

Spring / Summer Update to the 2002 Water Management Plan

Introduction

The purpose of the Spring / Summer update to the Water Management plan is to provide information on how the Action Agencies plan on operating the Federal Columbia River Power System (FCRPS) reservoirs during the spring and summer seasons. The update is needed because water supply forecasts for the spring summer time period are not available at the time the water management plan is written. The spring / summer update has current water supply forecasts that give the action agencies a better idea on how the FCRPS will be operated.

The Spring / Summer update does not repeat information in the Water Management plan unless more detail or changes need to be provided because of the availability of water supply forecasts and other new information.

Water Supply Forecasts

There are four forecast points that are used to determine BiOp operation of the FCRPS reservoirs. The latest forecasts are given below.

Forecast Point	Forecast Period	Forecast Date	Value (April Final Forecast)
Lower Granite	April – July	April Final	19.2 MAF ^A
Lower Granite	April – July	June Final	19.2 MAF
The Dalles	April – August	April Final	87.8 MAF ^A
The Dalles	April – August	July Final	87.8 MAF
Hungry Horse	April – August	March Final	2.05 MAF ^{AB}
Libby	April - August	N/A	6.3 MAF ^C

All forecasts from Weather Service unless otherwise indicated

A – Value that is used to set operations

B – USBR Forecast C – COE Forecast

Flow Objectives

Spring

The April final water supply forecast sets the spring flow objectives for Lower Granite and McNary. The Priest Rapids spring flow objective is fixed (not dependent on the water supply forecast). The spring flow objectives are shown below.

Project	Spring Flow Objective
Lower Granite	97 KCFS
McNary	246 KCFS
Priest Rapids	135 KCFS

Summer

Based on the latest water supply forecast (April Final) the summer flow objectives are shown below. The McNary summer flow objective is fixed (not dependent on the water supply forecast).

Project	Summer Flow Objective
Lower Granite	54 KCFS
McNary	200 KCFS

Prospects For Meeting Flow Objectives

An analysis of the likelihood of meeting the flow objectives was conducted by using the Corps' QADJ runs of the HYSSR model. This model uses the volume of the current water supply forecast and applies the 59 shapes observed in the runoff record to this runoff volume. The likelihood of meeting the flow objectives and refilling the reservoirs by the targeted dates is a function of both the runoff volume and the timeframe in which the snowmelt and stream flows occur.

24 April, 2002

Summary of April 2002 QADJ Model Runs

Assumptions:

- * Streamflows were adjusted based on the Apr 2002 Final Water Supply Forecast and shaped 59 different ways based on observed historical runoff.
- * Starting Elevations were actual Mar 31 observed data.
- * Hungry Horse targets full in June, and drafts to 3540 ft by 31 Aug.
- * Grand Coulee drafts to 1244.9 ft by 30 Apr, targets full by 30 June, drafts no lower than 1285 to meet McNary flows in July and targets 1280 ft by 31 Aug.
- * Brownlee operates to flood control elevations.
- * Dworshak maintains April discharges at 15,000 cfs. Project attempts to meet Lower Granite flow objectives in May, targets full in June, releases 14,000 cfs in July and targets 1520 ft by 31 Aug.
- * Libby releases 4 kcfs in April, releases flow for sturgeon and bull trout in May and June, targets full in July, and drafts to 2439 ft by 31 Aug.

Results:

Priest Rapids Meets Flow Objectives of 135 kcfs in Apr - Jun:

Month	Occurrences out of 59 Years	Average Flow for 59 Years (kcfs)
Apr2	29	137
May	56	148
Jun	52	160

Lower Granite Meets Flow Objectives of 97 kcfs in Apr - Jun and 51.3 kcfs in Jul - Aug:

Month	Occurrences out of 59 Years	Average Flow for 59 Years (kcfs)
Apr2	9	79
May	31	98
Jun	17	86
Jul	11	45
Aug1	0	31
Aug2	0	31

McNary Meets Flow Objectives of 246 kcfs in Apr2 - Jun and 200 kcfs in Jul - Aug:

Month	Occurrences out of 59 Years	Average Flow for 59 Years (kcfs)
Apr2	17	221
May	56	251
Jun	35	252
Jul	32	195
Aug1	0	132
Aug2	0	129

Projects Refill by 30 June:

Month	Occurrences out of 59 Years	Average Elevation on 30 Jun for 59 Years
Libby *	23	2454
Hungry Horse	52	3560
Grand Coulee	59	1290
Dworshak	27	1591

* Libby refills 58 out of 59 years by 31 Jul with an average elevation of 2458.8 ft for the 59 years.

