2026 Wind River Range Water Supply Forecasting: June 2026

Mountain Hydrology LLC presents the 2026 delivery of Wind River Range remotely sensed snow data and experimental seasonal water supply forecasts as part of the Bureau of Reclamation's Snow Water Supply Forecasting Project.

A key component of this project is the collection of airborne lidar data by Airborne Snow Observatories, Inc. (ASO) and snow density field measurements by Mountain Hydrology to estimate full-watershed snowpack storage at 3 meter spatial resolution. The third of three annual full-watershed snow water equivalent (SWE) maps is presented below. These data are assimilated into a physical water supply forecasting model, DHSVM-WSF to generate probabilistic runoff forecasts. This report discusses the snowpack survey and runoff forecasting results.

Best, Eli Boardman
Chief Scientist and Founder, Mountain Hydrology LLC
Eli Boardman

Delivered: June 1st, 2026

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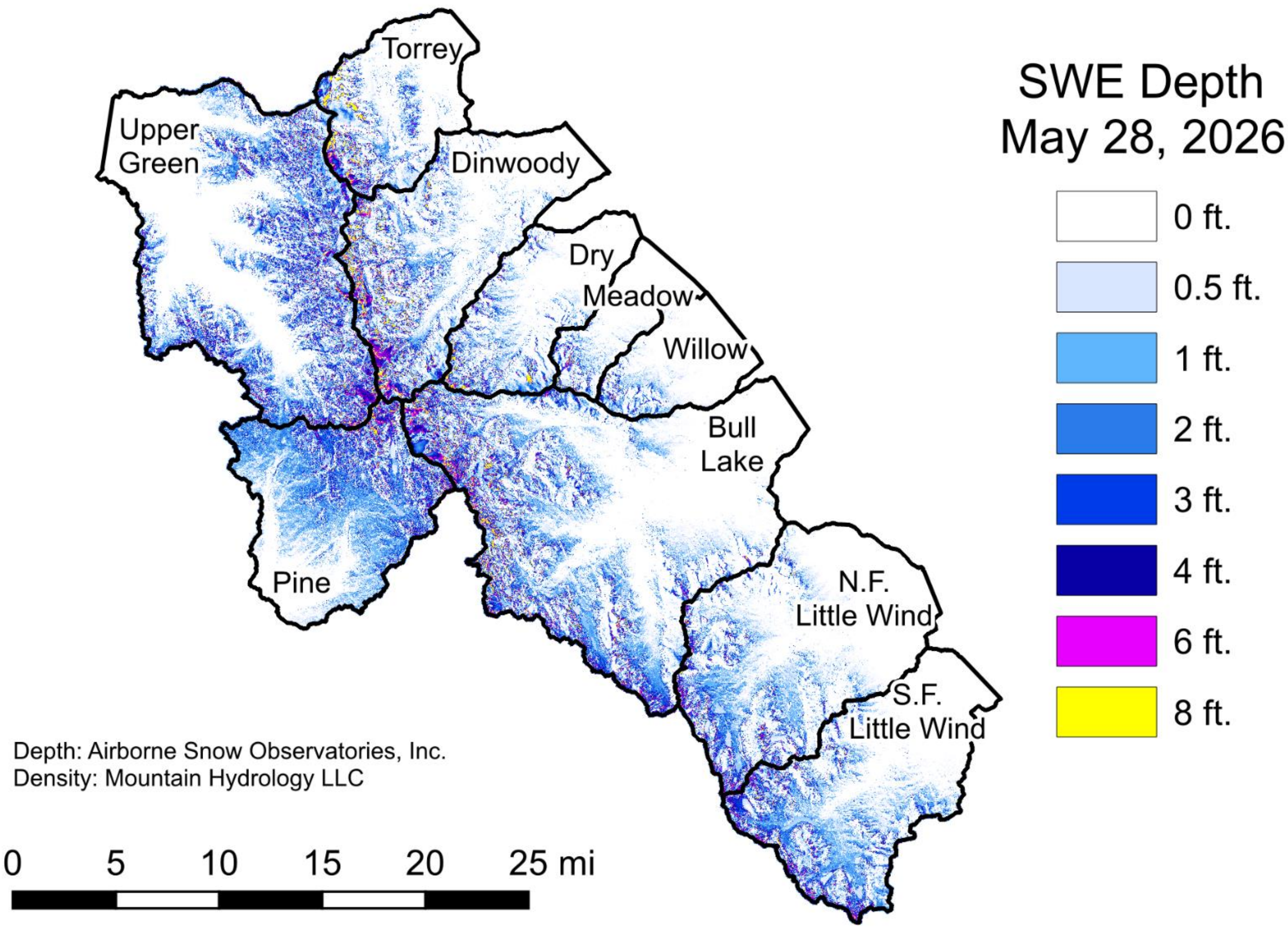


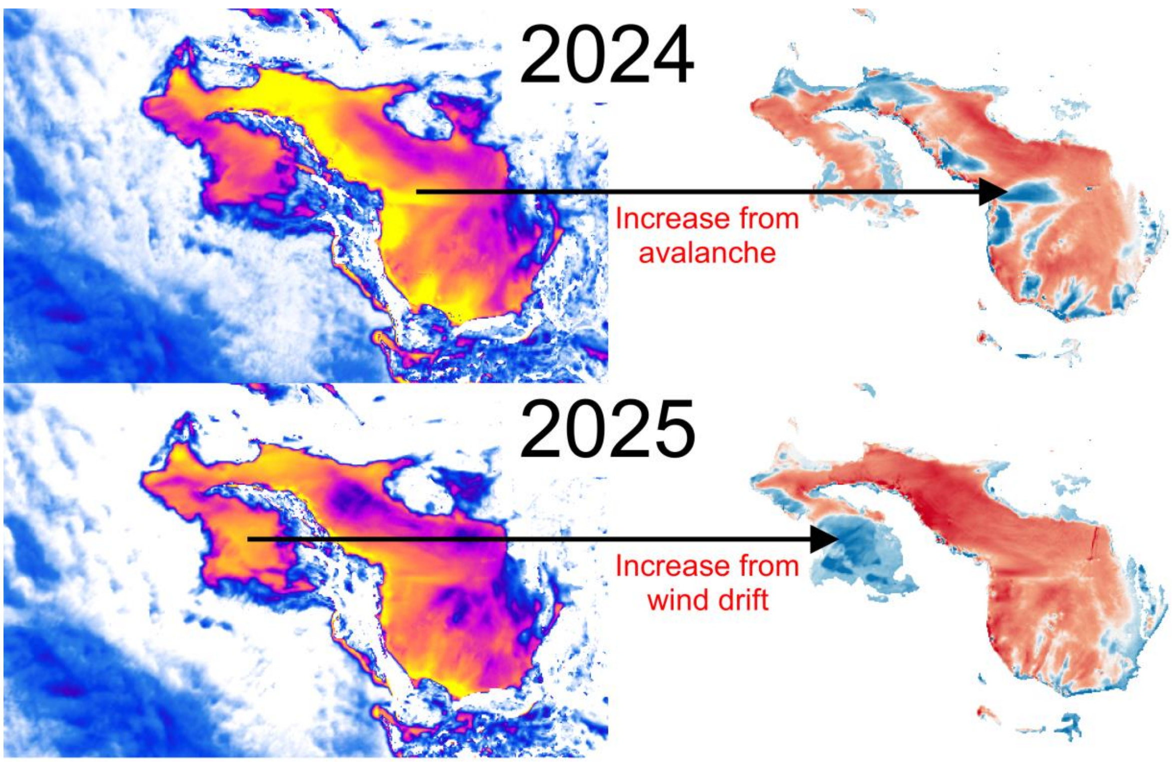
Note: ASO's official version of the snow depth map can be found at https://ava.airbornesnowobservatories.com/.

