

The Official WSF is computed on the 3rd work day of the month, January through July, using the 5-day QPF 50% exceedance value. FRM will be computed at the same intervals as before and posted online at: <http://www.nwd.usace.army.mil/Missions/Water/Columbia/FloodControl>

The January WSF sets BiOp actions as highlighted in the table below.

Forecast Point	Forecast period	Forecast	BiOp Actions to be Determined
Hungry Horse	April – August Provided by Reclamation	January, February, March Final	Sets min. flows at Hungry Horse and Columbia Falls
	May – September Provided by Reclamation	January, February, March Final	Sets VARQ FRM targets
		April Final	Sets VARQ FRM targets and VARQ refill flows
		May, June Final	Sets VARQ refill flows
The Dalles	April – September Provided by NWRFC	March Final	Sets CRWMP adjustments at Grand Coulee
	April – August Provided by NWRFC	April Final	Sets spring flow objective at McNary Dam
		May Final	Sets end of September draft limits at Hungry Horse and Libby
		July Final	Sets end of August draft limit at Grand Coulee
Lower Granite	April – July Provided by NWRFC	April Final	Sets spring flow objective at Lower Granite
		June Final	Sets summer flow objective at Lower Granite
Libby	April – August Provided by Corps Seattle District	December Final	Sets end of December variable draft target
		January, February, March Final	Sets VARQ FRM targets
		April Final	Sets VARQ FRM targets and VARQ refill flows
		May Final	Sets Libby min. sturgeon flow volume and min. bull trout flows for after sturgeon pulse through Sept. Sets VARQ FRM targets and VARQ refill flows
		June Final	VARQ refill flows
Dworshak	April – July Provided by Corps Walla Walla District	January to June Final	Manage for reservoir FRM and refill

January 5, 2018

**Hungry Horse Dam – Official Water Supply Forecast
JANUARY 2018**

Here are the volumes for the January final forecast for Hungry Horse inflow:

Jan-Jul: 2,437 kaf (116%)

Apr-Aug: 2,246 kaf (116%)

May-Sep: 1,964 kaf (116%)

The minimum flows downstream of Hungry Horse are as follows:

Columbia Falls: 3,500 cfs

Hungry Horse: 900 cfs

Thanks,

Peter Cooper, P.E.
River and Reservoir Operations
U.S. Bureau of Reclamation
PN Regional Office
Boise, ID 83706



Northwest River Forecast Center Water Supply Forecasts

COLUMBIA - THE DALLES DAM (TDAO3) Forecasts for Water Year 2018

Official Forecast

10 days QPF: Ensemble: 2018-01-04 Issued: 2018-01-04

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	75626	92044	99	105814	92704
APR-JUL	64149	79124	99	90270	79855
APR-AUG	71161	87334	100	100049	87532
JAN-SEP	93700	111713	98	127885	114216
JAN-JUL	83368	99416	98	115578	101368
OCT-SEP	109916	127929	98	144102	130518

5 days QPF: Ensemble: 2018-01-04 Issued: 2018-01-04

APR-SEP	74598	92541	100	108381	92704
APR-JUL	64238	80370	101	93274	79855
APR-AUG	70420	87282	100	100452	87532
JAN-SEP	93477	112625	99	132501	114216
JAN-JUL	82740	99282	98	118425	101368
OCT-SEP	109693	128841	99	148717	130518

0 days QPF: Ensemble: 2018-01-04 Issued: 2018-01-04

APR-SEP	78260	94529	102	110783	92704
APR-JUL	67326	80236	100	95057	79855
APR-AUG	73899	88800	101	105183	87532
JAN-SEP	97441	115086	101	135870	114216
JAN-JUL	86507	102428	101	121430	101368
OCT-SEP	113657	131303	101	152086	130518