Storage Project Operation

Libby

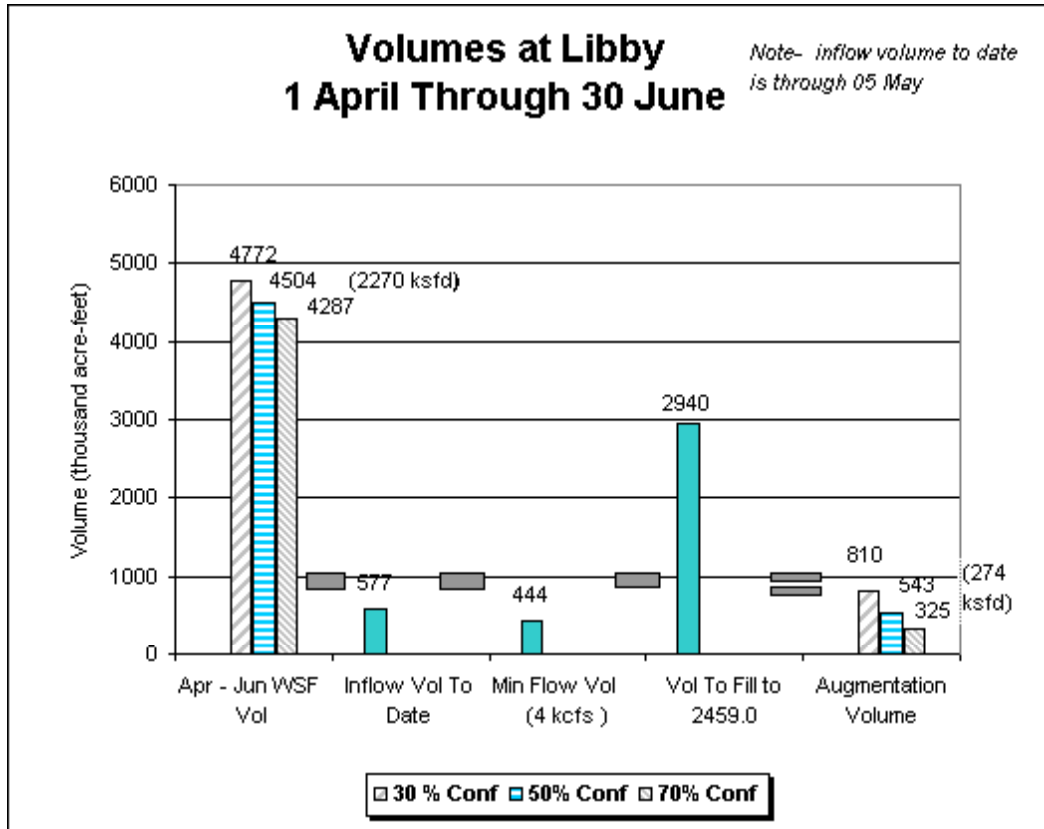
Tier

The current water supply forecast for Libby (April – August) puts Libby operations in the 3rd Tier of operation for sturgeon called for in the USFWS 2000 Biological Opinion. Tier 3 provides for a Sturgeon flow volume of .5 Maf and minimum bull trout releases in July of 8 kcfs.

Sturgeon Pulse

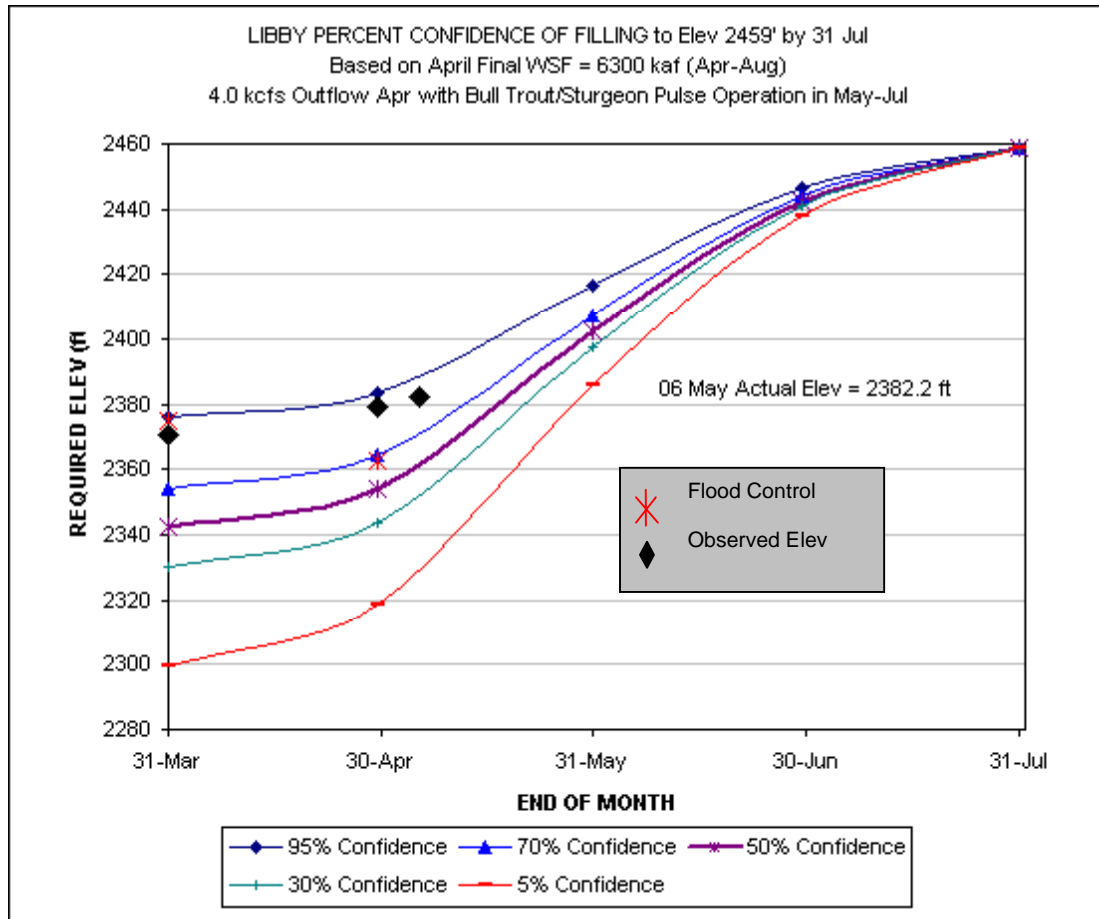
This year's sturgeon pulse request has not been finalized yet. The request will likely include a two-week operation at 20 kcfs down to 15 kcfs (about 350 total KAF). This will be preceded by tiered Bull Trout flows as per the USFWS Biological Opinion, a total of 150-200 KAF. The draft plan proposes operation from May 5 through the second week in July and the use of 500-800 KAF.

Libby Outlook



Starting Elev. = 2381.54 ft, observed midnight pool 5/05/02

Calculations based on official April Final Water Supply Forecast from USACE , NWD.