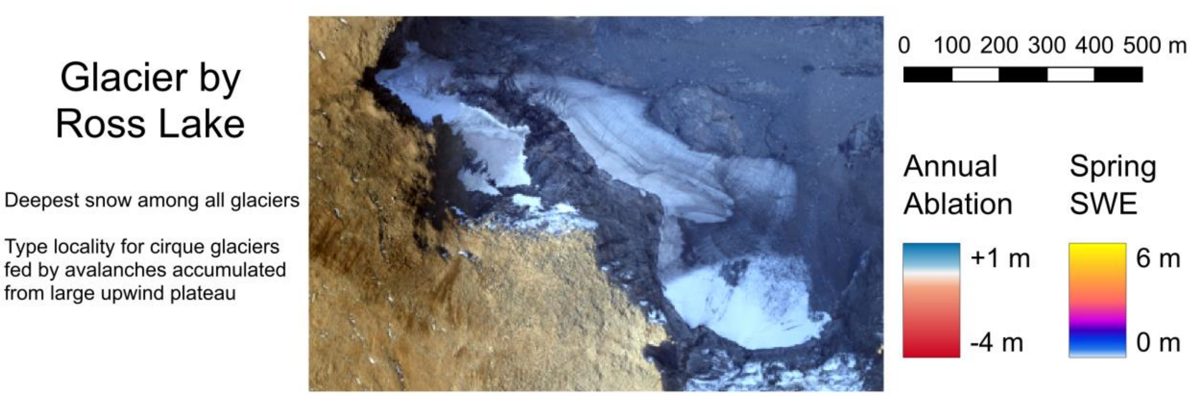
Snow Depth Survey

Mountain Hydrology contracted with Airborne Snow Observatories, Inc. (ASO) to obtain high resolution lidar-based snow depth maps for 10 key sub-watersheds in the Wind River Range. The survey was targeted for mid-May (earlier than past years) due to the anomalously early snowmelt season; however, due to stormy weather and flight logistics, the survey was not able to be conducted until late May. This year, the survey was acquired in a single aircraft flight on May 28, and the ASO team processed and delivered the data by the afternoon of May 31.

One key improvement to the snow depth survey is the inclusion of updated topographic data over persistent snowfields and glaciers, which are rapidly melting and changing elevation. Previously, the ablation of glaciers between 2019 (USGS lidar acquisition) and 2022 (first Wyoming ASO acquisition) caused negative snow depths in most glaciated areas, which were masked to zero or imputed. Thanks to a generous in-kind commitment by ASO to help acquire updated glacier lidar data in late September of 2025, this year the snow-off topography was freshly updated and the snow depth measurements on top of the glaciers were meaningful.

Additional information on the ASO survey can be found in the ASO report available from the portal linked above.



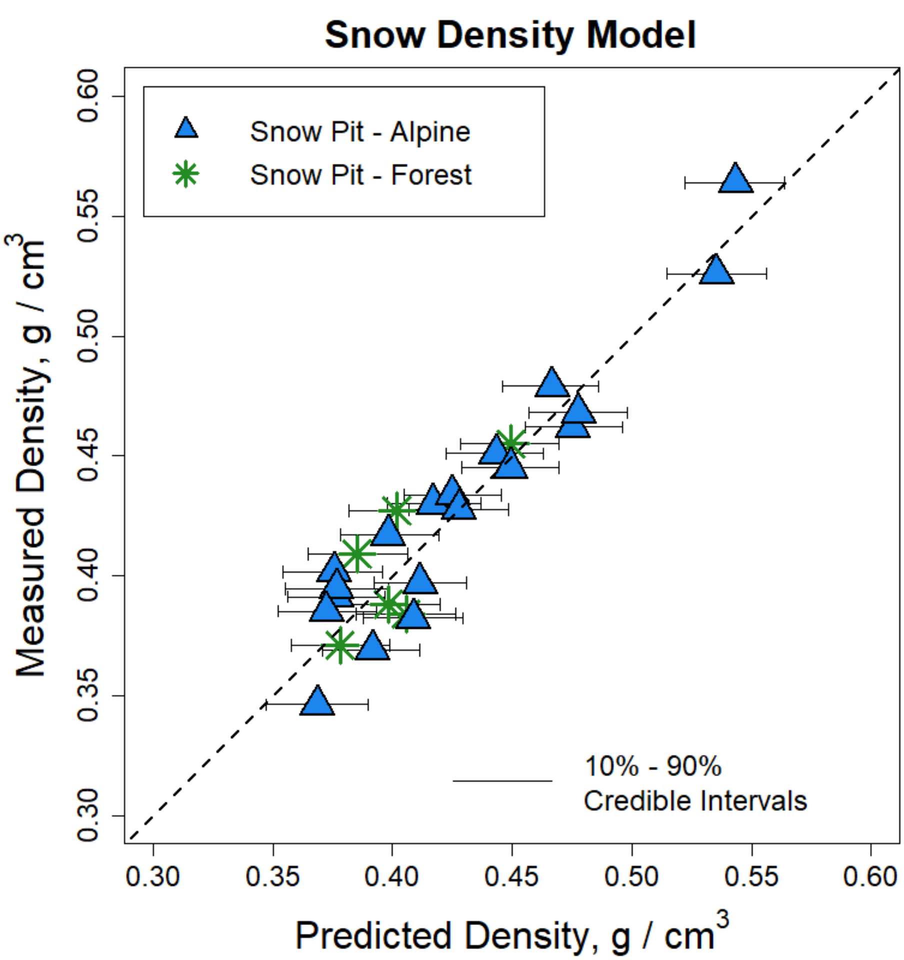


Snow Density Survey

To estimate how much total water is stored in the snowpack, Mountain Hydrology personnel measured snow pit density profiles that are used to constrain density variations across the landscape. The snow pit measurements funded by this project were located on the Shoshone and Bridger-Teton National Forests under special use permits and the Wind River Indian Reservation Roadless Area under authorization from the Office of the Tribal Water Engineer. Fieldwork was conducted between May 20 and May 28, with a total of 5 backcountry fieldwork days (10 person-days).

