	32	
Ave kwh/af			375	367	381	400	404	403	404	402	397	390	385	381	389
Upstream Generation	gwh		21.469	34.050	33.542	35.179	33.914	28.013	17.836	12.304	11.234	11.172	10.389	11.077	260.179
Total Generation	gwh		140.829	196.745	224.427	228.923	130.577	115.749	91.609	83.384	83.785	82.492	76.141	80.633	1535.294