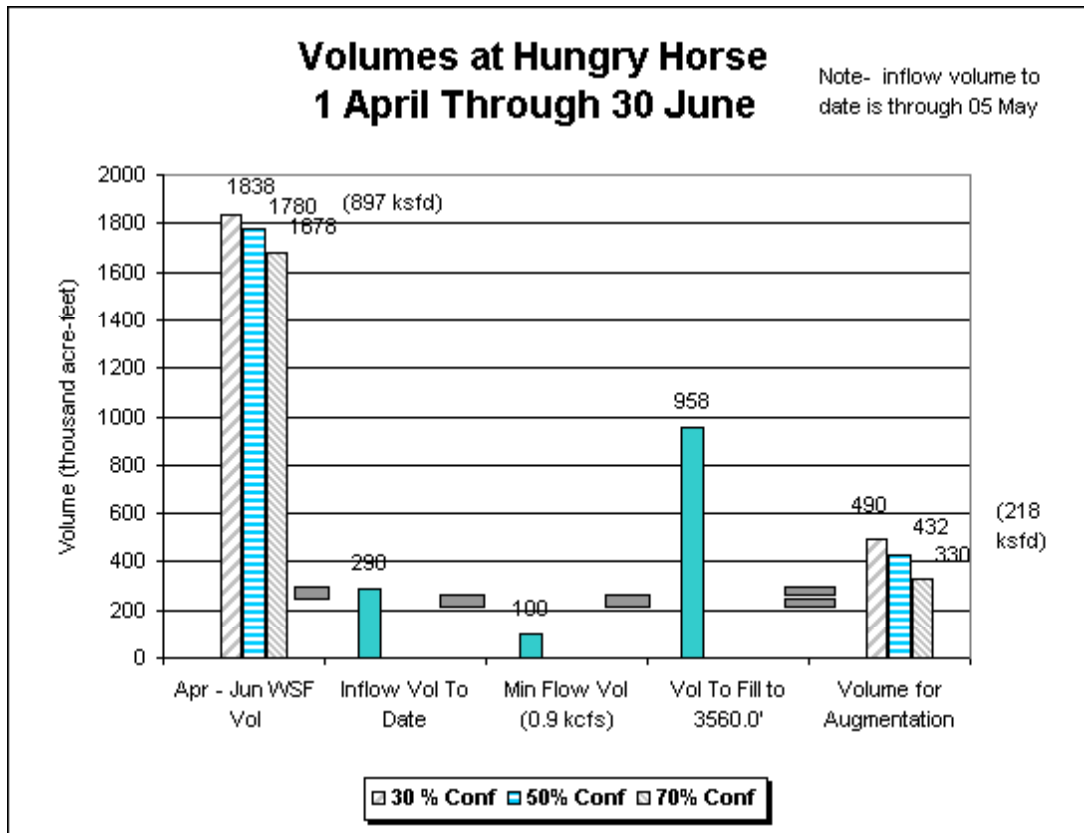


Hungry Horse

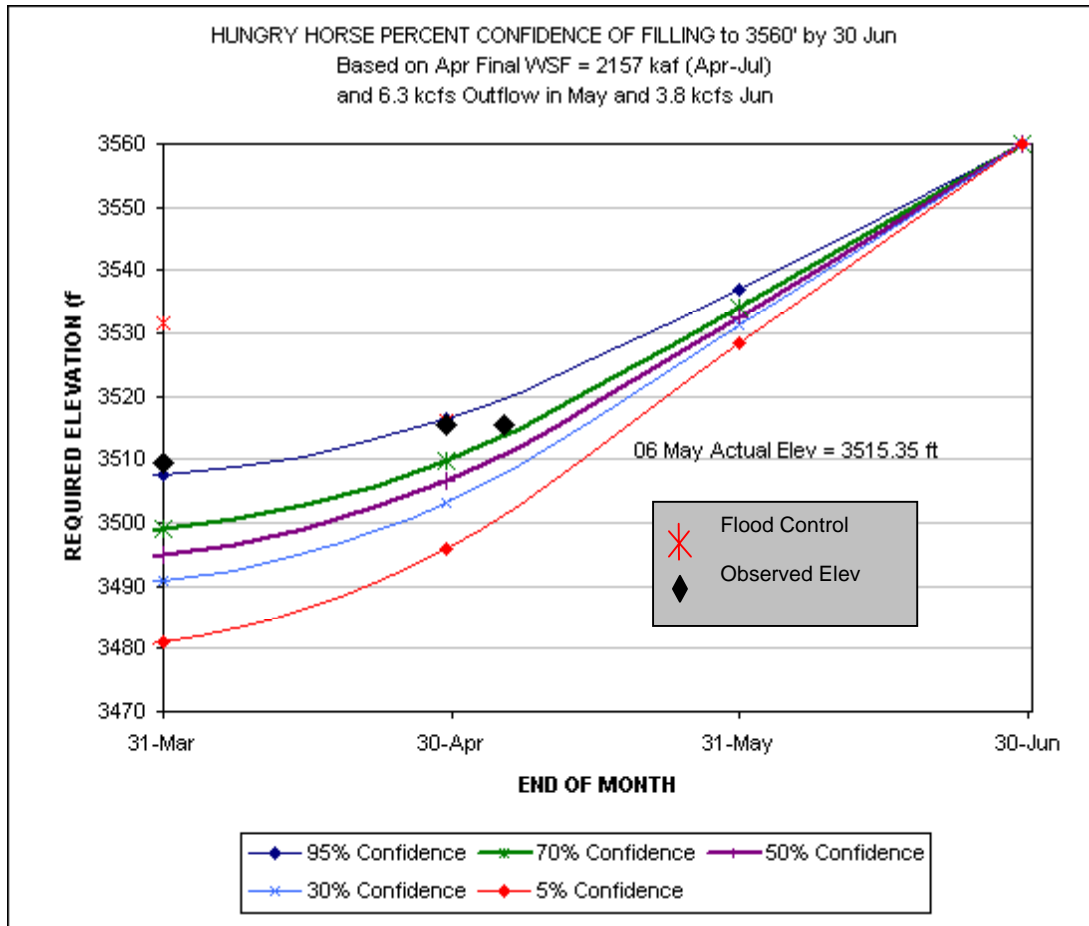
HGH Minimum Flows

Based on the Bureau of Reclamation March final forecast for April – August of 2053 kaf, the minimum outflow from Hungry Horse will be 900 cfs and the minimum flow for Columbia Falls will be 3,500 cfs.

