

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](http://www.nwd.usace.army.mil/Missions/Water/Columbia/FloodControl)

The **JUNE** 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
		January, February, March	Sets VARQ FRM targets
	May – September Provided by Reclamation	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/>

2-June-2023

## **Hungry Horse Dam – Official Water Supply Forecast June 2023**

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

- Jun-Jul: 450 kaf (51%)
- Apr-Aug: 1,660 kaf (82%)
- May-Sep: 1,475 kaf (83%)

**Joel Fenolio, P.E.**

Water Management - Operations Team Supervisor  
U.S. Bureau of Reclamation  
Columbia - Pacific Northwest Region  
Boise, ID 83706

## Northwest River Forecast Center

# Water Supply Forecasts

- Home
- Data/Normals
- Rankings
- ENSO / Runoff
- Adjustments
- Verification
- Verify All Years
- Archive
- Monthly Water Supply Forecasts
- Help

Choose Date:  Archive:  ▾

**COLUMBIA - THE DALLES DAM (TDAO3)**  
Forecasts for Water Year 2023

**Official Water Supply**  
*ESP with 10 Days QPF Ensemble: 2023-06-05 Issued: 2023-06-05*

Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	82204	84195	89	86339	94166
APR-JUL	72726	73746	90	75881	81933
APR-AUG	78063	79553	89	81816	89196
JAN-SEP	93818	95809	83	97953	115946
JAN-JUL	84340	85360	82	87495	103714
OCT-SEP	104201	106192	80	108336	132314

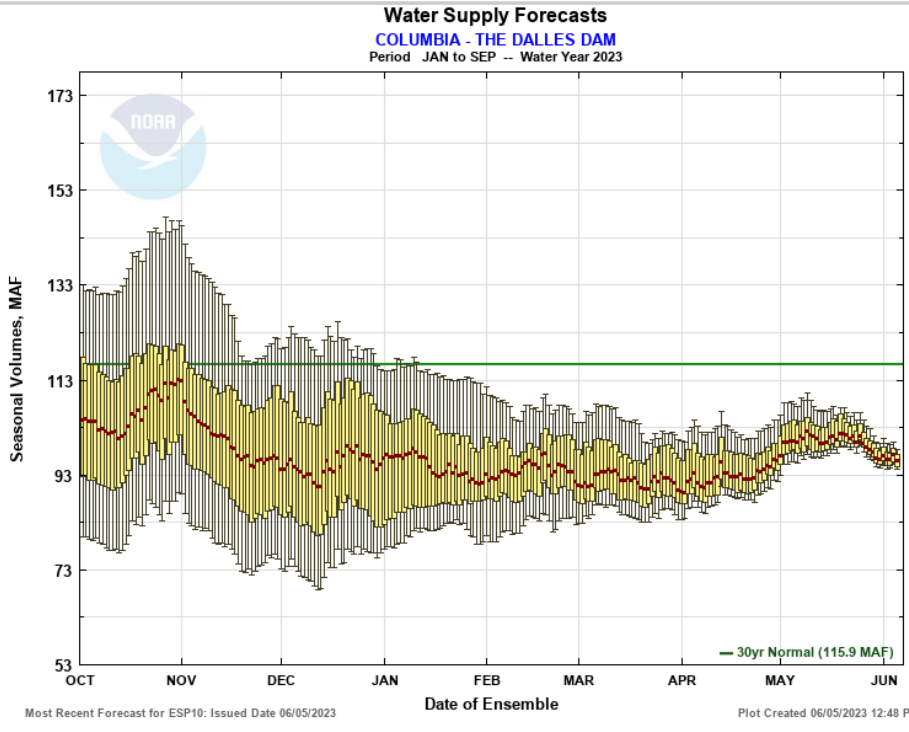
**Experimental Water Supply**  
*HEFS with 15 days EQPF Ensemble: 2023-06-05 Issued: 2023-06-05*

APR-SEP	81792	83846	89	87974	94166
APR-JUL	71528	73420	90	77094	81933
APR-AUG	76914	79094	89	83283	89196
JAN-SEP	93406	95460	82	99588	115946
JAN-JUL	83141	85034	82	88708	103714
OCT-SEP	103789	105843	80	109971	132314