A total of 15 snow pit profiles were available from the current year (within a few days before the ASO flight). These snow pit data constrain densities from below 9,000 ft. to above 12,000 ft. and from just over 1 ft. of snow depth to more than 18 ft. of snow depth in deep drifts, including several major pits (6+ ft. deep) at high elevations (11,000-12,000 ft.) and numerous pits in the forest. Observed heterogeneity in bulk (vertically integrated) snow density varied from 0.371 g/cm^3 in the shallow forested snowpack to 0.564 g/cm^3 in deep drifts at relatively low elevations.

Using 14 of the 15 snow density measurements (excluding a non-representative pit in fresh powder snow) combined with 11 additional snow density profiles from prior years (constraining elevations above 12,000 ft.), Mountain Hydrology constructed a Bayesian regression model as a function of elevation, snow depth, canopy cover, north slope aspect, and east slope aspect, which explained 89% of total variability (R^2). The root-mean-square-error is 0.016 g/cm^3, or 4% uncertainty relative to the mean of 0.42 g/cm^3. This model was used to infer snow density across the ASO flight domain with the same variables. Multiplying the density map by the depth map produces a spatially complete estimate of snow water equivalent (SWE), as shown on the cover page.



SWE Map Results

Across the 2,200 km^2 (850 mi^2) survey domain, the total SWE volume was 429,305 acre-ft. (429 TAF) of liquid water equivalent. The area-averaged mean SWE depth was 24 cm (0.79 ft.). Considering only snow-covered areas, the SWE depth 90th percentile was 134 cm (4.4 ft.) and a 99th percentile of 282 cm (9.3 ft.) at 3 meter horizontal resolution.

The following table gives estimated SWE volumes and area-averaged SWE depths for each sub-watershed:

Watershed	Airborne Snow Survey Date	SWE Volume	Mean SWE Depth
Torrey Creek	May 28, 2026	23 TAF	23 cm (0.75 ft.)
Dinwoody Creek	May 28, 2026	50 TAF	27 cm (0.89 ft.)
Dry Creek	May 28, 2026	16 TAF	14 cm (0.45 ft.)
Meadow Creek	May 28, 2026	4 TAF	5 cm (0.17 ft.)
Willow Creek	May 28, 2026	4 TAF	4 cm (0.12 ft.)
Bull Lake Creek	May 28, 2026	99 TAF	25 cm (0.82 ft.)
N.F. Little Wind R.	May 28, 2026	34 TAF	14 cm (0.47 ft.)
S.F. Little Wind R.	May 28, 2026	39 TAF	21 cm (0.68 ft.)
Upper Green River	May 28, 2026	93 TAF (At Roaring Fork confluence)	29 cm (0.94 ft.) (At Roaring Fork confluence)
Pine Creek	May 28, 2026	58 TAF	36 cm (1.18 ft.)

Note that the area-averaged SWE depths are affected by the position of stream gages, reservoirs, etc., since a larger low-elevation snow-free area will reduce the apparent mean SWE depth for a given watershed. Thus, the SWE volumes are more indicative of the amount of snow stored in a particular watershed.

Note also that the sum of sub-watershed SWE volumes is less than the total surveyed SWE volume because the total survey area extends slightly beyond the bounds of each watershed.

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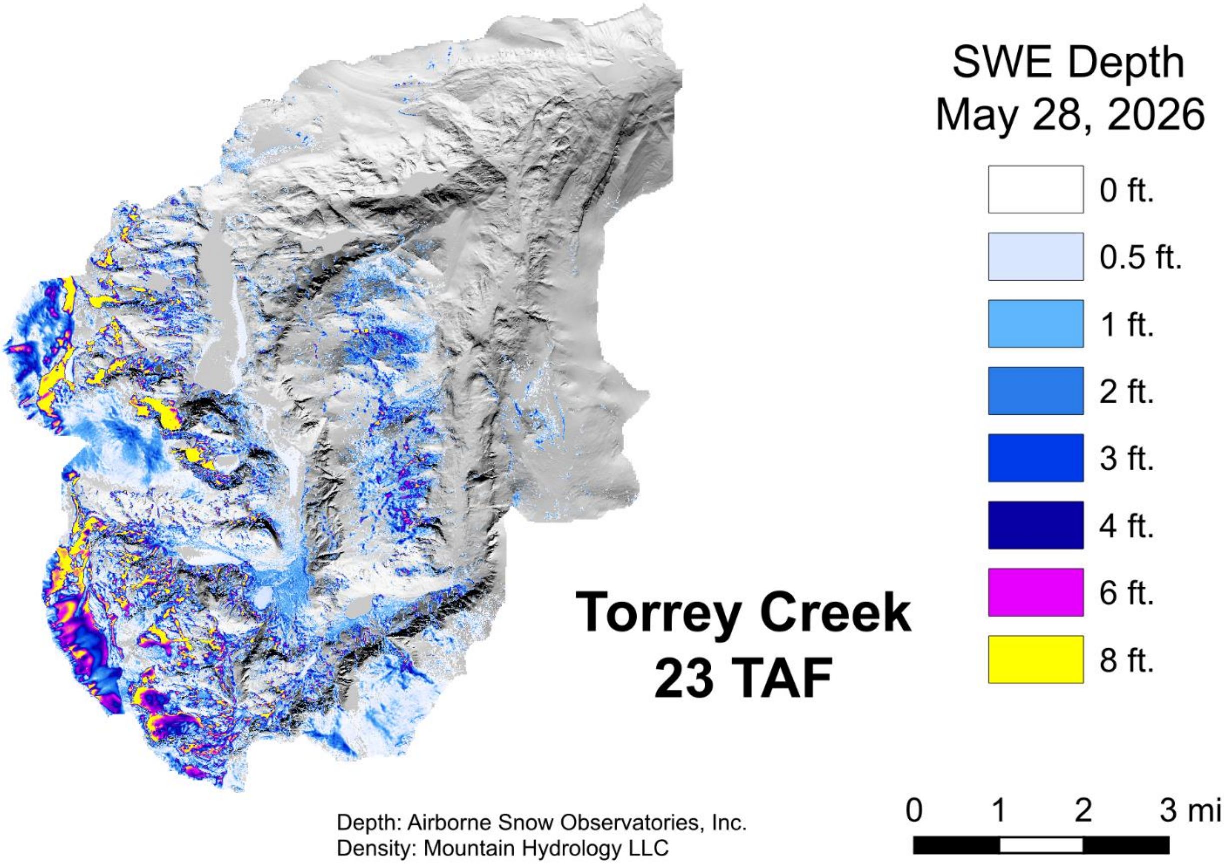

