

The Official Water Supply Forecasts for January through July are computed on the 3rd workday of the month. Flood Risk Management (FRM) is computed at standard intervals and posted at: www.nwd.usace.army.mil/Missions/Water/Columbia/FloodControl

The **FEBRUARY** Water Supply Forecast 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	Sets min. flows at Hungry Horse and Columbia Falls
	May – September Provided by Reclamation	January, February, March	Sets VARQ FRM targets
		April	Sets VARQ FRM targets and VARQ refill flows
		May	Sets VARQ refill flows Sets end of September draft target
		June	Sets VARQ refill flows
The Dalles	April – September Provided by NWRFC	March	Sets CRWMP adjustments at Grand Coulee
	April – August Provided by NWRFC	April	Sets spring flow objective at McNary Dam
		July	Sets end of August draft limit at Grand Coulee
Lower Granite	April – July Provided by NWRFC	April	Sets spring flow objective at Lower Granite
		June	Sets summer flow objective at Lower Granite
Libby	April – August Provided by Corps Seattle District	December	Sets end of December variable draft target
		January, February, March	Sets VARQ FRM targets
		April	Sets VARQ FRM targets and VARQ refill flows
		May	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 Sets end of September draft limit.
		June	VARQ refill flows
Dworshak	April – July Provided by NWRFC	January to March	Manage for reservoir FRM, VDL, and Flood Control Refill Curve (FCRC)
		April to June	Manage for reservoir FRM and FCRC

Source: 2023 Water Management Plan, page 15 - <https://pweb.crohms.org/tmt/documents/wmp/2023/>

Hungry Horse Dam – Official Water Supply Forecast FEBRUARY 2023

Below are the volumes for the February 2023 final forecast for Hungry Horse:

- Feb-Jul: 2,050 kaf (98%)
- Apr-Aug: 1,950 kaf (96%)
- May-Sep: 1,750 kaf (99%)
- May-Jul: 1,600 kaf (97%)

The minimum flows downstream of Hungry Horse are as follows:

- Columbia Falls: 3,500 cfs
- Hungry Horse: 900 cfs

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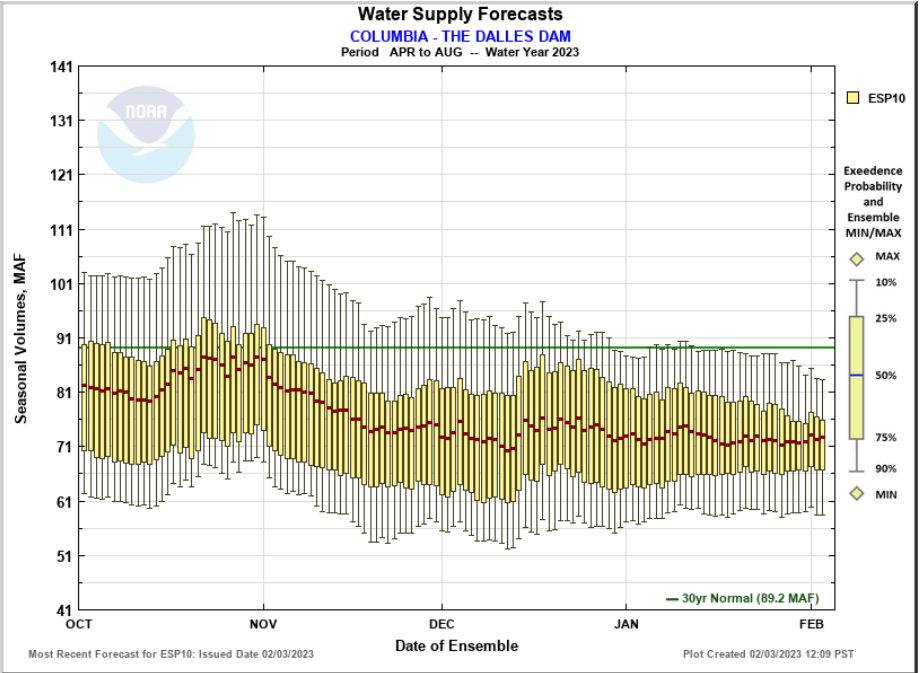
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COLUMBIA - THE DALLES DAM (TDAO3) Forecasts for Water Year 2023					
Official Water Supply					
ESP with 10 Days QPF Ensemble: 2023-02-03 Issued: 2023-02-03					
Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	62626	77494	82	89420	94166
APR-JUL	52919	65295	80	76174	81933
APR-AUG	58423	72791	82	83432	89196
JAN-SEP	78484	91982	79	109271	115946
JAN-JUL	68583	80149	77	97016	103714
OCT-SEP	88867	102366	77	119655	132314
Experimental Water Supply					
HEFS with 15 days EQPF Ensemble: 2023-02-03 Issued: 2023-02-03					
APR-SEP	64223	77876	83	92884	94166
APR-JUL	53888	65324	80	78884	81933
APR-AUG	59359	73026	82	87109	89196
JAN-SEP	82090	92926	80	110337	115946
JAN-JUL	71760	81068	78	96468	103714
OCT-SEP	92474	103310	78	120721	132314
Reference					
ESP with 0 Days QPF Ensemble: 2023-02-03 Issued: 2023-02-03					
APR-SEP	64845	77870	83	94770	94166
APR-JUL	54445	65663	80	80652	81933
APR-AUG	59948	73447	82	88967	89196
JAN-SEP	83367	93599	81	113386	115946
JAN-JUL	72686	81908	79	99557	103714
OCT-SEP	93750	103982	79	123770	132314