**Reference**  
*ESP with 0 Days QPF Ensemble: 2023-06-05 Issued: 2023-06-05*

APR-SEP	81108	82856	88	87624	94166
APR-JUL	71074	72552	89	76722	81933
APR-AUG	76806	78370	88	82816	89196
JAN-SEP	92722	94470	81	99237	115946
JAN-JUL	82688	84166	81	88336	103714
OCT-SEP	103106	104853	79	109621	132314

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



- Max Scale
- Scale To Data
- Scale To Last 45 Days
- Show Min/Max Ensemble Volume
- Show Tooltips Help

**Overlay**

ESP10
HEFS
ESPO

**Data Files**

CSV (ESP10 / APR-AUG)

Forecast Ensemble



[Commerce Home](#) | 
 [NOAA](#) | 
 [NWS Organization](#) | 
 [NWRFC Site Map](#) | 
 [Search](#)

[Freedom of Information Act](#) | 
 [Privacy Policy](#) | 
 [Information Quality](#) | 
 [USA.gov](#) | 
 [Career Opportunities](#)

# Northwest River Forecast Center

## Water Supply Forecasts

- Home
- Data/Normals
- Rankings
- ENSO / Runoff
- Adjustments
- Verification
- Verify All Years
- Archive
- Monthly Water Supply Forecasts
- He

Choose Date: 06/05/2023 Archive: Water Year ▼

**SNAKE - LOWER GRANITE DAM (LGDW1)**  
Forecasts for Water Year 2023

**Official Water Supply**  
*ESP with 10 Days QPF Ensemble: 2023-06-05 Issued: 2023-06-05*

Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	22697	22947	103	23597	22232
APR-JUL	20174	20376	102	20836	19946
APR-AUG	21453	21671	103	22197	21121
JAN-SEP	26824	27073	91	27723	29736
JAN-JUL	24301	24503	89	24963	27450
OCT-SEP	30293	30542	89	31193	34287

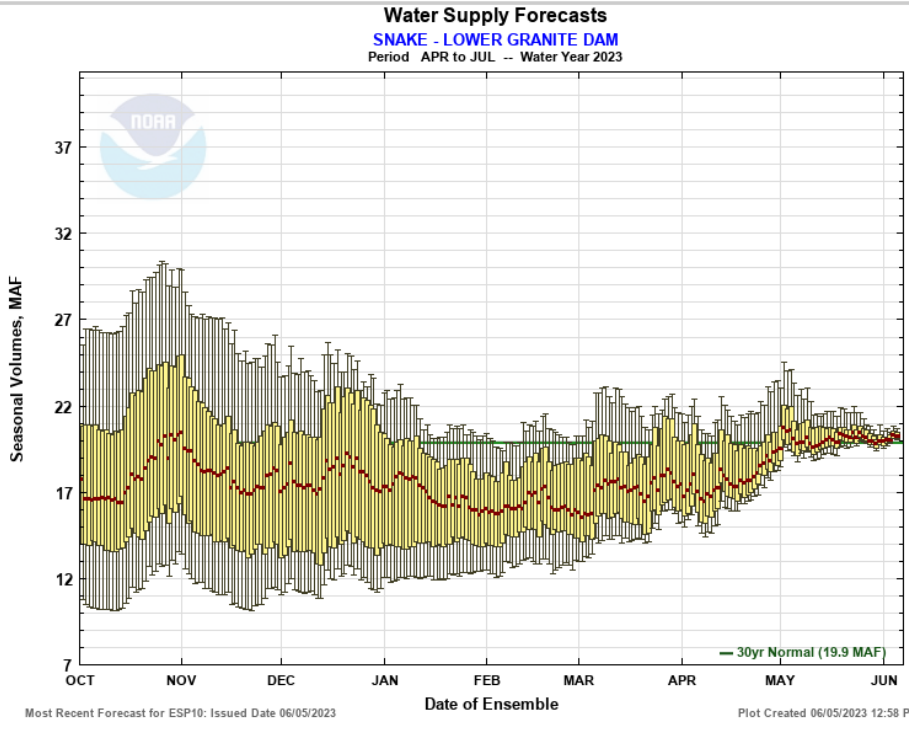
**Experimental Water Supply**  
*HEFS with 15 days EQPF Ensemble: 2023-06-05 Issued: 2023-06-05*

APR-SEP	21910	22762	102	24038	22232
APR-JUL	19451	20176	101	21069	19946
APR-AUG	20701	21451	102	22543	21121
JAN-SEP	26036	26889	90	28165	29736
JAN-JUL	23578	24303	89	25196	27450
OCT-SEP	29506	30358	89	31634	34287