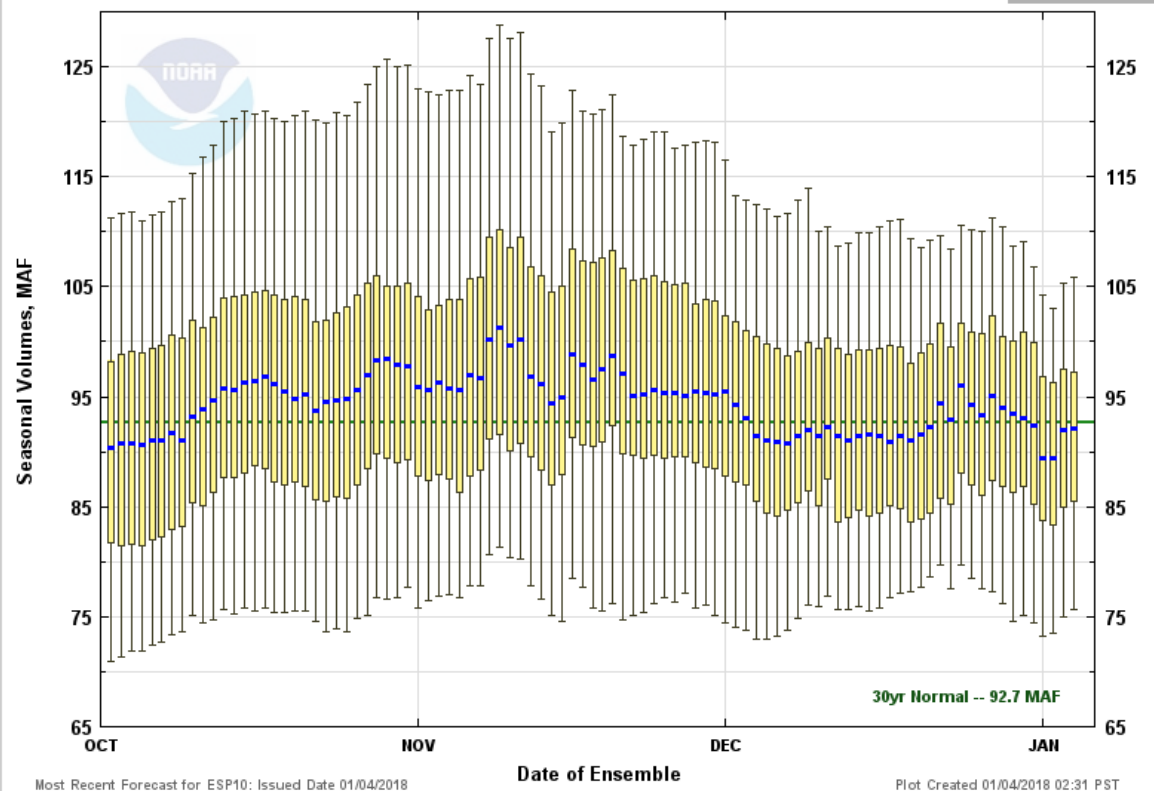
Move the mouse over the desired "Forecast Period" to display a graph.

Overlay

ESP10 ESP5 ESP0

Data Files

Water Supply Forecasts COLUMBIA - THE DALLES DAM Period APR to SEP -- Water Year 2018



Max Scale Scale To Data Scale To Last 45 Days



Northwest River Forecast Center Water Supply Forecasts

SNAKE - LOWER GRANITE DAM (LGDW1) Forecasts for Water Year 2018

Official Forecast

10 days QPF: Ensemble: 2018-01-04 Issued: 2018-01-04

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	15982	22656	102	27818	22279
APR-JUL	14074	20314	102	25390	19848
APR-AUG	15021	21509	102	26614	21091
JAN-SEP	22177	29565	99	37096	29872
JAN-JUL	20269	27161	99	34482	27440
OCT-SEP	27394	34782	100	42313	34667

5 days QPF: Ensemble: 2018-01-04 Issued: 2018-01-04

APR-SEP	15796	22839	103	28470	22279
APR-JUL	13853	20467	103	25807	19848
APR-AUG	14812	21708	103	27170	21091
JAN-SEP	22163	29747	100	37963	29872
JAN-JUL	20229	27399	100	35155	27440
OCT-SEP	27380	34964	101	43180	34667