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



Most Recent Forecast for ESP10: Issued Date 02/03/2023 Plot Created 02/03/2023 12:09 PST

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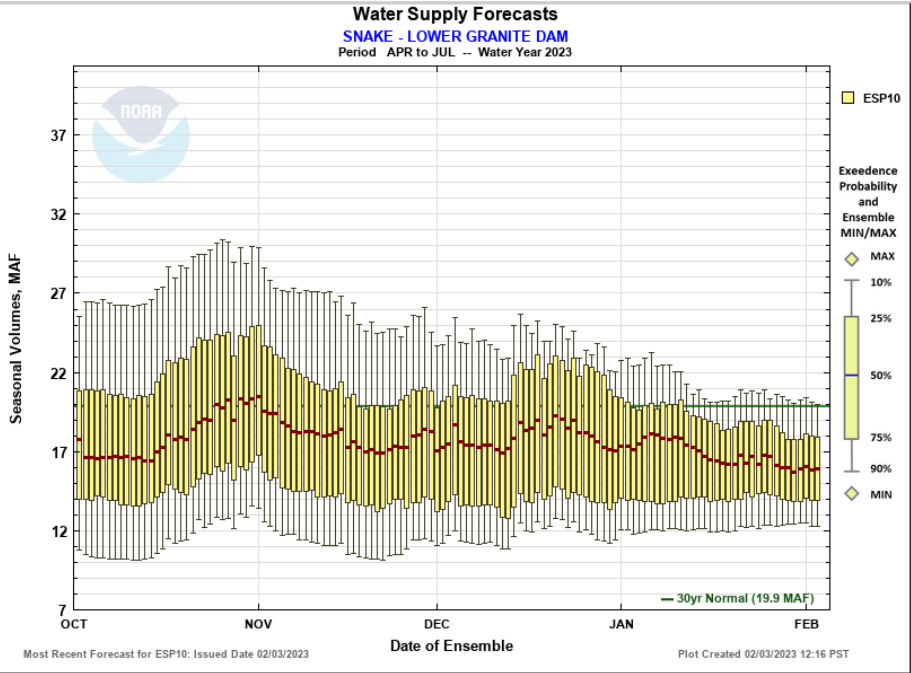
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SNAKE - LOWER GRANITE DAM (LGDW1) Forecasts for Water Year 2023					
Official Water Supply					
ESP with 10 Days QPF Ensemble: 2023-02-03 Issued: 2023-02-03					
Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	14417	18393	83	22677	22232
APR-JUL	12416	16036	80	20092	19946
APR-AUG	13421	17246	82	21430	21121
JAN-SEP	19633	24070	81	28964	29736
JAN-JUL	17648	21771	79	26508	27450
OCT-SEP	23103	27539	80	32433	34287
Experimental Water Supply					
HEFS with 15 days EQPF Ensemble: 2023-02-03 Issued: 2023-02-03					
APR-SEP	14187	18392	83	22736	22232
APR-JUL	12149	16086	81	20266	19946
APR-AUG	13170	17257	82	21550	21121
JAN-SEP	19478	23907	80	29058	29736
JAN-JUL	17485	21643	79	26451	27450
OCT-SEP	22947	27376	80	32528	34287
Reference					
ESP with 0 Days QPF Ensemble: 2023-02-03 Issued: 2023-02-03					
APR-SEP	14334	19062	86	23442	22232
APR-JUL	12288	16702	84	20822	19946
APR-AUG	13309	17920	85	22206	21121
JAN-SEP	19507	24188	81	30415	29736
JAN-JUL	17534	21992	80	27844	27450
OCT-SEP	22976	27657	81	33884	34287

