Seasonal Updates to the 2011 Water Management Plan

Updated February 22, 2011

Introduction

The Annual Water Management Plan (WMP) is developed prior to the implementation of operational measures identified in the BiOp. The WMP is also developed prior to the receipt of any seasonal information that may determine how many of the operation measures are implemented. The Seasonal Update is intended to supplement the WMP with more detailed information operations as the water year progresses. Each section of the Seasonal Update will be updated when information is available and finalized when no further information is available. The first update for the primary elements of Fall and Winter will be posted on November 1st of each year. The first update for the primary elements of Spring and Summer will be posted by March 1st of each year.

Seasonal Update Elements

The elements included in the Season Update are generally the same as have been previously presented in the Fall/Winter and Spring/Summer Updates to the WMP. The change to present in this manner has been implemented to present better continuity for tracking operations as they change throughout and across each season. The elements included in the Seasonal Update and the approximate schedule for updates and finalization are as present in the table below.

Update Elements	**Last Updated**	**Begins**	**Finalized**
Current Conditions (WSF, Streamflows, etc…)	Feb 22, 2011	October	July
Seasonal Flow Objectives		April	August
Flood Control	Feb 22, 2011	January	June
Storage Project Operations	Nov 1, 2010	September	September
Water Quality (spill priority lists)	Dec 2, 2010	April	August 31
Specific Operations			
Chum Operations	Dec 28, 2010	November	April 10
Burbot	Nov 1, 2010	November	December 30
Upper Snake Flow Augmentation		April	August 31
Lake Pend Oreille		September	December 30
Transportation			
Spill Operations			
Fish Passage Research		March	April 3
Snake River Zero Generation	Dec 2, 2010	December	February
Hanford Reach Fall Chinook Protection Operations	Feb 22, 2011	November	June

1.0 Current Conditions

NOAA River Forecasts:

The Dalles January-July (Average = 107.3 maf)

Date Issued	**Forecast**	**Volume (maf)**	**% Normal**
Dec 16, 2010	December Mid Month	111.0	103%
Dec 30, 2010	January Early Bird	103.0	96%
Jan 7, 2011	January Final	104.0	97%
Jan 20, 2011	January Mid-Month	108.0	101%
Jan 27, 2011	February Early Bird	108.0	101%
Feb 9, 2011	February Final	110.0	103%
Feb 17, 2011	February Mid-Month	108.0	101%

The Dalles April-August (Average = 93.1 maf)

Date Issued	Forecast	Volume (maf)	% Normal
Dec 16, 2010	December Mid Month	98.9	103%
Dec 30, 2010	January Early Bird	89.0	96%
Jan 7, 2011	January Final	90.6	87%
Jan 20, 2011	January Mid-Month	91.5	98%
Jan 27, 2011	February Early Bird	90.9	99%
Feb 9, 2011	February Final	92.5	99%
Feb 17, 2011	February Mid-Month	91.2	98%

The Grand Coulee January-July (Average = 62.9 maf)

Date Issued	Forecast	Volume (maf)	% Normal
Dec 16, 2010	December Mid Month	64.1	102%
Dec 30, 2010	January Early Bird	58.9	94%
Jan 7, 2011	January Final	59.0	94%
Jan 20, 2011	January Mid-Month	61.7	98%
Jan 27, 2011	February Early Bird	61.9	98%
Feb 9, 2011	February Final	65.2	104%
Feb 17, 2011	February Mid-Month	65.5	104%

Lower Granite April-July (Average = 21.6 maf)

Date Issued	Forecast	Volume (maf)	% Normal
Dec 16, 2010	December Mid Month	23.5	109%
Dec 30, 2010	January Early Bird	22.7	105%
Jan 7, 2011	January Final	23.7	110%
Jan 20, 2011	January Mid-Month	23.5	109%
Jan 27, 2011	February Early Bird	23.0	107%
Feb 9, 2011	February Final	22.2	103%
Feb 17, 2011	February Mid-Month	21.0	97%