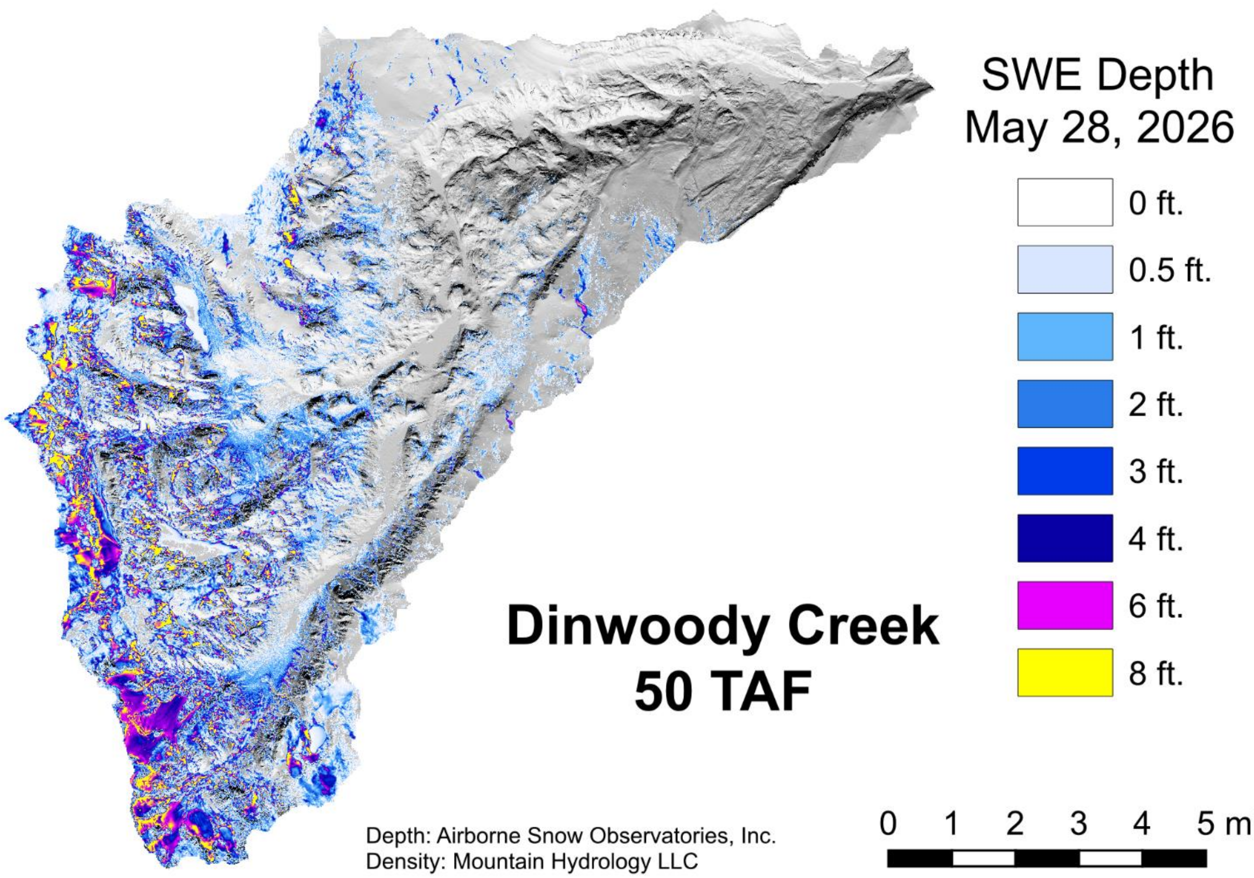

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