0 days QPF: Ensemble: 2018-01-04 Issued: 2018-01-04

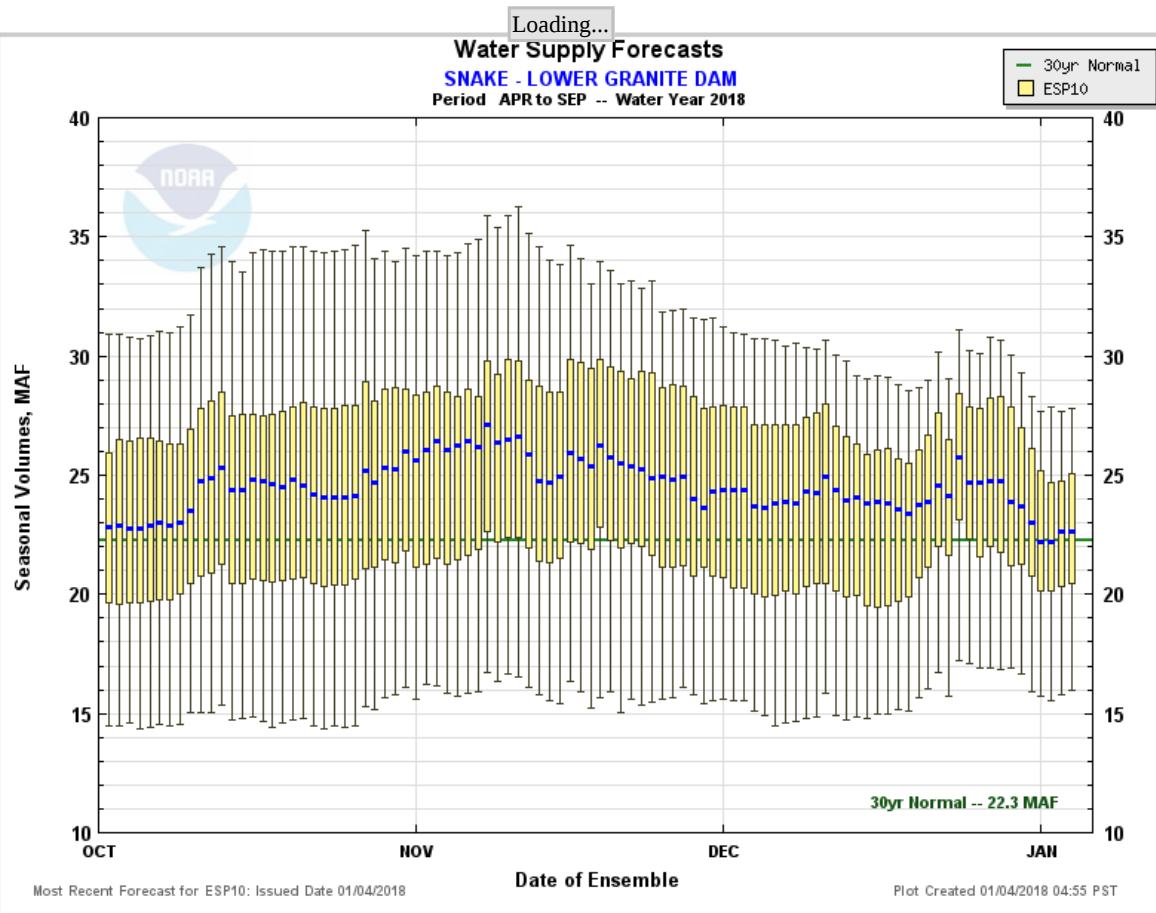
APR-SEP	15848	23828	107	29028	22279
APR-JUL	13921	21412	108	26483	19848
APR-AUG	14879	22711	108	27808	21091
JAN-SEP	22074	30926	104	38619	29872
JAN-JUL	20033	28441	104	36090	27440
OCT-SEP	27291	36143	104	43836	34667

Move the mouse over the desired "Forecast Period" to display a graph.

Overlay

ESP10 ESP5 ESP0

Data Files

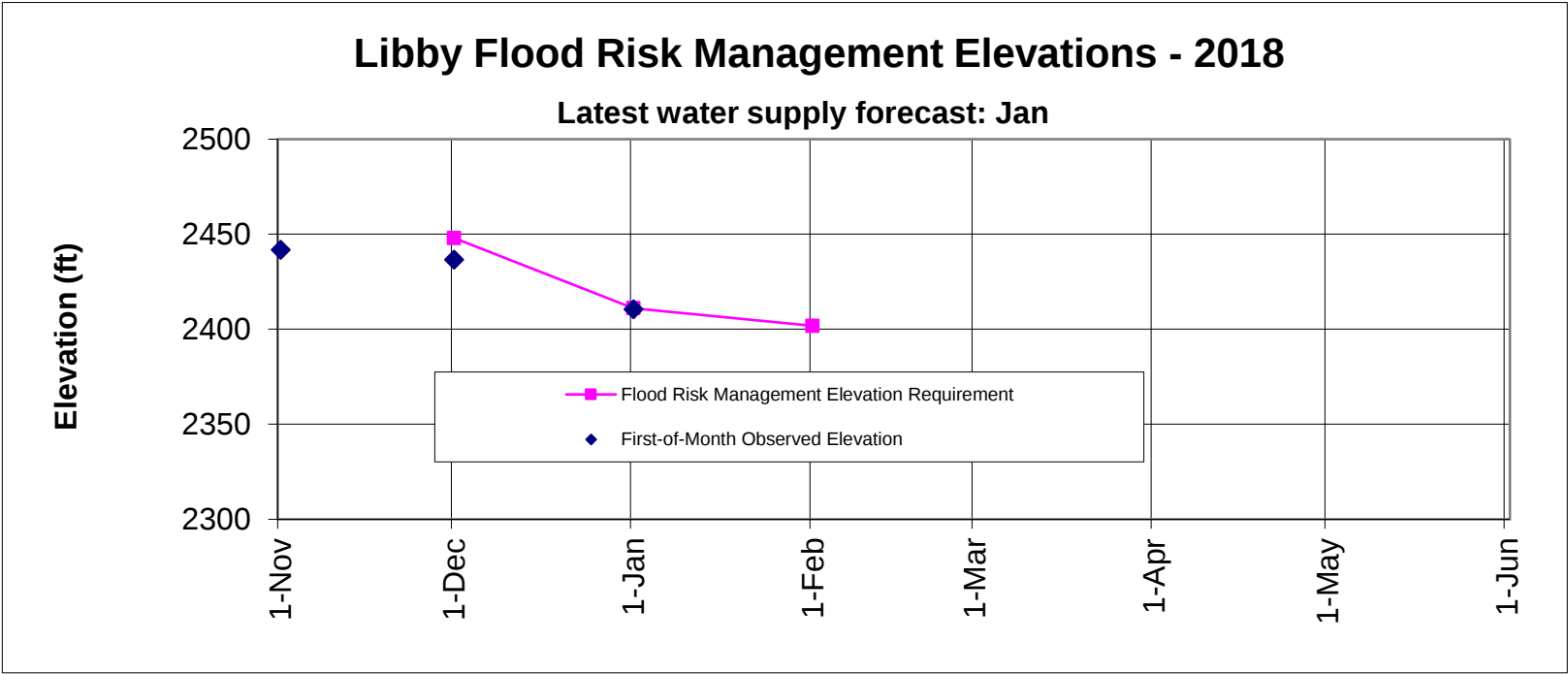
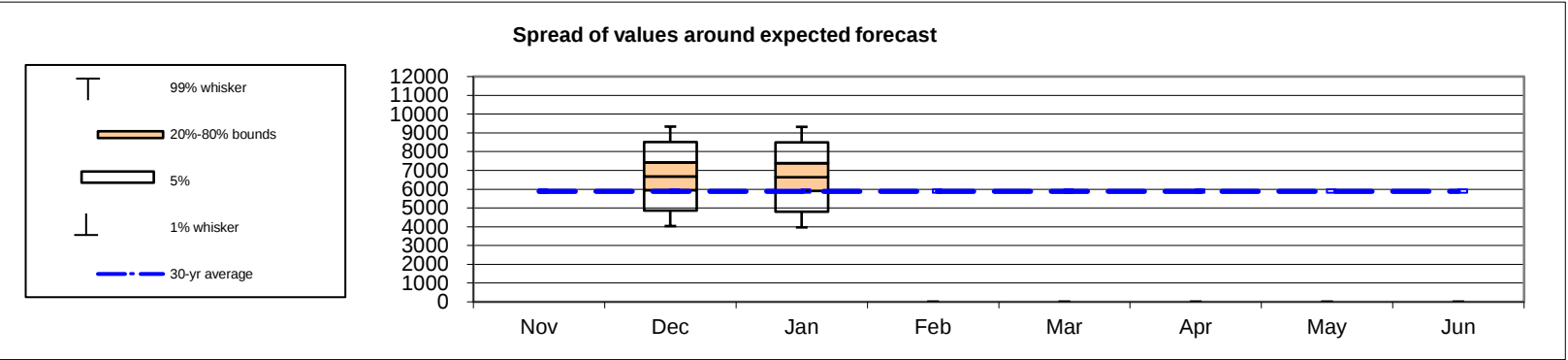