NOAA link to their water supply forecasts:
http://www.nwrfc.noaa.gov/misc/display_prod.cgi?/usr4/web/WAT_RES_prod/wsxfcst.all.20101216?WAT

Corps Forecasts:

Libby April-August (new equation)

Date Issued	**Forecast**	**Volume (kaf)**	**% Normal**
November 5, 2010	November Pre-Season	5822	99%
December 3, 2010	December Final	6262	107%
January 7, 2011	January Final	5610	89%
February 4, 2011	February Final	6656	105%

Normal April-August 1928-1999 = 6337 kaf

Dworshak April-July

Date Issued	**Forecast**	**Volume (kaf)**	**% Normal**
Oct 15, 2010	October Pre-Season	3972	148%
November , 2010	November Pre-Season	3972	148%
December 7, 2010	December Final	3452	129%
January 5, 2011	January Final	3340	124%
February 4, 2011	February Final	3142	117%

Normal April-July 1928-1999 = 2683 kaf

Reclamation Forecast:

Hungry Horse April-August

Date Issued	**Forecast**	**Volume (maf)**	**% Normal**
January 6, 2011	Apr-Aug January Final	2.193	106%
February 4, 2011	Apr-Aug February Final	2.413	117%

Hungry Horse April-August (30 year average =2070 kaf)

Hungry Horse January - July

Date Issued	Forecast	Volume (maf)	% Normal
January 6, 2011	Jan-Jul January Final	2.356	106%
February 4, 2011	Jan-Jul February Final	2.654	119%

Hungry Horse January-July (30 year average = 2224 kaf)

Hungry Horse May-September

Date Issued	Forecast	Volume (maf)	% Normal
January 6, 2011	May-Sep January final	1.944	106%
February 4, 2011	May-Sep February Final	2.139	117%

Hungry Horse May-September (30 year average = 1835 kaf)

Precipitation Summaries:

Date	Operation/TMT Discussion
October 26, 2010	The stormy weather that occurred over the past weekend will continue this week. There will be some streamflow rises; however, temperatures are cool. So flows are tempered because precipitation falling at higher elevations is coming down as snow. The new water year snowpack is starting to build!
November1, 2010	Remnants of the typhoon from Asia are bringing warm wet weather to the Pacific Northwest. The northern part of the basin, particularly British Columbia, will be receiving the heaviest of the precipitation. Snow levels in Canada will be about 6000 feet so some of the precipitation will be falling as rain. Expect precipitation, overall, for the week, to be average to above average. Moderate streamflow rises expected.
November 15, 2010	Precipitation this past weekend caused moderately small streamflow rises from BC to the lower Snake. Precipitation will continue this week although amounts expected are considered to be normal to below normal. With the cold front moving in, temperatures have dropped. This should temper streamflows rises, particularly at mid level and higher elevations, as the precipitation will be falling as snow.
November 22, 2010	This week streams should be quiet with the much colder weather shutting things down. Precipitation will fall mostly as snow. Overall, the precipitation will be average to below average this week.
November 29, 2010	The week of November 21-27 was perhaps the coldest November week since 1985 in the Columbia River Basin. A major winter storm moved off the Gulf of Alaska on the 21st, which pulled Arctic air south from the Yukon Territory. Snow levels fell to the valley floors on the 22nd with 2 to 3 feet of snow accompanied by hours of blizzard conditions in both middle and upper elevations. This was followed by record cold, particularly east of the Cascades. Temperatures began a slow recovery by Thanksgiving, but were still 5 to 7 degrees below long-term averages by week's end. The extreme cold slowed runoff into the river basin, with ice development noted at several headwater sites.
December 13, 2010	Unusually heavy precipitation, combined by a significant jump in snow levels, led to significant flows over the weekend, mostly west of the Cascades and especially over western Washington. Farther east where cold air remained entrenched until Sunday, most of the precipitation fell as snow or freezing rain before turning to rain. Reports are still coming in, but some stream response is already underway in some of the upper Columbia and Snake River tributaries. These increased flows will work downstream over the next few days. However a return to more seasonable precipitation and temperatures will slow runoff and reduce streamflows by midweek. The best news with this past weekend's storm is that significant precipitation fell over southern Canada, northeast Washington, and northern Idaho and Montana. These areas had generally missed out on previous storms this fall.
December 20, 2010	Below normal precipitation fell over the basin last week, which allowed streams to gradually recede throughout the week after significant jumps occurred in the wake of the December 7-9 heavy rain events. A storm system this weekend brought moderate amounts of precipitation to the southern two-thirds of the basin, but most of that fell as snow. Although still quite early in the season, snowpacks were above mid-December normals across Oregon and Southern Idaho and near normal in Northern Idaho and Montana. Snowpacks continued to lag behind normal in Washington and British Columbia.
December 27, 2010	Precipitation over the past four days was mostly a west side event. Snow conditions in Canada remain much below average in many spots. The rest of the basin is a mixed bag but pans out to an overall near average snowpack. Streamflows have been flat. The forecast for the next several days is for below normal precipitation in BC region (again) and near normal precipitation in northern Idaho and northwestern Montana, with heavier amounts in central and south Idaho. Mostly snow is expected but there will be a rain/snow mix at lower elevations. Small rises may occur in the Clearwater and lower Spokane river basins. Small rises should occur in the Willamette.