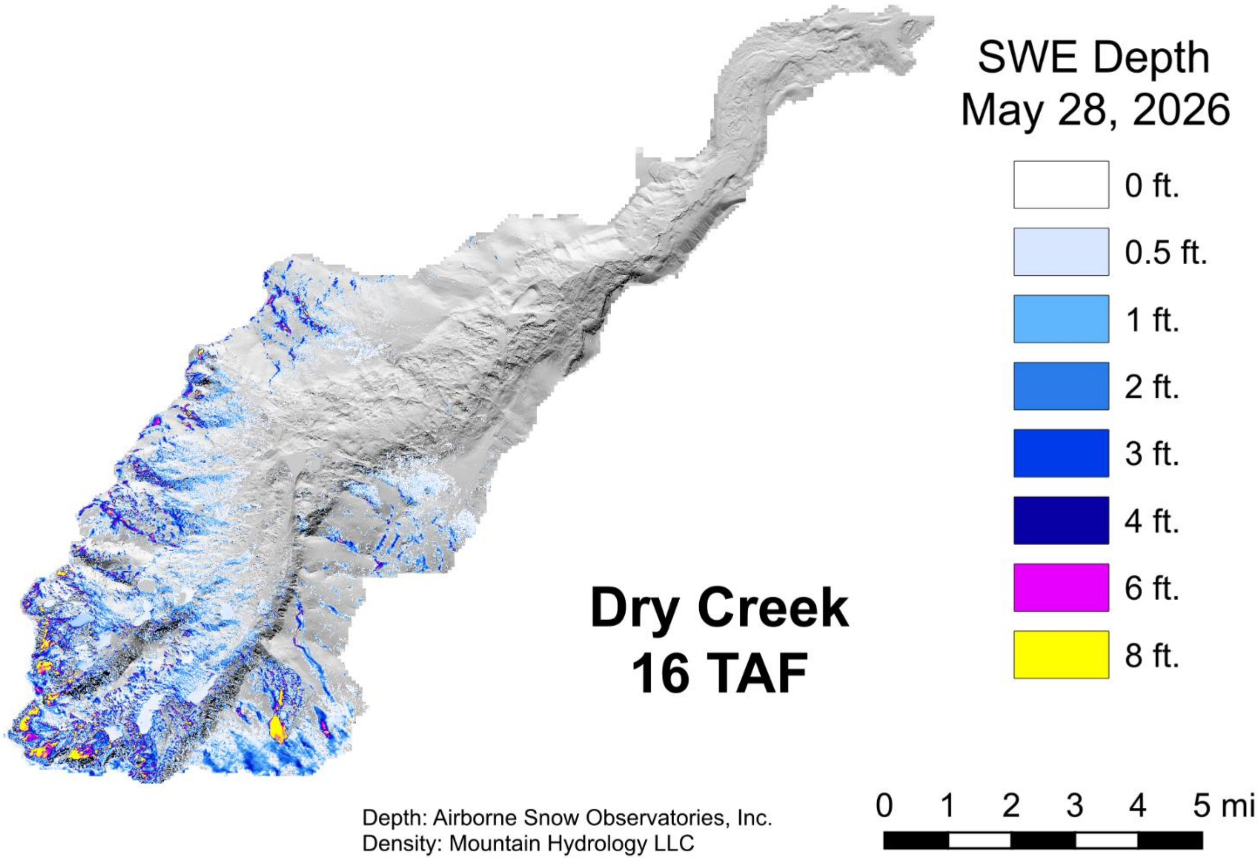
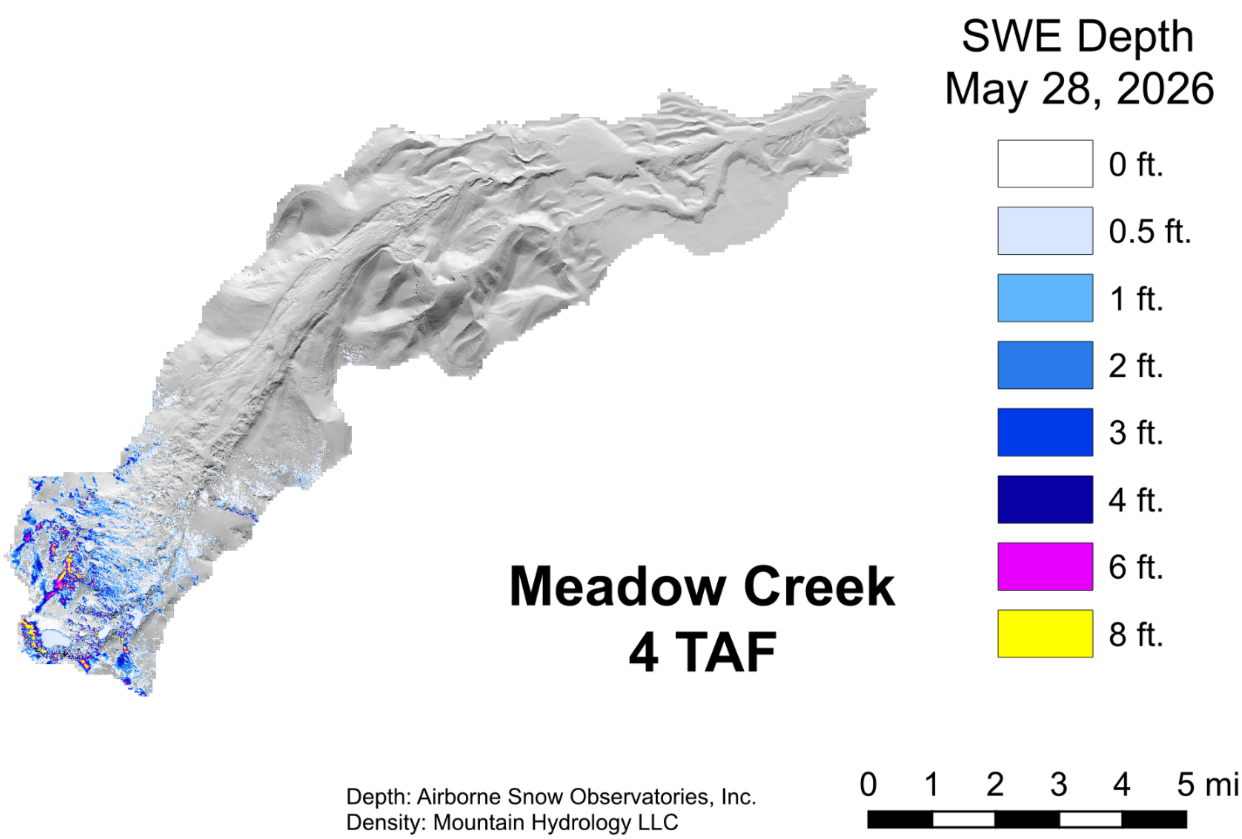
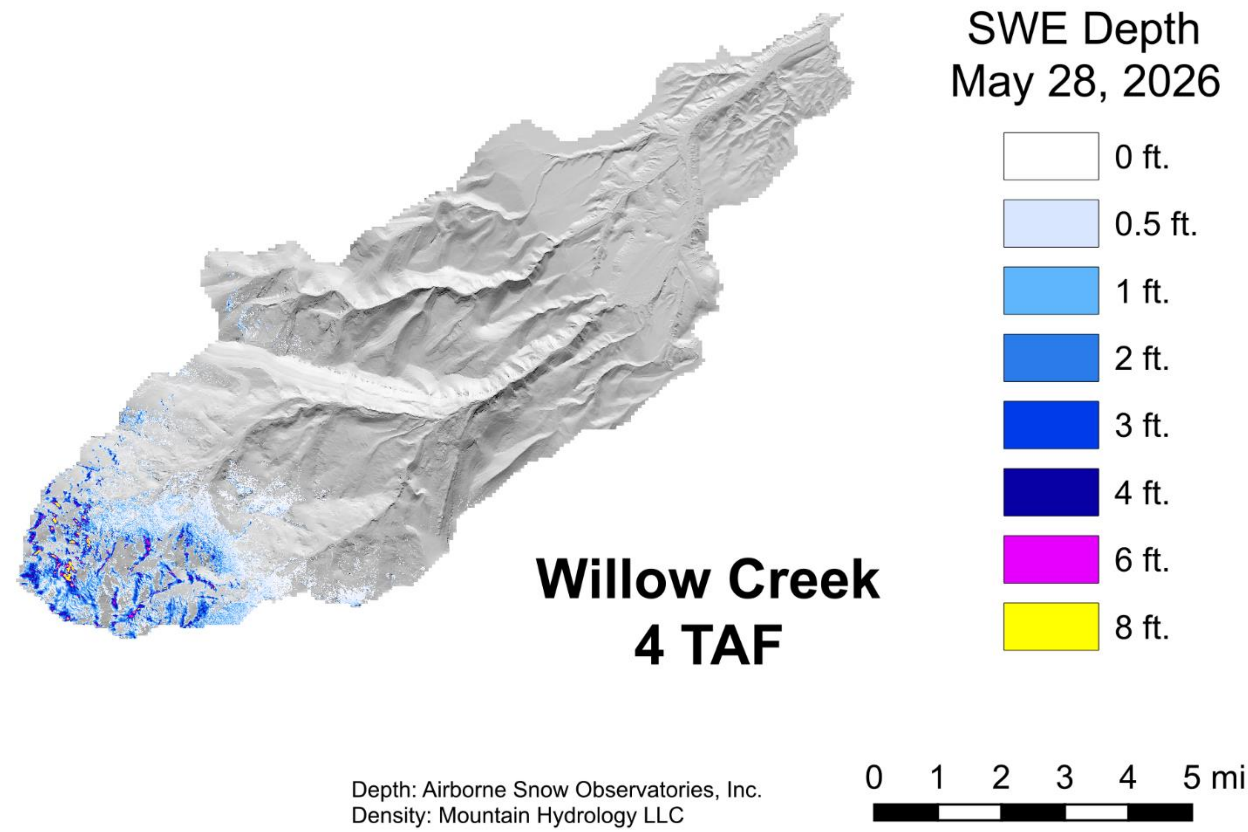