**Reference**  
*ESP with 0 Days QPF Ensemble: 2023-06-05 Issued: 2023-06-05*

APR-SEP	21581	22132	100	23218	22232
APR-JUL	19072	19577	98	20610	19946
APR-AUG	20320	20861	99	21940	21121
JAN-SEP	25708	26258	88	27345	29736
JAN-JUL	23198	23704	86	24736	27450
OCT-SEP	29177	29728	87	30814	34287

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



- Max Scale
- Scale To Data
- Scale To Last 45 Days
- Show Min/Max Ensemble Volume
- Show Tooltips Help

**Overlay**

ESP10
HEFS
ESPO

**Data Files**

CSV (ESP10 / APR-JUL)

Forecast Ensemble



[Commerce Home](#) | 
 [NOAA](#) | 
 [NWS Organization](#) | 
 [NWRFC Site Map](#) | 
 [Search](#)

[Freedom of Information Act](#) | 
 [Privacy Policy](#) | 
 [Information Quality](#) | 
 [USA.gov](#) | 
 [Career Opportunities](#)

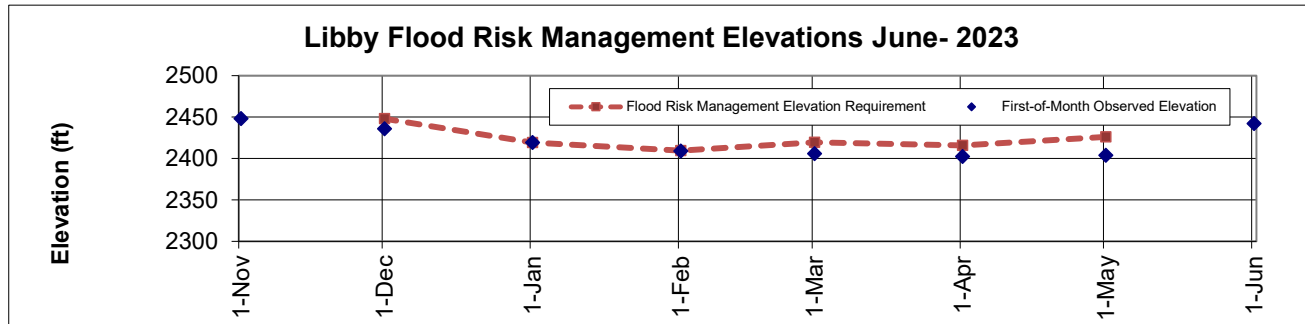
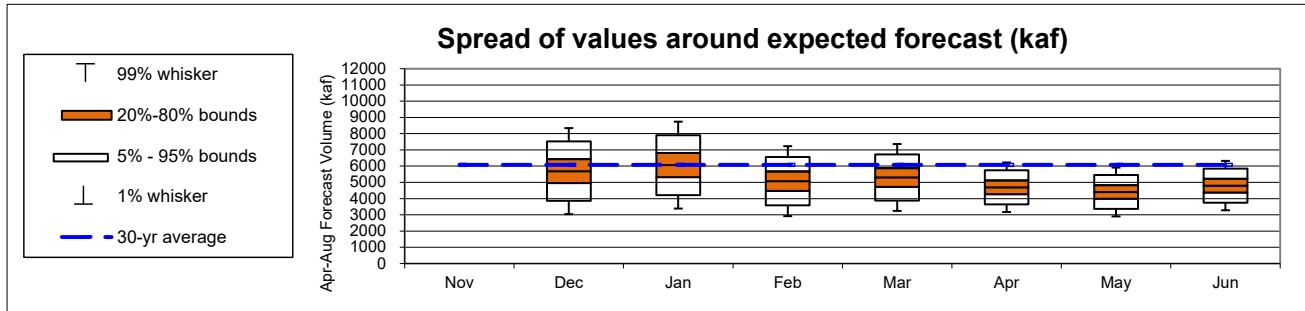
Libby : June Runoff Forecast & Flood Risk Management Calculation

WY 2023

Runoff Forecast	June	1991-2020 Average	1991 - 2020 Percent of Average	1929-2020 Average	1929 - 2020 Percent of Average
Most Probable Runoff Volume: Apr-Aug (kaf)	4803	6080	79%	6259	77%
Most Probable Runoff Volume: Apr-Jul (kaf)	4497	5570	81%	5708	79%
Most Probable Runoff Volume: May-Jul (kaf)	4200	5014	84%	5183	81%