HGH Outlook



Starting Elevation = 3515.49 ft, observed midnight pool 5/05/02
 Calculations based on April Final Water Supply Forecast, U S Bureau of Reclamation.



Grand Coulee

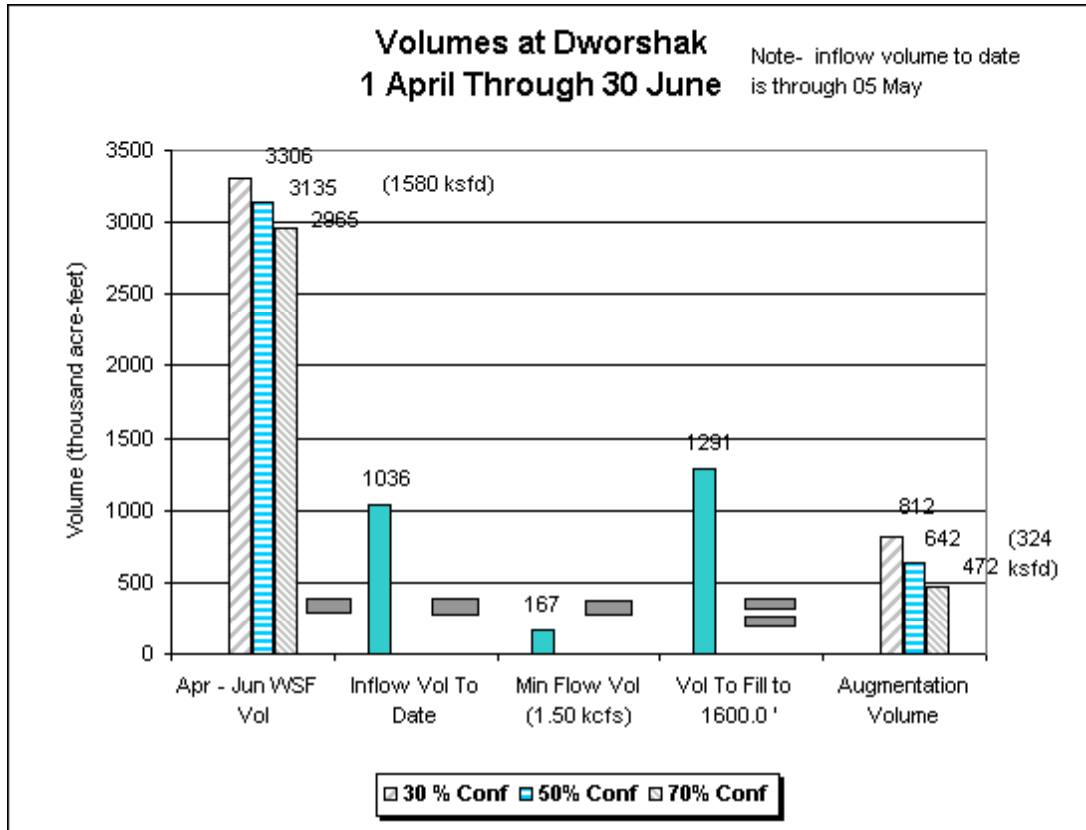
Based on the current April – August forecast at the Dalles, the summer draft limit for Grand Coulee is expected to be 1278 feet.

GCL Summer Draft Limit

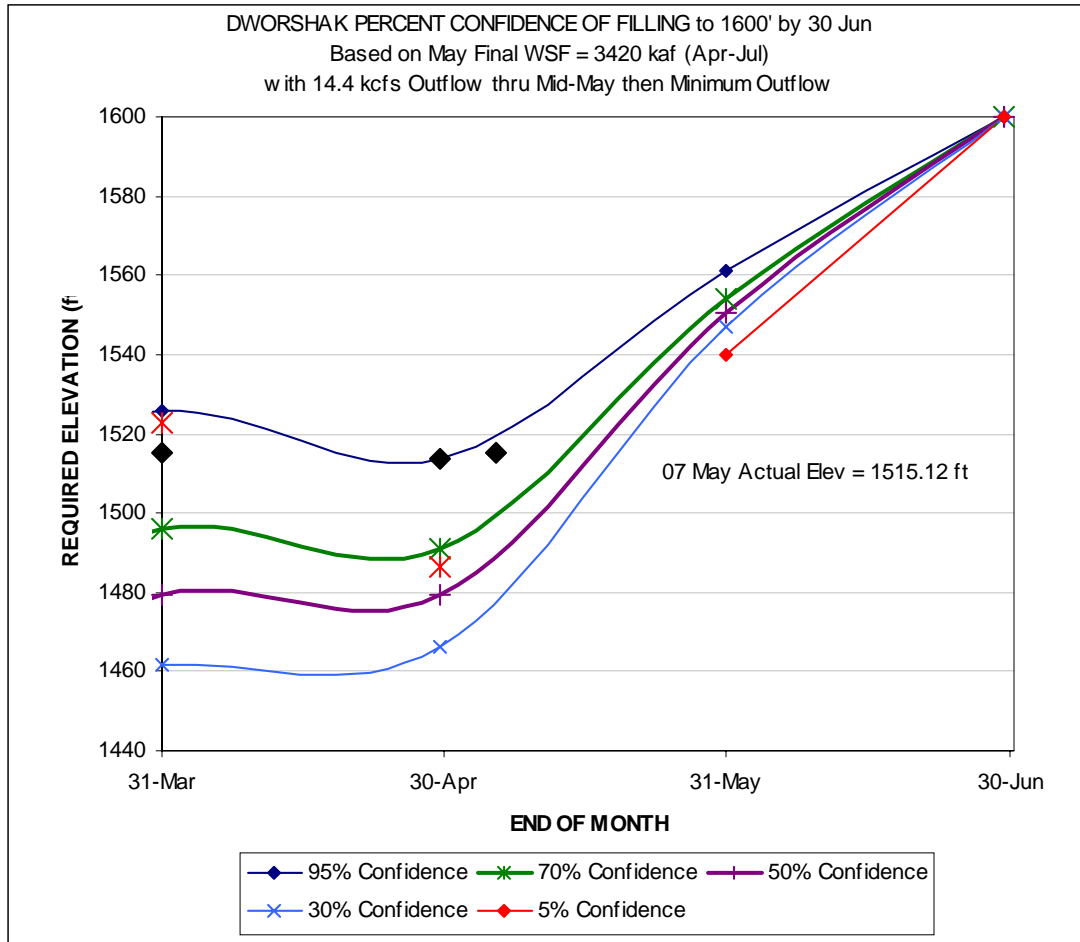
The August 30 draft limit at Grand Coulee is based on the River Forecast Center’s July Final water supply forecast for the April – August runoff volume at The Dalles. When this forecast is less than 92 maf, the Grand Coulee draft limit will be 1278.0 feet. If the forecast is greater than 92 maf, the draft limit will be 1280.0 feet.