January 3, 2011	After a wet Christmas, below normal precipitation and temperatures were the main story across the entire basin last week. Temperature departures bottomed out at -10F over the New Years' weekend, with many subzero low temperatures in the interior Pacific Northwest. This kept streamflows flat with some icing noted on many smaller river systems. While snowpack levels remain near or even slightly above normal on the U.S. side of the border, they remain well below normal in southwest Canada.
January 10, 2011	Most of the precipitation last week was focused where it is needed most: over Canadian portions of the Columbia Basin. Several feet of snow fell in the mountains of southwest Canada, but that merely put a dent into ongoing snowpack deficits. The U.S. portion of the basin received below average precipitation last week, although snowpacks remained near or above early January normals.
January 18, 2011	Both weather and streamflows were unusually active across the basin last week, even for a La Niña winter. The beginning of the week featured a brief cold snap and unusually low elevation snows. By the end of the week, the jet stream quickly shifted into a nearly classic pineapple express configuration it dipped into Hawaii and aimed at the Pacific Northwest. The result was a rapid warmup and record rainfall this past weekend. This precipitation, which ranged from 2 to 9 inches across the U.S. portion of the Basin, in addition to snow levels ranging from 4000ft in Canada to 8000ft in the Cascades, led to significant streamflows and some tributary flooding -- particularly in the streams flowing out of the Cascades, and in the Clearwater, Spokane, and Pend Oreille Basins. Even southern British Columbia got into the action with high flows and significant improvement in the snowpack. While the Canadian headwater snowpack continues to lag well behind the rest of the basin, snow water equivalents as of this morning had risen above their record lows near Mica, and were now above average in the Kootenay Basin.
January 24, 2011	After the active weather from last weekend and early in the week, this coming week looks to be fairly quiet here in the northwest with dry conditions and just above normal temperatures. Streamflow rises peaked both above Coulee and Lower Granite early in the week with slow recessions across the week. Heartening news is that although we lost low elevation snow, that the storms from these past two weeks have increased the upper elevation snow and especially increased the snow pack in Canada. Water supply saw a small increase in the mid-month forecast, with these dry conditions expected for the next week, we may see that drop down again.
January 31, 2011	The Columbia Basin continued dry weather is expected this week, with the exception of some spotty light rain or mountain snow over southern Canada and Washington. A piece of the Arctic air heading into the eastern U.S. has also spilled into the valleys east of the Cascades and will remain in place for much of the week. East winds through the Gorge and passes will help drop temperatures to near average levels for a few days this week in the I-5 corridor before turning milder again this weekend. The forecast for the second week of February looks on the cool side, with some indications of more seasonable, wetter weather returning to the basin.
February 7, 2011	The cool dry weather led to gradual streamflow decreases, with some river icing returning to headwater areas in Montana and Idaho. Snowpack averages actually decreased in the U.S. portion of the basin last week because of the fact that snowpack should be steadily increasing in early February, and it simply did not last week. The only location which built snowpack was over southern British Columbia where many locations are finally near average after lagging for much of the winter so far.
February 14, 2011	Much of the week was mild and dry across the basin with temperatures several degrees above early February averages. By the end of the week, though, the expected turn toward much wetter and cooler weather began, particularly over British Columbia and Washington where significant valley rain and mountain snow fell. Streamflows slowly receded through much of the week, although some snowmelt in the Snake basins helped maintain some elevated base flows.