Max Scale Scale To Data Scale To Last 45 Days

Libby : January Runoff Forecast & Flood Risk Management Calculation

WY 2018

Runoff Forecast and Flood Risk Management						1981-2010 Average	Percent of Average	1929-2008 Average	Percent of Average
Most Probable Runoff Volume:	Apr-Aug		6645	KAF		5885	113%	6282	106%
	Apr-Jul		6032	KAF		5342	113%	5720	105%
	May-Jul		5443	KAF		4821	113%	5199	105%
31-Jan Flood Risk Management Space			2322	KAF					
31-Jan Flood Risk Management Elevation			2401.8	ft					
Seasonal Flood Risk Management									
VARQ Flood Risk Management Implemented									
Forecast Date >>	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	
Apr-Aug Runoff Forecast		6687	6645						
First-of-Month Elev	2441.8	2436.5	2410.6						
Date >>	30-Nov	31-Dec	31-Jan	28-Feb	15-Mar	31-Mar	15-Apr	30-Apr	
Flood Risk Management Space	500	2000	2322						
Flood Risk Management Elevation	2448.0	2411.0	2401.8						



Notes:

1. The given forecast is the official Corps of Engineers forecast for Libby. If you have any questions please contact Joel Fenolio (206) 764-6683, Kevin Shaffer (206) 764-3660, Jon Moen (206) 764-3561, or Kristian Mickelson (206) 764-6927.

2. If a prior month's forecast as published in this document is different than what was originally published in the issue month, then the earlier forecast has been adjusted to reflect updated values for precipitation or streamflow.