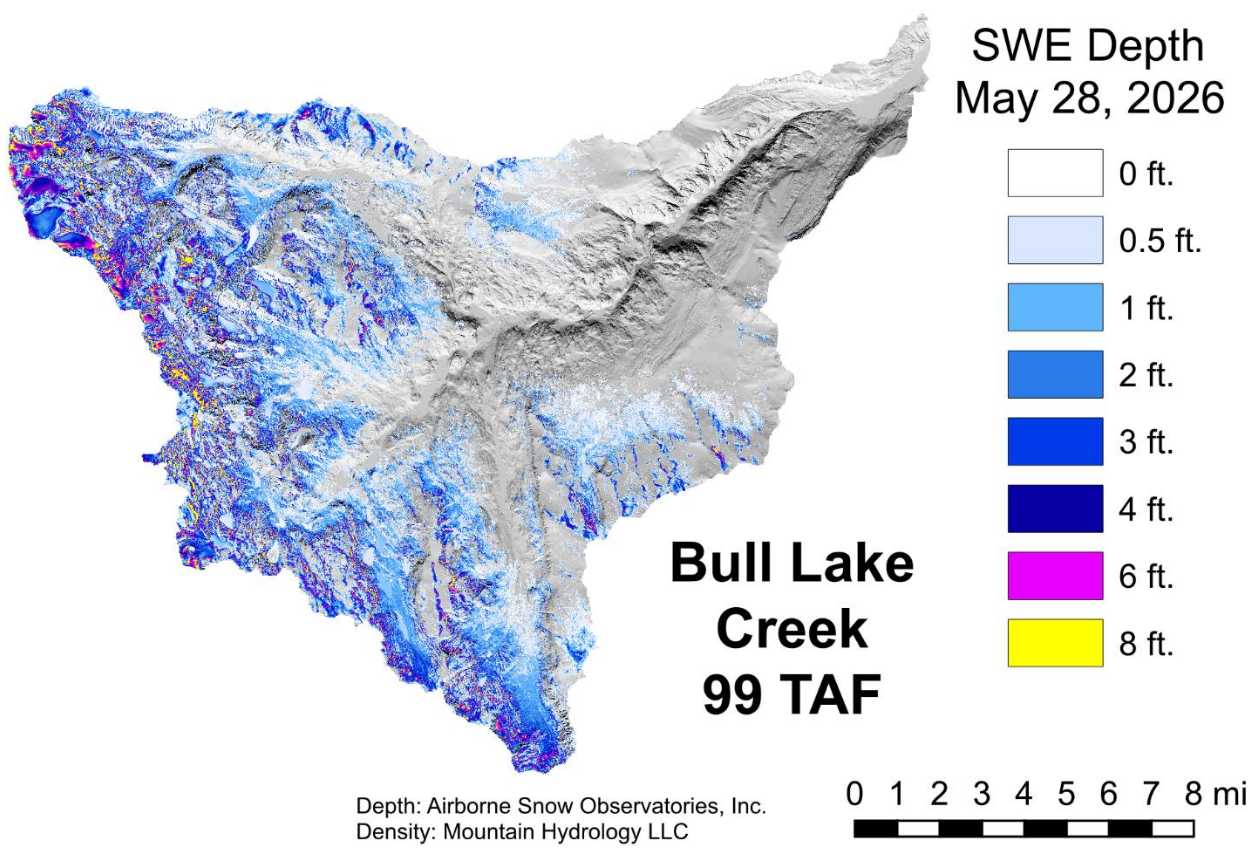
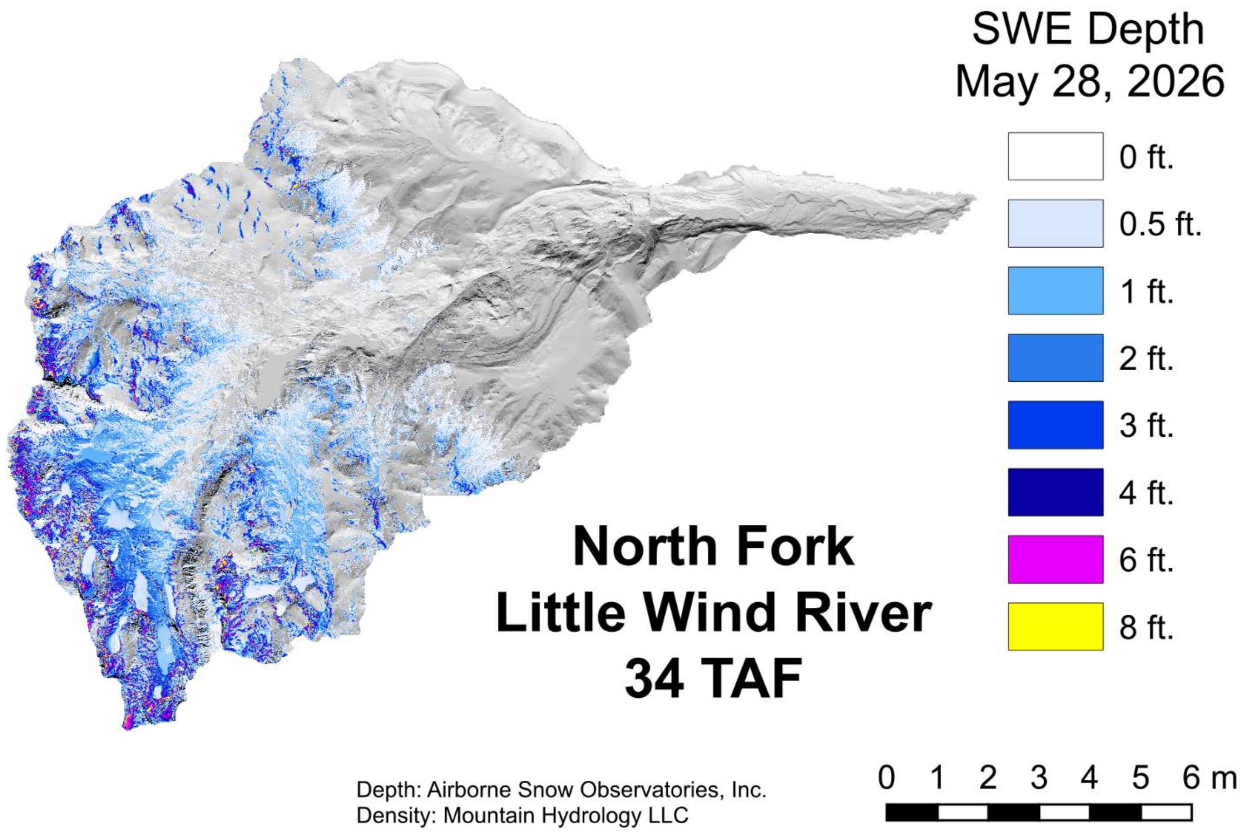
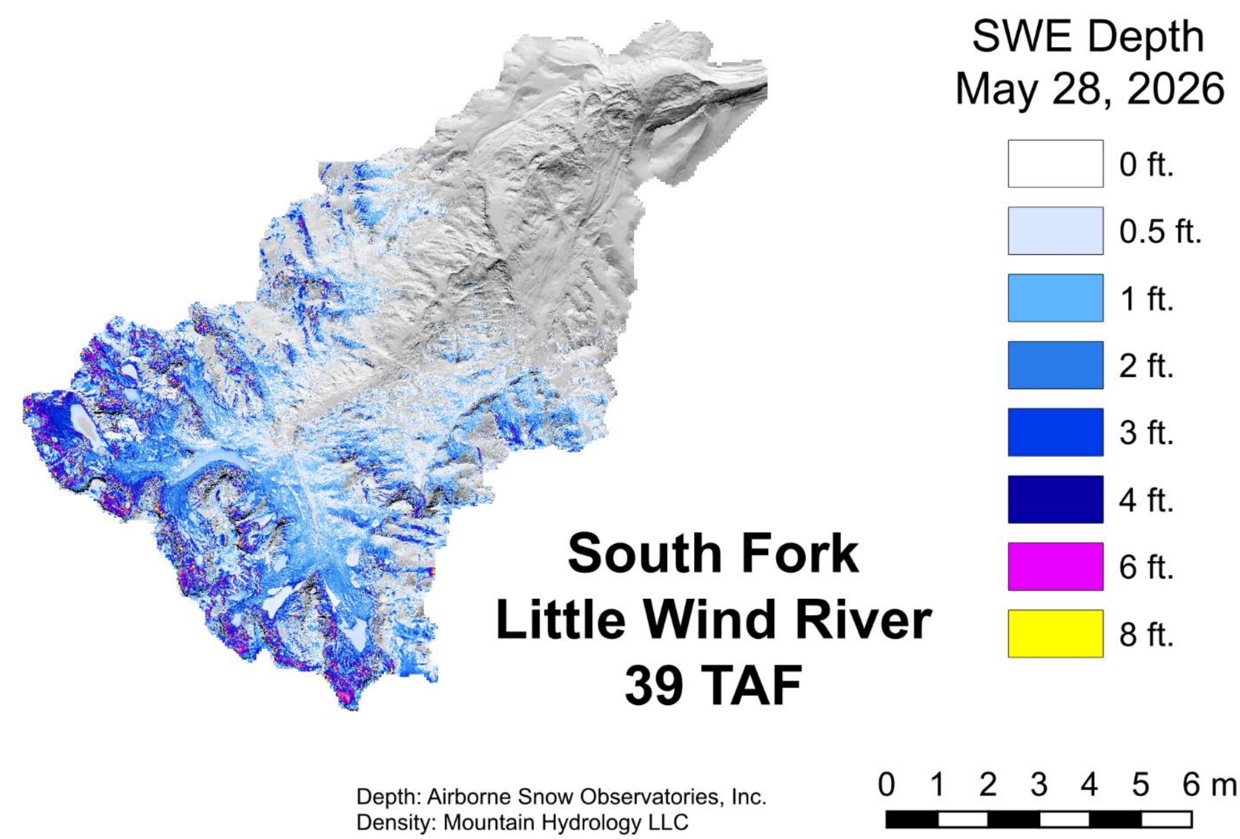