2.0 Seasonal Flow Objectives

Project	Average to date	BiOp Objective
Priest Rapids Spring (4/10-6/30)		135 kcfs
McNary Spring (4/10-6/30)		
McNary Summer (7/1-8/30)		200 kcfs
Lower Granite Spring (4/3-6/20)		
Lower Granite Summer (6/21/8/30)		

3.0 Flood Control

Flood Control Elevations and April 10 Objective Elevations per each forecast period. Forecasted flood control elevations will be presented beginning in December after the Libby and Dworshak water supply forecasts are available. Subsequent forecasted flood controls will be updated after the final water supply forecasts are available January-April. (*The April 10 elevations noted below are the result of linear interpolation between the March 31 and April 15 forecasted flood control elevations.)*

Libby	Dec	Jan	Feb	Mar	Apr
Jan 31	2410.8	2424.5			
Feb 28	2409.2	2432.7	2392.7		
March 31	2408.4	2436.7	2388.6		
April 10	2408.4	2436.7	2388.6		
April 15	2408.4	2436.7	2388.6		
April 30	2408.4	2436.7	2388.6		

Hungry Horse	Dec	Jan	Feb	Mar	Apr
Jan 31	3543.6	3541.8			
Feb 28	3538.5	3534.9	3525.1		
March 31	3532.5	3527	3511.2		
April 10	3530.6	3524.4	3506.5		
April 15	3529.6	3523.1	3504.1		
April 30	3526.7	3519.0	3501.8		

Grand Coulee	Dec	Jan	Feb	Mar	Apr
Jan 31	1290.0	1290.0			
Feb 28	1289.8	1289.7	1289.4		
March 31	1259.3	1267.4	1262.0		
April 10	1246.3	1254.8	1248.9		
April 15	1239.8	1248.5	1242.3		
April 30	1230.8	1238.5	1235.1		

Brownlee	Dec	Jan	Feb	Mar	Apr
Jan 31	2077.0	2077.0			
Feb 28	2048.4	2044.5	2044.5		
March 31	2043.1	2036.8	2035.9		
April 15	2040.7	2031.7	2030.7		
April 30	2038.4	2028.8	2026.8		

Dworshak	Dec	Jan	Feb	Mar	Apr
Jan 31	1526.2	1526.2			
Feb 28	1491.5	1493.5	1501.4		
March 31	1469.6	1479.7	1495.6		
April 10	1472.3	1483.6	1495.1		
April 15	1474.2	1485.5	1494.8		
April 30	1466.6	1475.2	1489.8		

Grand Coulee and all Canadian projects will be operated for standard flood control in 2009-10. Hungry Horse and Libby will be operated for Variable Q (VARQ) Flood Control. Beginning in January, the Corps calculates Upper Rule Curve elevations based on the monthly official final forecasts. Projects are operated using these elevations as an upper limit, with the objective of reaching their spring refill elevations. For detailed flood control operations see: http://www.nwd-wc.usace.army.mil/report/colsum.

4.0 Storage Project Operations

Libby Dam

Libby Dam - Bull Trout Flows

Bull trout minimum flows are specified in the 2006 Libby Sturgeon Biological Opinion (2006 BiOp) and presented in Table 7 of the WMP.

Libby Dam - Sturgeon Pulse

Per the 2006 BiOp, the sturgeon pulse volume is determined from a tiered flow structure based upon the Corps' May Final WSF for the period of April-August.

Libby Dam - April 10 and Refill Objectives

To be update in January after the release of the January final forecast.