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Libby : February Runoff Forecast & Flood Risk Management Calculation

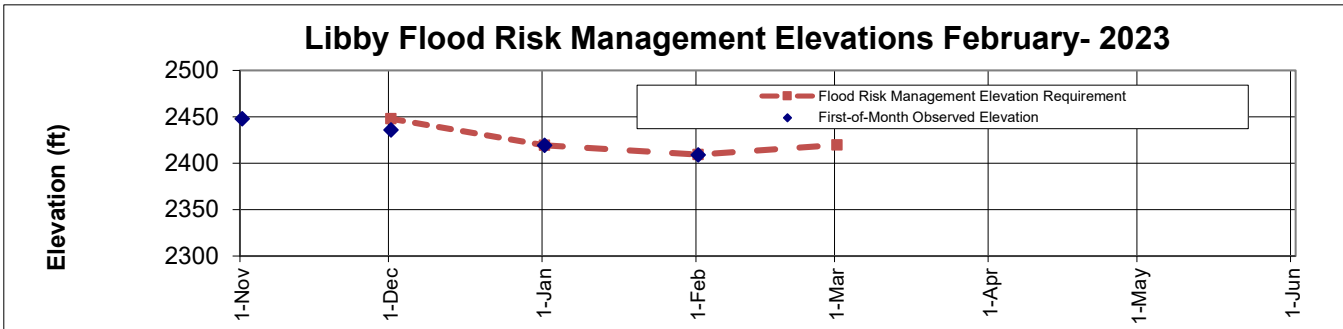
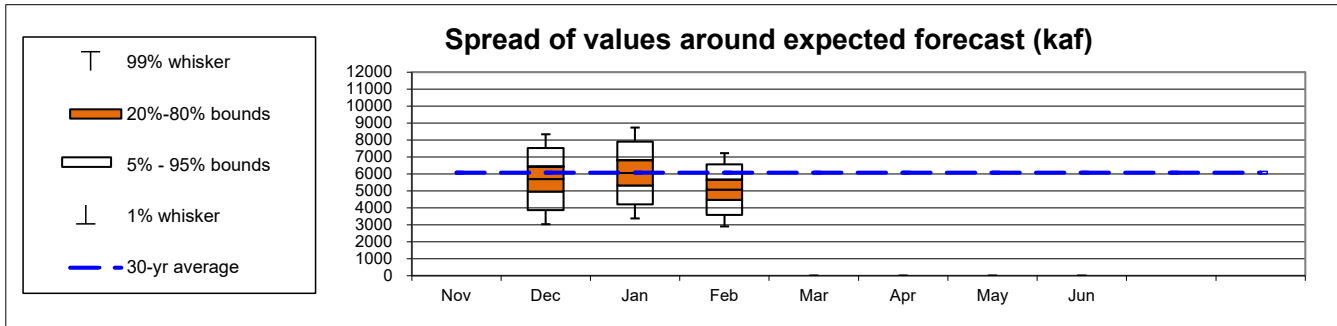
WY 2023