SWE Depth
May 28, 2026
0 ft.
0.5 ft.
1 ft.
2 ft.
3 ft.
4 ft.
6 ft.
8 ft.
Willow Creek
4 TAF
Depth: Airborne Snow Observatories, Inc.
Density: Mountain Hydrology LLC
0 1 2 3 4 5 mi


SWE Depth
May 28, 2026
0 ft.
0.5 ft.
1 ft.
2 ft.
3 ft.
4 ft.
6 ft.
8 ft.
Bull Lake
Creek
99 TAF
Depth: Airborne Snow Observatories, Inc.
Density: Mountain Hydrology LLC
0 1 2 3 4 5 6 7 8 mi


SWE Depth
May 28, 2026
0 ft.
0.5 ft.
1 ft.
2 ft.
3 ft.
4 ft.
6 ft.
8 ft.
North Fork
Little Wind River
34 TAF
Depth: Airborne Snow Observatories, Inc.
Density: Mountain Hydrology LLC
0 1 2 3 4 5 6 mi


SWE Depth
May 28, 2026
0 ft.
0.5 ft.
1 ft.
2 ft.
3 ft.
4 ft.
6 ft.
8 ft.
South Fork
Little Wind River
39 TAF
Depth: Airborne Snow Observatories, Inc.
Density: Mountain Hydrology LLC
0 1 2 3 4 5 6 mi