Dworshak

DWR Outlook



Starting Elevation = 1515.22 ft, observed midnight pool 5/05/02
 Calculations based on official May Final Water Supply Forecast from USACE, NWD.



Summer Draft for Temperature Control

Modeling will be done to help decide how to draft Dworshak for temperature control.

Upper Snake Operation

The upper Snake River system is not expected to fill this year. The Bureau of Reclamation currently estimates that approximately 300 kaf will be available for flow augmentation in 2002. The Bureau of Reclamation is actively pursuing additional sources of water.

Flood Control

The flood control elevations based on the April Final Forecast are as follows.

Note April 10th flood control elevations are interpolated. There is no official method of determining April 10th flood control elevations

Project	Date						
	Jan 31	Feb 28	Mar 15	Mar 31	Apr 10	Apr 15	Apr 30
MCDB							
ARDB	1430.5	1422.9	N/A	1414.1		1414.1	1414.1
LIB	2389.8	2375	2375	2375	2361.3	2354.9	2363.6
DCDB	1841.9	1813.9	N/A	1807.7		1807.7	1807.7
HGH	3548	3537.7	N/A	3531.6	3524.3	3520.7	3516.2
GCL	1290	1290	N/A	1279.8	1267.8	1261.8	1244.9
BRN	2077	2051.1	N/A	2052.8		2062.9	2064.3
DWR	1536	1513.7	N/A	1505.7	1467	1447.6	1486.5

Dworshak/Grand Coulee flood control shift

The Corps and Bureau of Reclamation implemented a partial system flood control shift from Dworshak to Grand Coulee in March and April. The operation was intended to provide additional Snake River flow in April. As of March 31, 2002 Dworshak had shifted about 116 kaf of flood control to Grand Coulee.

MOP

Mop operation for the Lower Snake projects is scheduled is scheduled to start April 3rd. The table below shows currently planed MOP operations.

Project	Lower Range		Upper Range	
	Operation	Elevation	Operation	Elevation
Ice Harbor	Mop +1	438	Mop + 2	439
Lower Monumental	Mop	537	Mop + 1	538
Little Goose	Mop	633	Mop + 1	634
Lower Granite	Mop + 1	734	Mop + 2	735

Note Ice Harbor and Lower Granite will be operating at Mop + 1 to Mop +2 because of navigational concerns.

At John Day the forebay will be operated within a 1.5 foot range between 262.5 and 265.0 feet from April 10th to September 30th.

Hanford Reach

This information based on “Proposed 2002 Hanford Reach Juvenile Fall Chinook Protection Program” Dated February 25, 2002. Details are summarized below.

2002 Program Elements

Starting Program Operating Constraints

1. Begin index seining (6 standard beach seine hauls at pre-determined locations) one week prior to the calculated start of emergence under the Vernita Bar Agreement. Index seining will be conducted daily to define the beginning of susceptibility.
2. Start operational constraints for 2002 program when a daily total of 50 or more sub-yearling chinook is sampled from the 6 index seining stations. During each index-seining sample, sub-yearling fork length will be reported. After program is initiated, decrease index seining to one time per week.

Flow Range (Priest Rapids discharge)		
Lower	Upper	Flow Fluctuation Limit
VBA Minimum	80 KCFS	20 KCFS
80 KCFS	110 KCFS	30 KCFS
110 KCFS	140 KCFS	40 KCFS
140 KCFS	170 KCFS	60 KCFS
170 KCFS		150 KCFS Minimum hourly discharge at Priest Rapids

Ending Program Operating Constraints

When 400 or more temperature units (°C) have accumulated following the end of emergence under the Vernita Bar Agreement, the operating constraints identified above will end.

McNary End Bay Service Bridge Removal

Due to problems with the newly installed flow deflectors on the end bays at McNary the service bridges that go over the end bays will be removed. The removal is scheduled to take approximately 21 days and should be done early May. During removal normal spill operations will have to be changed.

Spill for Juvenile Fish Passage

Spring

LWG

Spill to gas cap 1800 – 0600 hours except when Removable Spillway Weir test is ongoing. See under research below. Spill started April 3rd.