Runoff Forecast	February	1991-2020 Average	1991 - 2020 Percent of Average	1929-2020 Average	1929 - 2020 Percent of Average
Most Probable Runoff Volume: Apr-Aug (kaf)	5071	6080	83%	6259	81%
Most Probable Runoff Volume: Apr-Jul (kaf)	4564	5570	82%	5708	80%
Most Probable Runoff Volume: May-Jul (kaf)	4100	5014	82%	5183	79%

Flood Risk Management	February
28-Feb Flood Risk Management Space (kaf)	1678
28-Feb Flood Risk Management Elevation (ft)	2419.6

Forecast/Reservoir Data	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Apr-Aug Runoff Forecast (kaf)		5692	6061	5071				
First-of-Month Elev (ft)	2448.0	2435.9	2419.3	2409.0				

Seasonal FRM Requirements	30-Nov	31-Dec	31-Jan	28-Feb	31-Mar	30-Apr		
Flood Risk Management Space (kaf)	500	1689	2054	1678				
Flood Risk Management Elevation (ft)	2448.0	2419.3	2409.5	2419.6				



Notes:

1. The given forecast is the official Corps of Engineers forecast for Libby. If you have any questions please contact Leon Basdekas (208) 353-2564, Jason Chang (206) 764-3528, Lumas Helaire (206) 316-3875, Ethan Cheng (206) 316-3875, or Kevin Shaffer (206) 764-3660.
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 : February Runoff Forecast & Flood Risk Management Calculation
Apr-Aug Runoff Forecast Calculation:

Variable	Month(s)	Units	Observed Value A	Percent of Average (1991-2020)	Regression Coefficient B	Marginal Runoff (KAF) =A*B
SOI	ΣJun:Jul		2.50			0.0
Eureka RS, MT	ΣOct:Jan Prcp	inches	3.24	70%	78.47	254.2
West Glacier, MT	ΣOct:Jan Prcp	inches	10.02	77%	30.95	310.1
Cranbrook A, BC	ΣOct:Jan Prcp	millimeters	105.50	85%	2.84	299.6
Fernie, BC	ΣOct:Jan Prcp	millimeters	365.15	73%	0.72	262.9
Hawkins Lake, MT	1-Feb SWE	inches	14.1	86%	30.60	431.5
Stahl Peak, MT	1-Feb SWE	inches	18.99	79%	22.99	436.6
East Creek, BC	1-Feb SWE	millimeters	437.00	71%	0.75	327.8
Moyie Mountain, BC	1-Feb SWE	millimeters	256.00	87%	1.48	378.9
Sunshine Village, AB	1-Feb SWE	millimeters	261.31	68%	1.47	384.1
Akamina Pass, AB	1-Feb SWE	millimeters	254.35	81%	1.27	323.0
South Racehorse Creek, AB	1-Feb SWE	millimeters	242.18	93%	1.53	370.5
Intercept			1		1291.47	1291.5
January Forecast	April - August	kaf				5070.7

Data used in Libby Water Supply Forecast

Climate Data	Jun-22	Jul-22
SOI	1.70	0.80

Precipitation Data	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Eureka RS, MT (inch)	0.40	1.08	1.57	0.19				
West Glacier, MT (inch)	2.02	2.76	4.48	0.76				
Cranbrook A, BC (mm)	13.00	24.50	36.20	31.80				
Fernie, BC (mm)	98.81	118.00	112.27	36.07				