Libby : January Runoff Forecast & Flood Risk Management Calculation

Apr-Aug Runoff Forecast Calculation:						
Variable	Month(s)	Units	Observed Value	Percent of Average	Regression Coefficient	Marginal Runoff (KAF)
			A		B	=A*B
SOI	Σ Jun:Jul		0.40		95.3	38.1
Eureka RS, MT	Σ Oct,Nov,Dec Prcp	inches	4.69	138%	141.7	664.8
West Glacier, MT	Σ Oct,Nov,Dec Prcp	inches	11.90	132%	58.4	695.2
Cranbrook A, BC	Σ Oct,Nov,Dec Prcp	millimeters	135.60	149%	4.6	621.0
Fernie, BC	Σ Oct,Nov,Dec Prcp	millimeters	403.00	110%	1.2	483.6
Hawkins Lake, MT	1-Jan SWE	inches				0.0
Stahl Creek, MT	1-Jan SWE	inches	14.50	89%	34.6	502.1
East Creek, BC	1-Jan SWE	millimeters				0.0
Moyie Mountain, BC	1-Jan SWE	millimeters	194.00	108%	1.6	307.5
Sunshine Village, AB	1-Jan SWE	millimeters	284.00	104%	2.1	607.8
Akamina Pass, AB	1-Jan SWE	millimeters				0.0
South Racehorse Creek, AB	1-Jan SWE	millimeters				0.0
Intercept			1		2724.4	2724.4
1-Jan Forecast (KAF)					Σ	6644.5

Data used in Libby Water Supply Forecast

WY 2018

Climate Data							Jun-17	Jul-17				
SOI							-0.40	0.80				
Precipitation Data				Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Units
Eureka RS, MT				0.87	1.76	2.06						inch
West Glacier, MT				3.10	4.57	4.23						inch
Cranbrook A, BC				25.00	63.60	47.00						mm
Fernie, BC				132.00	193.00	78.00						mm
Snow Water Equiv				1-Jan			1-Feb	1-Mar	1-Apr	1-May	1-Jun	Units
Hawkins Lake, MT												inch
Stahl Creek, MT							15					inch
East Creek, BC												mm
Moyie Mountain, BC							194					mm
Sunshine Village, AB							284					mm
Akamina Pass, AB												mm
South Racehorse Creek, AB												mm
Streamflow				Jan			Feb	Mar	Apr	May	Jun	Units
Libby Inflow Volume												KAF
Reservoir Elevation				1-Nov	1-Dec	1-Jan	1-Feb	1-Mar	1-Apr	1-May	1-Jun	Units
Libby FOM Elev				2441.8	2436.5	2410.6						feet

William D. Proctor, P.E.
 Approving Official
 Ch., Hydrologic Engineering and Power Branch
 Northwestern Division

Joel Fenolio, P.E.
 Upper Columbia Senior Water Manager
 Seattle District

Runoff Forecast and Flood Risk Management (FRM)				1981-2010 Average	Percent of 30yr Average	1929-2008 Average	Percent of Average
Most Probable Runoff Volume	Apr-Jul	2941	KAF	2438	121%	2696	109%
	May-Jul	2066	KAF	1784	116%	1972	105%

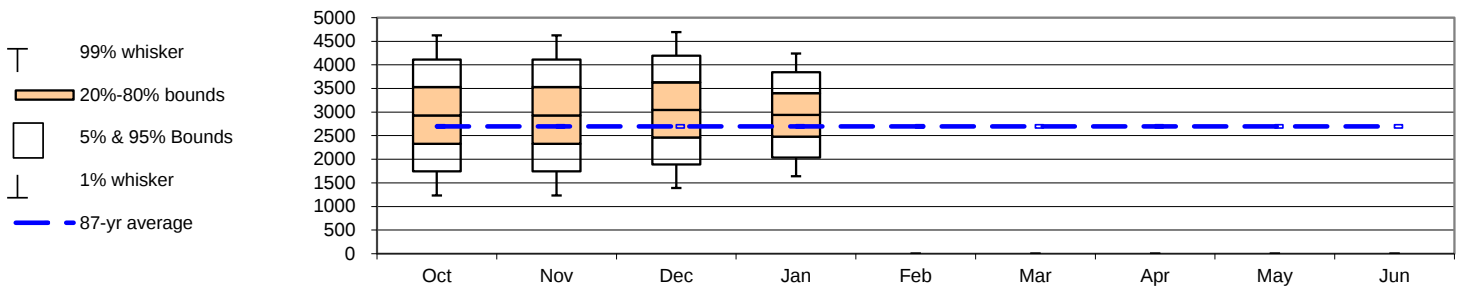
31-Jan Flood Risk Management Space	1090	KAF
31-Jan Flood Risk Management Elevation	1530.5	ft

Seasonal Flood Risk Management (assumes no shift of flood risk management space to Grand Coulee)

Forecast Date>>	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Apr-Jul Runoff Forecast	2929	2929	3043	2941					
First-of-Month Elev	1519.1	1518.7	1526.2	1520.7					