LGS

Spill to gas cap 24 hours a day until 1 May, then spill 12 hours nightly through the remainder of the spring season. Spill started April 5th.

LMN

No voluntary spill will occur in 2002 due to tailrace repair.

IHR

Spill to gas cap 1800 – 0500 spill limited to 45 kcfs 0500 – 1800. Spill started April 10th.

MCN

Spill to gas cap 1800 – 0600. Spill started April 10th.

JDA

See under research below.

TDA

Spill 40% of the outflow up to the gas cap 24 hours a day. Spill started April 10th.

BON

See under research below.

Summer

Summer spill planning date is June 21 for the Lower Snake projects and July 1st for the Lower Columbia projects.

LWG

No summer spill

LGS

No summer spill

LMN

No summer spill

IHR

Spill to gas cap 1800 – 0500 spill limited to 45 kcfs 0500 – 1800.

MCN

No summer spill

JDA

See under research below.

TDA

Spill 40% of the outflow up to the gas cap 24 hours a day.

BON

See under research below.

Water Quality***Spill Priority List***

In cases of involuntary spill the projects are to spill in the following order McNary, John Day, The Dalles, Bonneville, Little Goose, Ice Harbor, Lower Granite, Priest Rapids, Rocky Reach, Wells, Rock Island, Wanapum, Chief Joseph. Note this order is subject to change during the season. Also note that Lower Monumental is not on the spill priority list due tailrace erosion and repair work.

Research

Note for more detail on research see the 2002 Fish Passage Plan, Appendix A, Special Operations and Studies. Only research activities the significantly impact project operations are discussed below.

Libby Spill Test

In May / June (exact date not set yet) the Corps will conduct a spill test at Libby. The spill schedule is presented below.

Table 1. Tentative Test Schedule for TDG Testing at Libby Dam.

Event	Date	Time	Number Hours	Generation Flow (Kcfs)	Spill per Gate (Kcfs)	Number Gates	Total Spill (Kcfs)	Total Release (Kcfs)
Install Equipment	Day 1	All day		25	0	0	0	25
1	Day 2	0700-1100	4	25	1	2	2	27
2	Day 2	1100-1500	4	25	1.5	2	3	28
3	Day 2	1500-1900	4	24	2	2	4	28
	Day 2-3	1900-0700		25	0	0	0	25
4	Day 3	0900-1300	4	23	2.5	2	5	28
5	Day 3	1300-1700	4	22	3	2	6	28
6	Day 3	1700-2100	4	21	3.5	2	7	28
	Day 3-4	0700-0900		25	0	0	0	25
7	Day 4	0900-1300	2	20	4	2	8	28
8	Day 4	1300-1700	4	19	4.5	2	9	28
9	Day 4	1700-2100	4	18	5	2	10	28
Remove Equipment	Day 5	All day		25	0	0	0	25

Removable Spillway Weir – Lower Granite

Proposed Operation of Lower Granite and the RSW

There are three operational conditions proposed for the spring 2002 evaluation of the RSW at Lower Granite. They are:

1. Spill to the dissolved gas cap (~60 kcfs) for 12 hours per day (1800 to 0600). This is the “BiOp” spill condition. The RSW will not be operated during this condition.
2. RSW operation (around 6.7 kcfs at the expected forebay elevation) plus around 15.5 kcfs “training spill” through spillbays 2 – 8. This is a 24-hour operation.
3. RSW operation (around 6.7 kcfs at the expected forebay elevation) plus around 8.5 kcfs “training spill” through spillbays 2 – 8. This is a 24-hour operation.

The spill patterns for each of these treatments are detailed in Table 1.

Table 1. LWG spill scenarios - spring 2002

	Low	Medium	BiOp
Bay 1/RSW	6.7	6.7	0
Bay 2	0	1.7	9.1
Bay 3	1.7	1.7	9.1
Bay 4	0	3.5	9.1
Bay 5	1.7	1.7	7.2
Bay 6	1.7	1.7	7.2
Bay 7	1.7	1.7	9.1
Bay 8	1.7	3.5	9.1
Total volume (kcfs)	15.2	22.2	59.9

Each of these conditions will be run for 2 days in a row during 6-day experimental blocks (Table 2). In the table, the “Low” spill operation is listed as “RSW + 8”, the “Medium” spill operation is listed as “RSW + 16”, and the “BiOp” operation is listed as “Gas Cap”.

Table 2. Lower Granite Operations Schedule for 2002 Testing of the Removable Spillway Weir

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
April	14	15 RSW + 16 (24 hours)	16 RSW + 16 (24 hours)	17 RSW + 8 (24 hours)	18 RSW + 8 (24 hours)	19 Gas Cap (12 hours)	20 Gas Cap (12 hours)
	21 RSW + 16 (24 hours)	22 RSW + 16 (24 hours)	23 RSW + 8 (24 hours)	24 RSW + 8 (24 hours)	25 Gas Cap (12 hours)	26 Gas Cap (12 hours)	27 Gas Cap (12 hours)
May	28 Gas Cap (12 hours)	29 RSW + 8 (24 hours)	30 RSW + 8 (24 hours)	1 RSW + 16 (24 hours)	2 RSW + 16 (24 hours)	3 Gas Cap (12 hours)	4 Gas Cap (12 hours)
	5 RSW + 8 (24 hours)	6 RSW + 8 (24 hours)	7 RSW + 16 (24 hours)	8 RSW + 16 (24 hours)	9 RSW + 16 (24 hours)	10 RSW + 16 (24 hours)	11 Gas Cap (12 hours)
	12 Gas Cap (12 hours)	13 RSW + 8 (24 hours)	14 RSW + 8 (24 hours)	15 RSW + 16 (24 hours)	16 RSW + 16 (24 hours)	17 Gas Cap (12 hours)	18 Gas Cap (12 hours)
	19 RSW + 8 (24 hours)	20 RSW + 8 (24 hours)	21 RSW + 8 (24 hours)	22 RSW + 8 (24 hours)	23 RSW + 16 (24 hours)	24 RSW + 16 (24 hours)	25 Gas Cap (12 hours)
	26 Gas Cap (12 hours)	27 RSW + 8 (24 hours)	28 RSW + 8 (24 hours)	29 Gas Cap (12 hours)	30 Gas Cap (12 hours)	31 RSW + 16 (24 hours)	1 RSW + 16 (24 hours)

Radio antennas will also be placed below the dam to determine the egress time of radio-tagged fish out of the tailrace under each of the operational scenarios.