Snow Water Equiv	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Hawkins Lake, MT (inch)				14				
Stahl Peak, MT (inch)			16	19				
East Creek, BC (mm)				437				
Moyie Mountain, BC (mm)			219	256				
Sunshine Village, AB (mm)			236	261				
Akamina Pass, AB (mm)				254				
South Racehorse Creek, AB (mm)				242				

Streamflow	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Libby Inflow Volume (kaf)			170.3					

Reservoir Elevation	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Libby FOM Elev (feet)	2448.0	2435.9	2419.3	2409.0				

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Northwest River Forecast Center

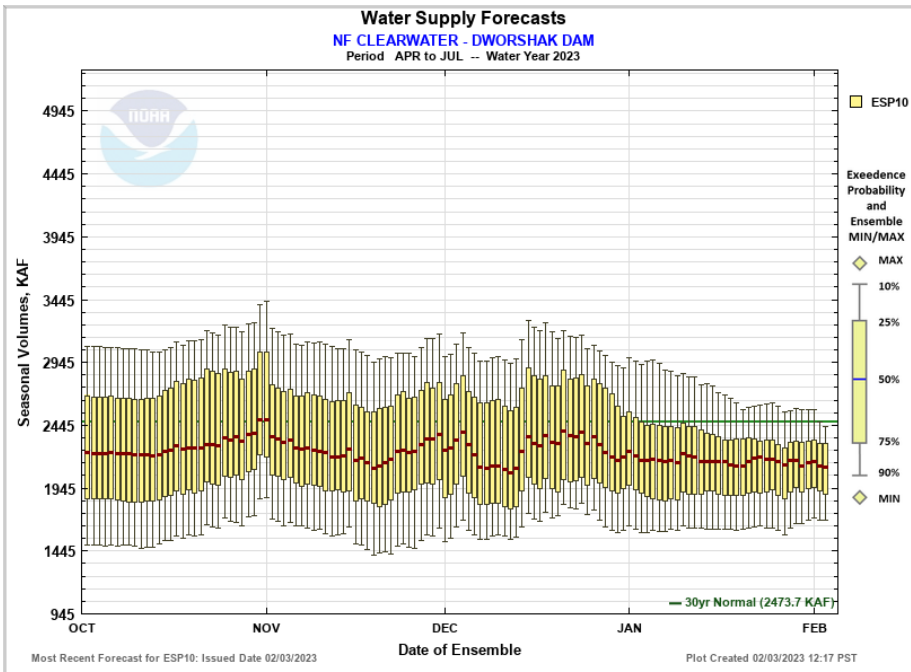
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NF CLEARWATER - DWORSHAK DAM (DWR11) Forecasts for Water Year 2023					
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Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	1794	2258	86	2568	2620
APR-JUL	1687	2117	86	2436	2474
JAN-SEP	2595	3015	85	3770	3543
JAN-JUL	2482	2874	85	3605	3397
OCT-SEP	2888	3307	83	4062	3998
Experimental Water Supply					
HEFS with 15 days EQPF Ensemble: 2023-02-03 Issued: 2023-02-03					
APR-SEP	1802	2328	89	2711	2620
APR-JUL	1696	2193	89	2576	2474
JAN-SEP	2598	3050	86	3715	3543
JAN-JUL	2489	2919	86	3553	3397
OCT-SEP	2890	3342	84	4007	3998
Reference					
ESP with 0 Days QPF Ensemble: 2023-02-03 Issued: 2023-02-03					
APR-SEP	1744	2317	88	2760	2620
APR-JUL	1631	2173	88	2619	2474
JAN-SEP	2598	3072	87	3800	3543
JAN-JUL	2490	2941	87	3645	3397
OCT-SEP	2890	3365	84	4092	3998

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