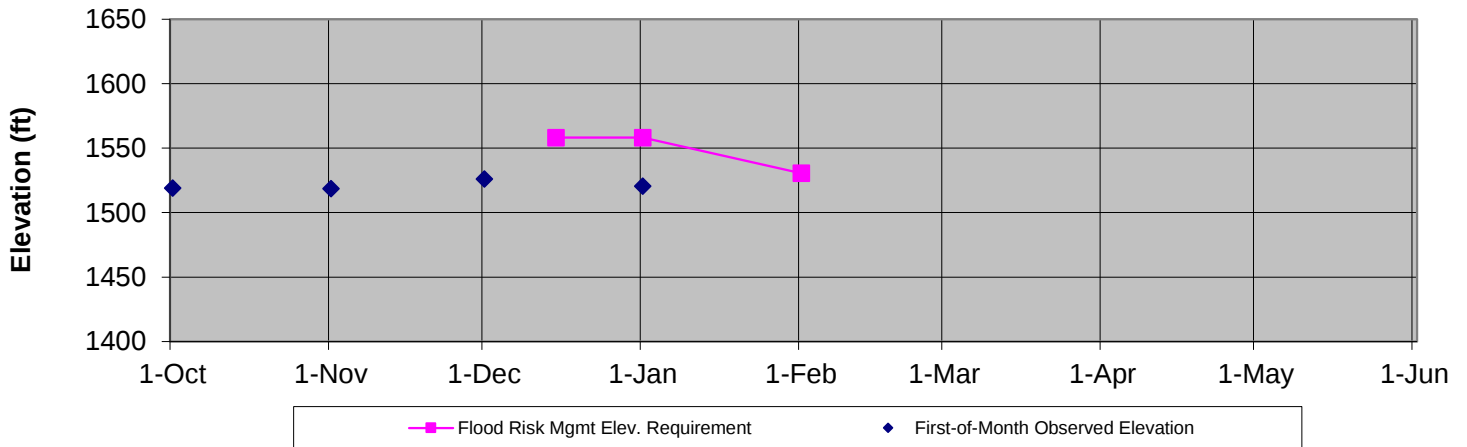
Date >>	15-Dec	31-Dec	31-Jan	28-Feb	31-Mar	15-Apr	30-Apr	31-May
FRM Space	--	700	700	1090				
FRM Elevation	--	1558.2	1558.2	1530.5				

Spread of values around expected forecast



Dworshak Flood Risk Management Elevations - 2018

Latest water supply forecast: Jan



Dworshak : January Runoff Forecast & Flood Risk Management Calculation

Apr-Jul Runoff Forecast Calculation					
Variable	Month	Observed Value	% of Average	Regression Coefficient	Runoff (KAF)
		A		B	=A*B
SOI	Sep	0.60		355.71	213.4
HQSI Cumulative Precip	Oct-Date	15.95	114%	48.12	767.5
Elk Butte SWE	1-Jan	16.10	109%	6.25	100.6
Cool Creek SWE	1-Jan	18.9	104%	9.96	188.2
Hoodoo Basin SWE	1-Jan	18.7	110%	12.22	228.5
Sherwin SWE	1-Jan	5.1	112%	44.69	227.9
Lost Lake SWE	1-Jan	22.3	97%	4.24	94.6
Intercept		1		1119.86	1119.9
1-Jan Forecast (KAF)				Σ	2940.7

Data Station	Sept	Nov	Dec	1-Jan	1-Feb	1-Mar	1-Apr	1-May	1-Jun
Climate (Stdzd SOI)									
September SOI	0.60								
Precipitation (in)	Oct								
Headquarters, ID	3.65	6.20	6.10	--	--	--	--		
Cumulative HQSI Data	3.65	9.85	15.95	--	--	--	--		
Snow Water Equiv (First of Month values) (in)									
Elk Butte, ID				16.1	--	--	--		
Cool Creek, ID				18.9	--				
Hoodoo Basin, MT				18.7	--	--	--	--	--
Sherwin, ID				5.1	--	--	--		
Shanghi Summit, ID								--	--
Lost Lake, ID				22.3	--	--	--	--	--
Hemlock, ID								--	--
Crater Meadows Mar						--	--		
Streamflow (End of Month) (kaf)				Jan	Feb	Mar	Apr	May	Jun
Dworshak Inflow				--	--	--	--	--	--

Notes:

1. The given forecast is the official Corps of Engineers forecast for Dworshak. If you have any questions please contact Steve Hall (509 527 7550), Wayne Jousma (509-527-7606), Amanda Morelos (509-527-7632), or Alfredo Rodriguez (509-527-7532).
 2. Due to updated values for precipitation, snow or streamflow, subsequent forecasts may be different from the forecast published herein.
 3. 15-Dec and 31-Dec Flood Management Space is fixed at 700 KAF.
 4. Cool Creek SWE data was estimated for Jan 1. by the NRCS.
 5. Headquarters Cumulative Precipitation was taken from the HDQI link and calculated from 1OCT-1JAN changing the November value to the correct value. This will be the link used for the remainder of the Water Year.
 6. D. Alfredo Rodriguez is approving as the Acting Chief Hydrology.
 7. Jason Ward is approving as Acting Chief fHydrologic Engineering and Power Branch
- Approval:

John J. Heitstuman P.E.
Chief Hydrology Section
Walla Walla District USACE

William D. Proctor, P.E.
Ch., Hydrologic Engineering and Power Branch
Columbia Basin Water Management Division