McNary Spill Test

The McNary spill test originally scheduled for this year has been cancelled due to problems with the flow deflectors on the end bays.

John Day Project Survival Test

Spill will alternate between 0% day / 60% night and 30% day / 30% night according to the schedule below

date	%spill	date	%spill	date	%spill	date	%spill
4/10/2002	0 day/60 night	5/16/2002	0 day/60 night	6/21/2002	0 day/60 night	7/27/2002	0 day/60 night
4/11/2002	0 day/60 night	5/17/2002	0 day/60 night	6/22/2002	0 day/60 night	7/28/2002	0 day/60 night
4/12/2002	0 day/60 night	5/18/2002	30 day/30 night	6/23/2002	30 day/30 night	7/29/2002	30 day/30 night
4/13/2002	0 day/60 night	5/19/2002	30 day/30 night	6/24/2002	30 day/30 night	7/30/2002	30 day/30 night
4/14/2002	0 day/60 night	5/20/2002	30 day/30 night	6/25/2002	30 day/30 night	7/31/2002	30 day/30 night
4/15/2002	0 day/60 night	5/21/2002	30 day/30 night	6/26/2002	30 day/30 night	8/1/2002	30 day/30 night
4/16/2002	0 day/60 night	5/22/2002	0 day/60 night	6/27/2002	0 day/60 night	8/2/2002	0 day/60 night
4/17/2002	0 day/60 night	5/23/2002	0 day/60 night	6/28/2002	0 day/60 night	8/3/2002	0 day/60 night
4/18/2002	0 day/60 night	5/24/2002	0 day/60 night	6/29/2002	0 day/60 night	8/4/2002	30 day/30 night
4/19/2002	0 day/60 night	5/25/2002	0 day/60 night	6/30/2002	0 day/60 night	8/5/2002	30 day/30 night
4/20/2002	30 day/30 night	5/26/2002	30 day/30 night	7/1/2002	30 day/30 night	8/6/2002	0 day/60 night
4/21/2002	30 day/30 night	5/27/2002	30 day/30 night	7/2/2002	30 day/30 night	8/7/2002	0 day/60 night
4/22/2002	0 day/60 night	5/28/2002	30 day/30 night	7/3/2002	0 day/60 night	8/8/2002	0 day/60 night
4/23/2002	0 day/60 night	5/29/2002	30 day/30 night	7/4/2002	0 day/60 night	8/9/2002	0 day/60 night
4/24/2002	30 day/30 night	5/30/2002	0 day/60 night	7/5/2002	30 day/30 night	8/10/2002	30 day/30 night
4/25/2002	30 day/30 night	5/31/2002	0 day/60 night	7/6/2002	30 day/30 night	8/11/2002	30 day/30 night
4/26/2002	30 day/30 night	6/1/2002	0 day/60 night	7/7/2002	30 day/30 night	8/12/2002	30 day/30 night
4/27/2002	30 day/30 night	6/2/2002	0 day/60 night	7/8/2002	30 day/30 night	8/13/2002	30 day/30 night
4/28/2002	0 day/60 night	6/3/2002	30 day/30 night	7/9/2002	0 day/60 night	8/14/2002	0 day/60 night
4/29/2002	0 day/60 night	6/4/2002	30 day/30 night	7/10/2002	0 day/60 night	8/15/2002	0 day/60 night
4/30/2002	30 day/30 night	6/5/2002	30 day/30 night	7/11/2002	0 day/60 night	8/16/2002	30 day/30 night
5/1/2002	30 day/30 night	6/6/2002	30 day/30 night	7/12/2002	0 day/60 night	8/17/2002	30 day/30 night
5/2/2002	0 day/60 night	6/7/2002	0 day/60 night	7/13/2002	30 day/30 night	8/18/2002	0 day/60 night
5/3/2002	0 day/60 night	6/8/2002	0 day/60 night	7/14/2002	30 day/30 night	8/19/2002	0 day/60 night
5/4/2002	30 day/30 night	6/9/2002	0 day/60 night	7/15/2002	0 day/60 night	8/20/2002	0 day/60 night
5/5/2002	30 day/30 night	6/10/2002	0 day/60 night	7/16/2002	0 day/60 night	8/21/2002	0 day/60 night
5/6/2002	0 day/60 night	6/11/2002	30 day/30 night	7/17/2002	30 day/30 night	8/22/2002	30 day/30 night
5/7/2002	0 day/60 night	6/12/2002	30 day/30 night	7/18/2002	30 day/30 night	8/23/2002	30 day/30 night
5/8/2002	0 day/60 night	6/13/2002	30 day/30 night	7/19/2002	30 day/30 night	8/24/2002	30 day/30 night
5/9/2002	0 day/60 night	6/14/2002	30 day/30 night	7/20/2002	30 day/30 night	8/25/2002	30 day/30 night
5/10/2002	30 day/30 night	6/15/2002	0 day/60 night	7/21/2002	0 day/60 night	8/26/2002	0 day/60 night
5/11/2002	30 day/30 night	6/16/2002	0 day/60 night	7/22/2002	0 day/60 night	8/27/2002	0 day/60 night
5/12/2002	30 day/30 night	6/17/2002	30 day/30 night	7/23/2002	0 day/60 night	8/28/2002	30 day/30 night
5/13/2002	30 day/30 night	6/18/2002	30 day/30 night	7/24/2002	0 day/60 night	8/29/2002	30 day/30 night
5/14/2002	0 day/60 night	6/19/2002	0 day/60 night	7/25/2002	30 day/30 night	8/30/2002	0 day/60 night
5/15/2002	0 day/60 night	6/20/2002	0 day/60 night	7/26/2002	30 day/30 night	8/31/2002	0 day/60 night