Forecast/Reservoir Data	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Apr-Aug Runoff Forecast (kaf)		5692	6063	5075	5302	4698	4408	4803
First-of-Month Elev (ft)	2448.0	2435.9	2419.3	2409.0	2405.7	2402.4	2403.8	2442.1

Seasonal FRM Requirements	30-Nov	31-Dec	31-Jan	28-Feb	31-Mar	30-Apr		
Flood Risk Management Space (kaf)	500	1689	2054	1680	1823	1422		
Flood Risk Management Elevation (ft)	2448.0	2419.3	2409.5	2419.6	2415.8	2426.1		



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) 316-3909, 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.
3. Nearby Cranbrook A (Auto), BC dataset was used in place of Cranbrook A, BC due to a missing data point in the latter.

**Libby : June 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	Σ Jun:Jul					
Eureka RS, MT	Σ Oct:May Prcp	inches	6.1	67%	37.7	228.6
West Glacier, MT	Σ Oct:May Prcp	inches	14.9	66%	22.5	335.4
Cranbrook A, BC	Σ Oct:May Prcp	millimeters	173.8	72%	2.0	352.9
Fernie, BC	Σ Oct:May Prcp	millimeters	598.6	71%	0.5	300.5
Hawkins Lake, MT	1-Jun SWE	inches	0.0	0%	10.1	0.0
Stahl Peak, MT	1-Jun SWE	inches	0.0	0%	10.3	0.0
East Creek, BC	1-Jun SWE	millimeters	184.0	27%	0.4	79.5
Moyie Mountain, BC	1-Jun SWE	millimeters	0.0	0%	0.8	0.0
Sunshine Village, AB	1-Jun SWE	millimeters	0.0	0%	0.6	0.0
Akamina Pass, AB	1-Jun SWE	millimeters	0.0	0%	0.7	0.0
South Racehorse Creek, AB	1-Jun SWE	millimeters	0.0	0%	0.6	0.0
Intercept			1		978.0	978.0
Forecast Inflow	June-August	kaf				2274.8
Observed Inflow	April - May	kaf	2528.0			2528.0
May Forecast	April - August	kaf				4802.9

**Data used in Libby Water Supply Forecast**

Climate Data				Jun-22	Jul-22
SOI				1.7	0.8

Precipitation Data	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Eureka RS, MT (inch)	0.4	1.1	1.6	0.2	0.5	0.1	0.2	2.0
West Glacier, MT (inch)	2.0	2.8	4.5	0.8	1.8	0.4	1.0	1.7
Cranbrook A, BC (mm)	13.0	24.5	36.6	32.8	6.0	4.1	26.2	30.6
Fernie, BC (mm)	98.8	118.0	112.3	36.1	52.1	35.1	118.9	27.4

Snow Water Equiv	1-Nov	1-Dec	1-Jan	1-Feb	1-Mar	1-Apr	1-May	1-Jun
Hawkins Lake, MT (inch)				14.1	18.5	21.8	21.3	0.0
Stahl Peak, MT (inch)			15.6	19.0	25.5	28.0	28.0	0.0
East Creek, BC (mm)				437.0	604.0	670.0	669.5	184.0
Moyie Mountain, BC (mm)			219.0	256.0	325.0	379.0	261.0	0.0
Sunshine Village, AB (mm)			236.1	261.3	356.4	392.7	423.5	0.0
Akamina Pass, AB (mm)				254.4	339.9	381.0	229.3	0.0
South Racehorse Creek, AB (mm)				242.2	326.4	371.8	279.1	0.0

Streamflow	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Libby Inflow Volume (kaf)			170.3	122.5	131.7	296.2	2231.8	

Reservoir Elevation	1-Nov	1-Dec	1-Jan	1-Feb	1-Mar	1-Apr	1-May	1-Jun
Libby FOM Elev (feet)	2448.0	2435.9	2419.3	2409.0	2405.7	2402.4	2403.8	2442.1