Northwest River Forecast Center Water Supply Forecasts

COLUMBIA - GRAND COULEE DAM (GCDW1) Forecasts for Water Year 2018

Official Forecast

10 days QPF: Ensemble: 2018-01-04 Issued: 2018-01-04

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	50927	58183	97	68286	60110
APR-JUL	42336	49197	96	58031	51015
APR-AUG	48117	55153	97	63924	56763
JAN-SEP	59659	66110	96	79207	68694
JAN-JUL	50669	56526	95	68552	59599
OCT-SEP	67076	73527	96	86624	76824

5 days QPF: Ensemble: 2018-01-04 Issued: 2018-01-04

APR-SEP	50742	59266	99	69514	60110
APR-JUL	42589	49554	97	59106	51015
APR-AUG	47838	55852	98	65695	56763
JAN-SEP	59296	67357	98	78592	68694
JAN-JUL	49737	58033	97	68659	59599
OCT-SEP	66713	74774	97	86008	76824

0 days QPF: Ensemble: 2018-01-04 Issued: 2018-01-04

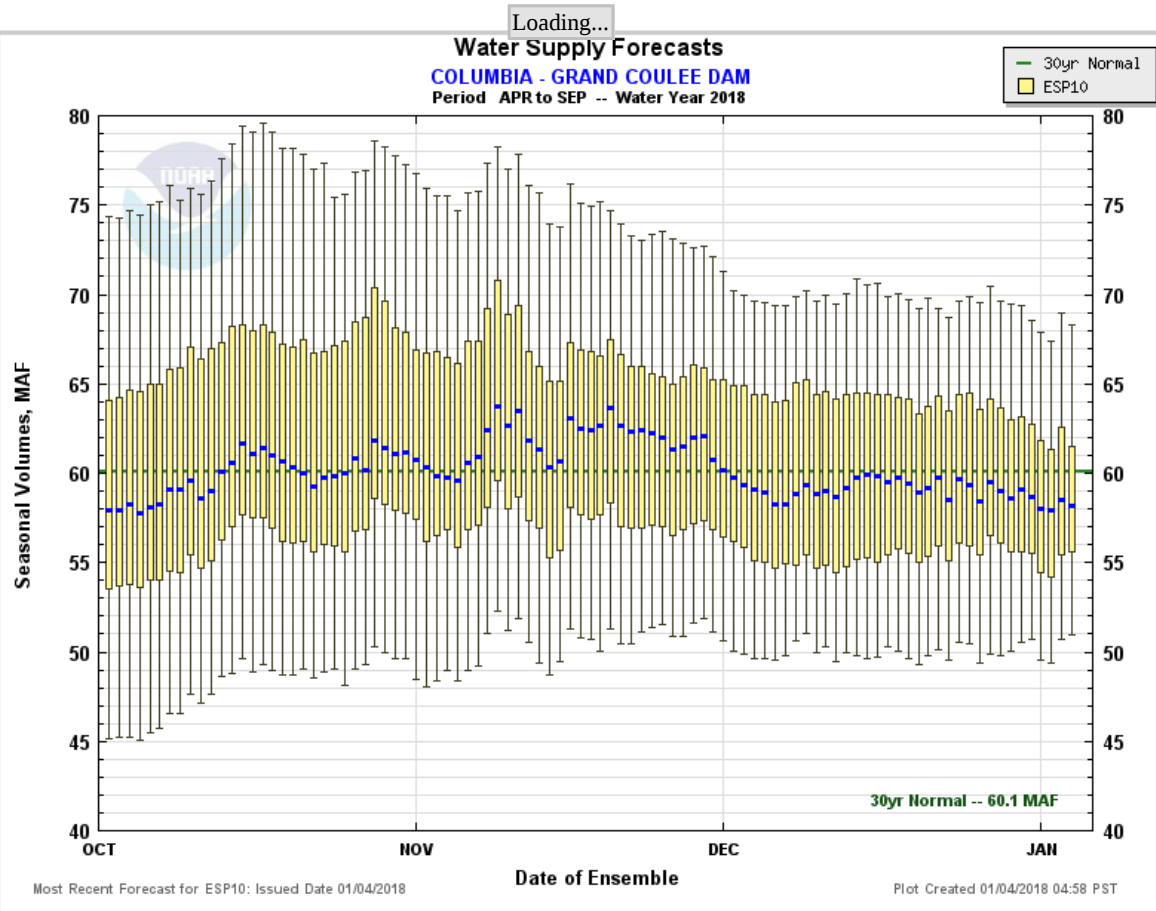
APR-SEP	51462	60497	101	71139	60110
APR-JUL	43413	50654	99	60244	51015
APR-AUG	48040	57025	100	66897	56763
JAN-SEP	60397	68768	100	83923	68694
JAN-JUL	52178	58474	98	71473	59599
OCT-SEP	67814	76184	99	91340	76824

Move the mouse over the desired "Forecast Period" to display a graph.