Libby Dam – Summer draft Limit

Experimental draft to 10 feet from full by the end of September, except in the lowest 20th percentile of water years (currently less than 71.8 MAF), as measured at The Dalles, when draft will increase to 20 feet from full by end of September. The RFC's May Final forecast for April-August is used to set the official draft limit.

Hungry Horse Dam

Water Supply Forecast and Minimum Flows

The minimum flow requirements are measured at two locations the South Fork Flathead River below Hungry Horse Dam and the Flathead River at Columbia Falls. The minimum flows will be determined monthly, beginning in January, with the Bureau of Reclamation's WSF forecast for Hungry Horse Reservoir for the period of April 1 to August 31. The final flow levels, for the remainder of the calendar year, are based on the March Final forecast. The Bureau of Reclamation's March Final WSF for April–August was 1449 kaf (70% of average). Minimum flow requirements from Hungry Horse and Columbia Falls are currently set at 616 cfs and 3,330 cfs, respectively. The March final forecast sets the minimum flow requirements from March through December.

Hungry Horse April 10 and June 30 Refill Objectives

The Bureau of Reclamation computes Hungry Horse's final April 10 elevation objective by linear interpolation between the March 31 and April 15 forecasted flood control elevations based on the March Final WSF. Hungry Horse Reservoir is expected to refill by approximately June 30. A late snowmelt runoff may delay refill to sometime after June 30 in order to avoid excessive spill at the project.

Hungry Horse Summer Draft Limit

The experimental summer reservoir draft limit at Hungry Horse is 3,550 ft. (10 ft. from full) by September 30, except in the lowest 20th percentile of water years (The Dalles April-August <71.8 maf) when the draft limit is elevation 3,540 ft. (20 ft. from full) by September 30. The RFC's May Final April-August forecast is used to set the official draft limit.

Grand Coulee Dam

Grand Coulee April 10 and June 30 refill Objective

The Bureau of Reclamation computes Grand Coulee's final April 10 elevation objective by linear interpolation between the March 31 and April 15 forecasted flood control elevations based on the March Final WSF for The Dalles.

Grand Coulee Summer Draft Limit

The Grand Coulee summer draft limit is set by the magnitude of the RFC's July Final April–August WSF at The Dalles Dam.

Drum Gate Maintenance

Because maintenance was deferred in 2009 and 2010, drum gate maintenance will have to be performed in the spring of 2011 regardless of water supply conditions.

Dworshak Dam

Summer Draft for Temperature Control and Flow Augmentation

To be update in June

Upper Snake River Flow Augmentation

To be updated in April

4.0 Water Quality

Insert Latest spill priority list below

Table 6 – Example Spill Priority List from last spring.

Spill Priority List

May 10, 2010

Project	TDG% 110	TDG% 115	TDG% 120	TDG% 125	TDG% 130	TDG% 135
LWG	20	30	41	90	125	200
LGS	10	15	32	80	150	250
LMN	10	15	35	95	180	250
IHR	30	45	95	125	180	240
WEL	10	15	25	45	130	
RRH	5	10	20	30	150	
RIS	5	10	20	30	150	
WAN	10	15	20	50	100	
PRD	20	30	40	40	40	
MCN	40	80	145	230	290	450
JDA	20	60	120	240	450	600
TDA	20	60	125	250	360	600
BON	50	65	75	150	225	270
CHJ	20	50	100	130	165	200
GCL(a)	0	5	10	20	35	50
GCL(b)	0	15	30	75	120	130
DWR	37%	42%	50%	60%	70%	

When Grand Coulee Forebay elevation is less than 1266 ft, use GCL(a) spill cap associated with outlet tubes. When Grand Coulee forebay elevation is greater than 1265.5 ft, use GCL(B) spill caps associated with the drumgates.

Date	Water Quality Discussion
October 26, 2010	Work on Bonneville Dam in the 1st week of November may require spill at the project to maintain the chum tailwater operation. This operation is not expected to impact the chum as the eggs in this phase of the life cycle are resilient to TDG.
December 6, 2010	Work in Bonneville Dam pool to remove the BGS begins Dec 6th. This work required divers and will require that a maximum of 2 units be operated at PH2 during the day through Jan 8th. If the chum tailwater is raised to a higher level the PH2 limitation will result in spill to maintain the daytime chum tailwater elevation.
	McNary transducer work might also require spill if a higher BON flow is required during the day.