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

Leon Basdekas, P.E.  
 Upper Columbia Senior Water Manager  
 Seattle District

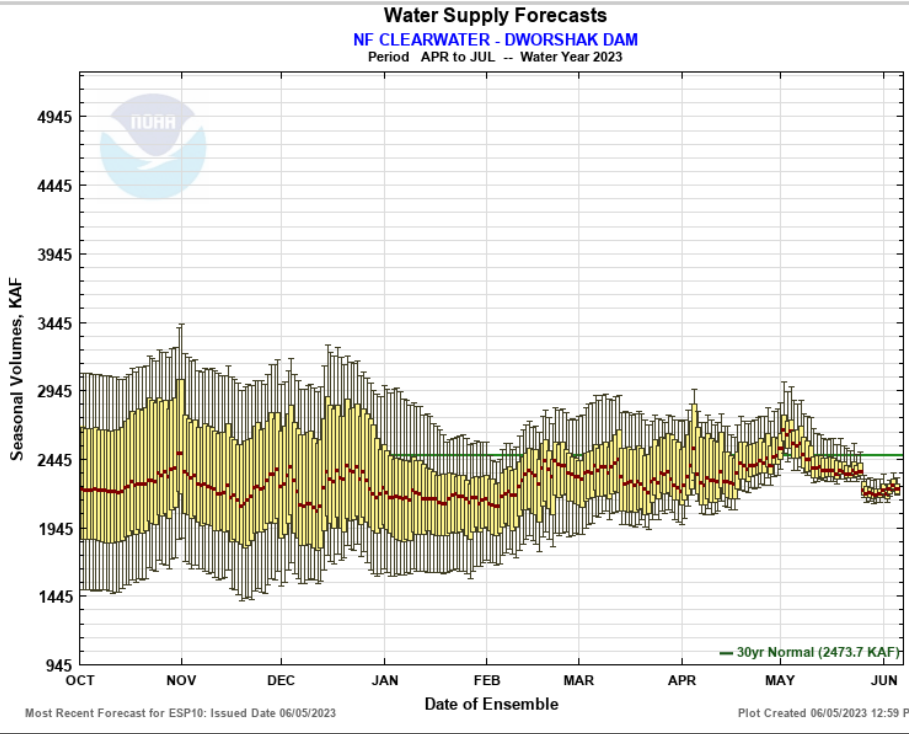
# Northwest River Forecast Center

## Water Supply Forecasts

- Home
- Data/Normals
- Rankings
- ENSO / Runoff
- Adjustments
- Verification
- Verify All Years
- Archive
- Monthly Water Supply Forecasts
- Help

Choose Date:  Archive:

NF CLEARWATER - DWORSHAK DAM (DWR11) Forecasts for Water Year 2023					
<b>Official Water Supply</b>					
ESP with 10 Days QPF Ensemble: <b>2023-06-05</b> Issued: 2023-06-05					
Forecast Period	Forecasts Are in KAF				30 Year Average (1991-2020)
	90 %	50 %	% Average	10 %	
APR-SEP	2311	2357	90	2440	2620
<b>APR-JUL</b>	<b>2188</b>	<b>2229</b>	<b>90</b>	<b>2308</b>	<b>2474</b>
JAN-SEP	2695	2741	77	2824	3543
JAN-JUL	2572	2613	77	2692	3397
OCT-SEP	2987	3033	76	3116	3998
Experimental Water Supply					
HEFS with 15 days EQPF Ensemble: 2023-06-05 Issued: 2023-06-05					
APR-SEP	2275	2351	90	2454	2620
APR-JUL	2160	2206	89	2321	2474
JAN-SEP	2659	2734	77	2838	3543
JAN-JUL	2543	2590	76	2704	3397
OCT-SEP	2951	3027	76	3130	3998
Reference					
ESP with 0 Days QPF Ensemble: 2023-06-05 Issued: 2023-06-05					
APR-SEP	2244	2301	88	2426	2620
APR-JUL	2129	2174	88	2293	2474
JAN-SEP	2628	2684	76	2810	3543
JAN-JUL	2512	2558	75	2677	3397
OCT-SEP	2920	2977	74	3102	3998
Move the mouse over the desired "Forecast Period" to display a graph.					



- Max Scale
- Scale To Data
- Scale To Last 45 Days
- Show Min/Max Ensemble Volume
- Show Tooltips Help

**Overlay**

ESP10
HEFS
ESPO

**Data Files**

CSV (ESP10 / APR-JUL)

Forecast Ensemble



Commerce Home | NOAA | NWS Organization | NWRFC Site Map | Search

Freedom of Information Act | Privacy Policy | Information Quality | USA.gov | Career Opportunities