Overlay

ESP10 ESP5 ESP0

Data Files



Max Scale Scale To Data Scale To Last 45 Days



Northwest River Forecast Center

Water Supply Forecasts

PEND OREILLE - ALBENI FALLS DAM (ALFW1) Forecasts for Water Year 2018

Official Forecast

10 days QPF: Ensemble: 2018-01-04 Issued: 2018-01-04

Forecast Period	Forecasts Are in KAF				30 Year Average (1981-2010)
	90 %	50 %	% Average	10 %	
APR-SEP	10610	13536	106	16699	12815
APR-JUL	9545	12394	105	15219	11777
APR-AUG	10012	13056	106	16055	12354
JAN-SEP	12647	15866	104	19342	15226
JAN-JUL	11758	14805	104	17946	14189
OCT-SEP	14830	18049	105	21525	17218

5 days QPF: Ensemble: 2018-01-04 Issued: 2018-01-04

APR-SEP	10453	13524	106	17277	12815
APR-JUL	9576	12382	105	15904	11777
APR-AUG	10020	13027	105	16659	12354
JAN-SEP	12627	15972	105	20602	15226
JAN-JUL	11721	14833	105	19155	14189
OCT-SEP	14810	18155	105	22785	17218

0 days QPF: Ensemble: 2018-01-04 Issued: 2018-01-04

APR-SEP	10776	13780	108	17607	12815
APR-JUL	9836	12507	106	16139	11777
APR-AUG	10367	13244	107	16948	12354
JAN-SEP	13013	16675	110	20907	15226
JAN-JUL	12272	15352	108	19387	14189
OCT-SEP	15196	18858	110	23090	17218

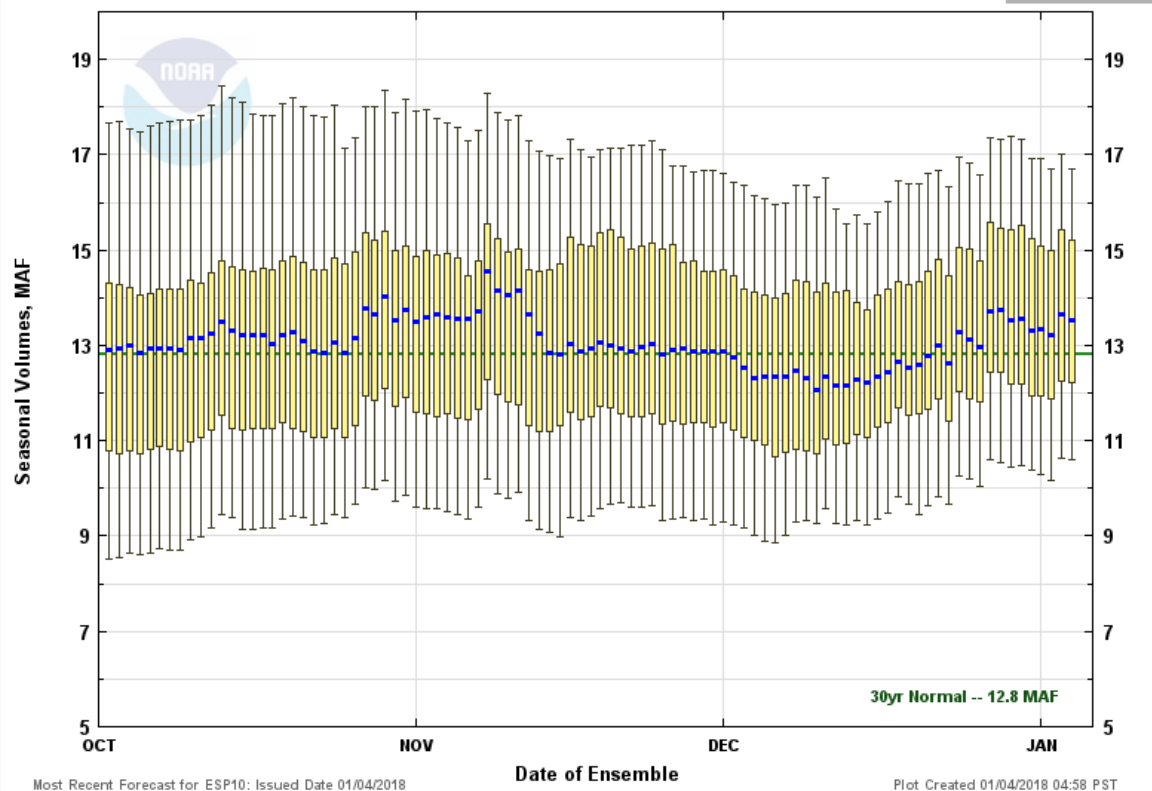
Move the mouse over the desired "Forecast Period" to display a graph.

Overlay

ESP10 ESP5 ESP0

Data Files

Water Supply Forecasts PEND OREILLE - ALBENI FALLS DAM Period APR to SEP -- Water Year 2018



Max Scale Scale To Data Scale To Last 45 Days