5.0 Specific Operations

Lake Pend Oreille Kokanee Operation

The state of Idaho (Idaho Department of Fish and Game (IDFG)) and the U.S. Fish and Wildlife Service (USFWS) submitted a System Operation Request (SOR) presented at the October 15, 2010 TMT meeting requesting that the Action Agencies: *"Draw Lake Pend Oreille down to a winter minimum control elevation (MCE) no lower than 2055'while minimizing or eliminating the need to spill at Albeni Falls Dam."* The SOR further specified: "*We therefore request that the drawdown be completed by November 8 if reasonably possible. If this is not possible, the MCE should be reached no later than November 15 and should not be dropped below this elevation for the duration of the winter. This proposed operation is not anticipated to cause exceedence of the state maximum total dissolved gas standards at downstream projects barring unforeseen circumstances. The lake will then be held within 0.5' above the MCE to the end of kokanee spawning [monitored by Idaho Department of Fish and Game (IDFG)] or December 31, whichever comes first. "*

In response to this SOR the Corps implemented a drawdown plan on as agreed to by TMT on October 15. Additional information will be included in the final Fall/Winter update.

Burbot Spawning Flows (Non-BiOp Action)

EDIT PER any changes for this year.

Under the terms of an MOU prepared in 2005 by the Kootenai Valley Resource Initiative (KVRI) and signed by the Corps, the selective withdrawal gate system at Libby Dam has been set to release cool water in November and December, before temperature stratification limits the temperature control capability. The purpose of this operation is to provide cooler river temperatures downstream Libby Dam (closer to normative thermal conditions). This operation will likely result in November and December temperatures being slightly cooler than the existing selective withdrawal temperature rule curve. Corps staff at Libby Dam removed selective withdrawal gates incrementally during late October to assure that daily temperature change remains within 2° F per day; gates were removed systematically to slowly lower river temperature by early November (a span of about 8° F). Temperature will not be minimized this fall until isothermal conditions develop due to constraints and precautions that will be observed related to selective withdrawal crane rehabilitation that will occur over the winter, necessitating a more conservative gate removal pattern. Rather than removing all gates (resulting in withdrawal elevation of 2,222 ft.), the Corps removed all but 3 rows of gates (resulting in withdrawal elevation of 2,253 ft.).

Chum Operations

Date	Operation/TMT Discussion
October 26, 2010	TMT discussion – Lots of chum showing up in the commercial and tribal fisheries. We've had plenty of rain recently resulting in good streamflows in the Hamilton springs, and Hamilton Creek. The early arrival of chum and good hydrologic conditions lead to a decision plan the start the chum spawning operation for November 1st. The typical daytime spawning tailwater range of 11.3-11.7 the planned operation.
Nov 1, 2010	Chum spawning operation begins as planned
November 19, 2010	Chum teletype modified to meet the desire of the salmon managers to move excess water at night around the midnight hour as much a possible.
December 13, 2010	High flows associated with a large amount of basin-wide precipitation resulted in the need to move excess water for several days at a tailwater elevation of 18.5'. Hoping to recover the daytime spawning operation by Monday the 20th.
December 22, 2010	TMT declares chum spawning completed. The chum operation transitions to the incubation phase with a minimum tailwater of 12.2 feet. TMT left the door open for a lower protection level if water becomes limited in the before emergence is completed in the spring.