BON Adult Passage study

Day time spill levels will alternate between 75 KCFS (Fallback limit) and spilling to the TDG Gas Cap as shown below.

date	%spill	date	%spill	date	%spill	date	%spill
4/10/2002	TDG CAP	5/16/2002	TDG CAP	6/21/2002	TDG CAP	7/27/2002	TDG CAP
4/11/2002	TDG CAP	5/17/2002	TDG CAP	6/22/2002	TDG CAP	7/28/2002	TDG CAP
4/12/2002	75 KCFS	5/18/2002	75 KCFS	6/23/2002	75 KCFS	7/29/2002	75 KCFS
4/13/2002	75 KCFS	5/19/2002	75 KCFS	6/24/2002	75 KCFS	7/30/2002	75 KCFS
4/14/2002	75 KCFS	5/20/2002	75 KCFS	6/25/2002	75 KCFS	7/31/2002	75 KCFS
4/15/2002	75 KCFS	5/21/2002	75 KCFS	6/26/2002	75 KCFS	8/1/2002	75 KCFS
4/16/2002	TDG CAP	5/22/2002	TDG CAP	6/27/2002	TDG CAP	8/2/2002	TDG CAP
4/17/2002	TDG CAP	5/23/2002	TDG CAP	6/28/2002	TDG CAP	8/3/2002	TDG CAP
4/18/2002	TDG CAP	5/24/2002	TDG CAP	6/29/2002	TDG CAP	8/4/2002	75 KCFS
4/19/2002	TDG CAP	5/25/2002	TDG CAP	6/30/2002	TDG CAP	8/5/2002	75 KCFS
4/20/2002	75 KCFS	5/26/2002	75 KCFS	7/1/2002	75 KCFS	8/6/2002	TDG CAP
4/21/2002	75 KCFS	5/27/2002	75 KCFS	7/2/2002	75 KCFS	8/7/2002	TDG CAP
4/22/2002	TDG CAP	5/28/2002	75 KCFS	7/3/2002	TDG CAP	8/8/2002	TDG CAP
4/23/2002	TDG CAP	5/29/2002	75 KCFS	7/4/2002	TDG CAP	8/9/2002	TDG CAP
4/24/2002	75 KCFS	5/30/2002	TDG CAP	7/5/2002	75 KCFS	8/10/2002	75 KCFS
4/25/2002	75 KCFS	5/31/2002	TDG CAP	7/6/2002	75 KCFS	8/11/2002	75 KCFS
4/26/2002	75 KCFS	6/1/2002	TDG CAP	7/7/2002	75 KCFS	8/12/2002	75 KCFS
4/27/2002	75 KCFS	6/2/2002	TDG CAP	7/8/2002	75 KCFS	8/13/2002	75 KCFS
4/28/2002	TDG CAP	6/3/2002	75 KCFS	7/9/2002	TDG CAP	8/14/2002	TDG CAP
4/29/2002	TDG CAP	6/4/2002	75 KCFS	7/10/2002	TDG CAP	8/15/2002	TDG CAP
4/30/2002	75 KCFS	6/5/2002	75 KCFS	7/11/2002	TDG CAP	8/16/2002	75 KCFS
5/1/2002	75 KCFS	6/6/2002	75 KCFS	7/12/2002	TDG CAP	8/17/2002	75 KCFS
5/2/2002	TDG CAP	6/7/2002	TDG CAP	7/13/2002	75 KCFS	8/18/2002	TDG CAP
5/3/2002	TDG CAP	6/8/2002	TDG CAP	7/14/2002	75 KCFS	8/19/2002	TDG CAP
5/4/2002	75 KCFS	6/9/2002	TDG CAP	7/15/2002	TDG CAP	8/20/2002	TDG CAP
5/5/2002	75 KCFS	6/10/2002	TDG CAP	7/16/2002	TDG CAP	8/21/2002	TDG CAP
5/6/2002	TDG CAP	6/11/2002	75 KCFS	7/17/2002	75 KCFS	8/22/2002	75 KCFS
5/7/2002	TDG CAP	6/12/2002	75 KCFS	7/18/2002	75 KCFS	8/23/2002	75 KCFS
5/8/2002	TDG CAP	6/13/2002	75 KCFS	7/19/2002	75 KCFS	8/24/2002	75 KCFS
5/9/2002	TDG CAP	6/14/2002	75 KCFS	7/20/2002	75 KCFS	8/25/2002	75 KCFS
5/10/2002	75 KCFS	6/15/2002	TDG CAP	7/21/2002	TDG CAP	8/26/2002	TDG CAP
5/11/2002	75 KCFS	6/16/2002	TDG CAP	7/22/2002	TDG CAP	8/27/2002	TDG CAP
5/12/2002	75 KCFS	6/17/2002	75 KCFS	7/23/2002	TDG CAP	8/28/2002	75 KCFS
5/13/2002	75 KCFS	6/18/2002	75 KCFS	7/24/2002	TDG CAP	8/29/2002	75 KCFS
5/14/2002	TDG CAP	6/19/2002	TDG CAP	7/25/2002	75 KCFS	8/30/2002	TDG CAP
5/15/2002	TDG CAP	6/20/2002	TDG CAP	7/26/2002	75 KCFS	8/31/2002	TDG CAP