Ives/Pierce Survey Data

Date	Lives	Dead*	Redds	
24-Sep	0	0	0	
1-Oct	0	0	0	
14-Oct	0	0	0	
19-Oct	0	0	0	
26-Oct	0	0	0	
2-Nov	18	1	3	
9-Nov	38	2	11	
16-Nov	32	24	18	
23-Nov	130	17	39	
30-Nov	134	30	16	Most areas are mass redds.
6-Dec	47	21	NC	
14-Dec	5	7	NC	
21-Dec	1	2	0	
28-Dec	0	1	0	

Vernita Bar spawning operation (Non-BiOp Action)

Date	Operation/TMT Discussion
October 24, 2010	Based on survey counts and the Hanford Reach Fall Chinook Protection Program Agreement, the Initiation of Spawning has not occurred for either zone below or above the 50 kcfs elevation.
October 31, 2010	The Initiation of Spawning has been set to be October 27 for the 36 kcfs - 50 kcfs zone (the Wednesday before the weekend on which the Monitoring Team identifies five or more redds within the zone). The Initiation of Spawning has not been set for the zone above 50 kcfs since no redds were counted above the 50 kcfs flow elevation.
November 7, 2010	Based on the November 7 survey count and the Hanford Reach Fall Chinook Protection Program Agreement, the Initiation of Spawning has been set for the zone above 50 kcfs to be November 3 (the Wednesday before the weekend on which the Monitoring Team identifies five or more redds within the zone). The Initiation of Spawning for the 36-50 kcfs zone was set to be on October 27 during the October 31 redd survey.
November 21, 2010	Based on the November 21 survey count and the Hanford Reach Fall Chinook Protection Program Agreement, the 2010-2011 Critical Flow Elevation is set at the 65 kcfs elevation (the Agreement states in section C6b, "If there are fewer than 15 redds above the 65 kcfs elevation, then the Critical Elevation will be the first 5 kcfs elevation above the elevation containing the 16th highest redd"). The Monitoring Team agreed that the fish spawning season had ended and that November 21, 2010 be identified as the End of Spawning date. The Team also agreed that since fish spawning has ended, there was no need for the November 28 supplemental ground redd count.
February 22, 2011	It is estimated that 1,000 temperature units (TU) from the initiation of spawning will be reached on Saturday 2/26/2011 marking Emergence and the start of the Emergence and Rearing periods.

Snake River Zero Generation (Non-BiOp Action)

According to the Lower Snake projects operating manuals, “From December to February, "zero" minimum project discharge is permitted on a limited basis. Under an agreement between the Corps of Engineers and the fishery agencies, zero river flow is allowed for water storage during low power demand periods (at night and on weekends) when there are few, if any, actively migrating anadromous fish present in the Snake River. Water stored under zero river flow conditions may maximize power production from the Columbia River Basin system, but zero river flow operations are not recommended at Lower Snake projects when fish are actively migrating in the Snake River.”

In 2005, the Salmon Managers developed guidance criteria for dropping to zero generation. The status of the actively migrating fish in the Snake River will be evaluated in November and December to determine when the criteria have been met.

Paul Wagner, NOAA Fisheries and further clarified by David Benner, FPC reported at the December 1, 2010 TMT that the criteria this year for “few if any” fish is 65 combined and 20 wild. As of TMT on December 1st. the criteria had not been met but was only a few fish off the objective. Paul committed to TMT to coordinate with TMT when the criteria is met. On December 2nd the criteria was met.

Minimum Operating Pool (MOP)

(Edit for what we know now)

To be updated spring 2011

Table 5.— Snake River MOP elevations.

Project	Operation	Lower Range Elevation (ft)	Upper Range Elevation (ft)
Ice Harbor	MOP	437.0	438.0
Lower Monumental	MOP	537.0	538.0
Little Goose[A]	MOP	633.0	634.0
Lower Granite	MOP	733.0	734.0

A – To be adjusted as necessary to provide adequate depth over entrance sill at Lower Granite navlock.

At John Day, the forebay is being operated within a 1.5 ft range of the minimum level that provides irrigation pumping from April 10 to September 30. The initial range is 262.5 to 264.0 feet. The minimum level will be adjusted upward as necessary to facilitate irrigation pumping.

Date	MOP Operation Discussion
April 3, 2011	Planned start of MOP operations on the Lower Snake River

6.0 2010 Spill and Transportation Operations

To be updated spring 2011

7.0 2010 Fish Passage Research

To be update spring 2011