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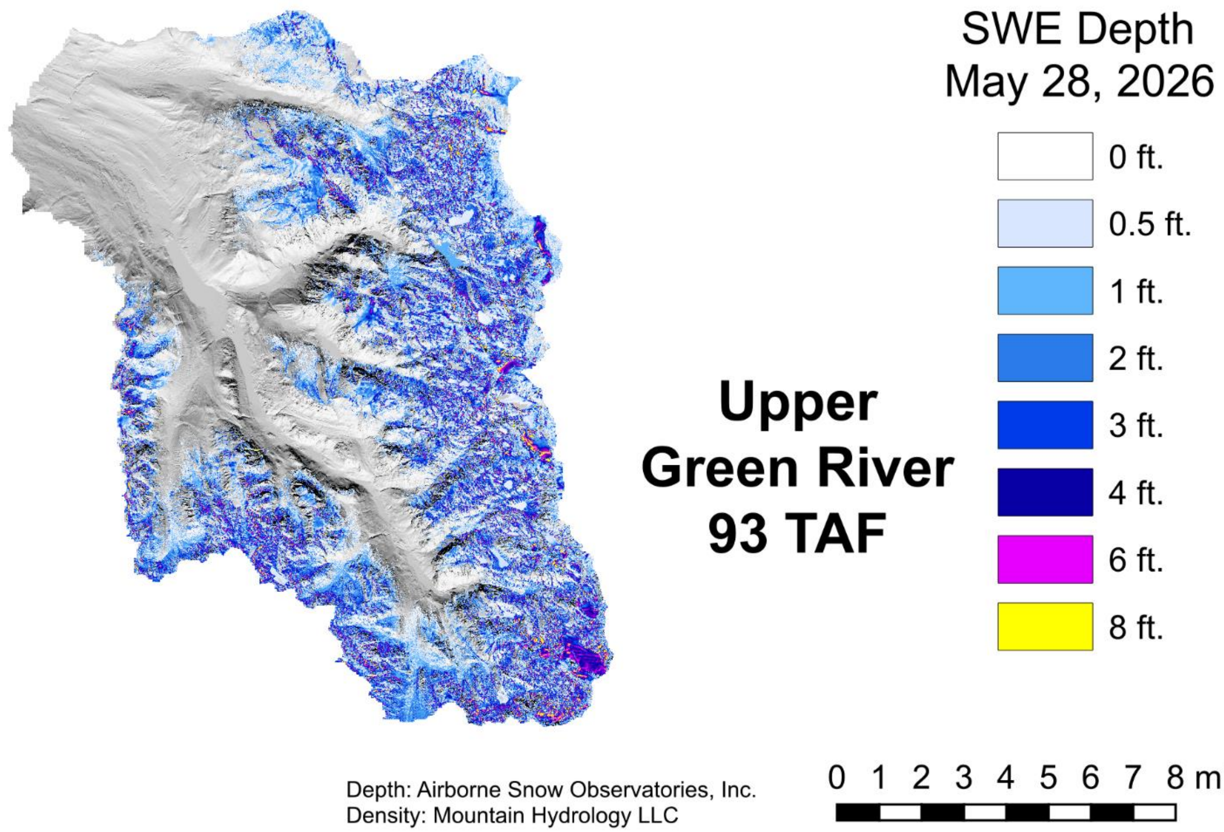
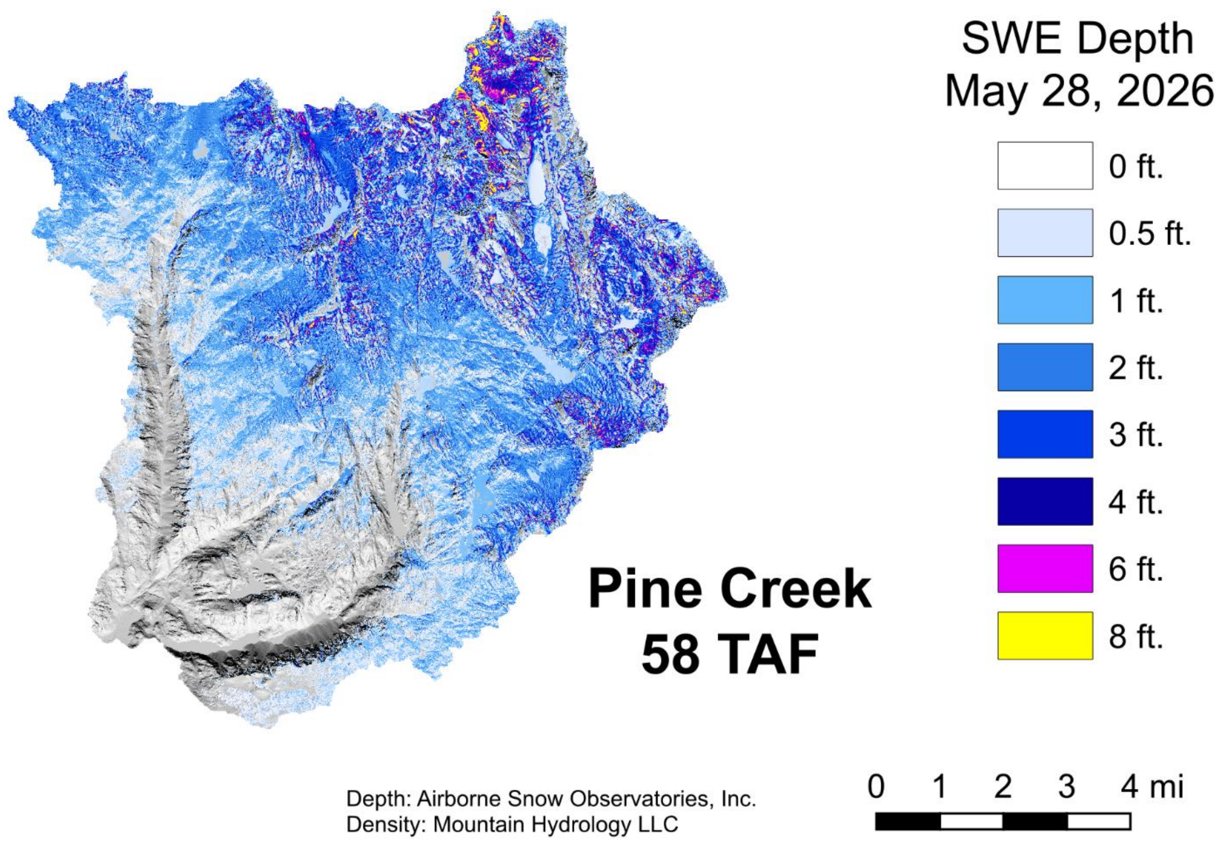




DHSVM-WSF Forecast Summary

The 3 meter SWE map captures the snowpack water storage and distribution on a particular date, but additional variables like rain, evapotranspiration, and groundwater are also important for predicting runoff. The SWE data are aggregated to 90 m resolution and assimilated into the DHSVM-WSF hydrological model using a patented process-based assimilation method (cf. Western Snow Conference proceedings, 2024). Water supply forecasts are generated using a Bayesian ensemble of multiple models with 30-day subseasonal weather forecasts and 40 years of historical climatology (refer to DHSVM-WSF white paper for details: https://mountainhydrology.com/mountainhydrology_wp2_dhsvm-wsf/.

All forecasts listed below are for the June-September forecast period (inclusive), with issue date June 1st, 2026.

Watershed	Forecast Point	Airborne Snow Survey Date	Snowpack Water Storage	Runoff: 90% Exceedance	Runoff: 50% Exceedance	Runoff: 10% Exceedance
Torrey Creek	Gage (Private)	May 28, 2026	23 TAF	20 TAF	26 TAF	33 TAF
Dinwoody Creek	Gage USGS 06221400	May 28, 2026	50 TAF	50 TAF	61 TAF	74 TAF
Dry Creek	Canal USGS 06222500	May 28, 2026	16 TAF	19 TAF	23 TAF	27 TAF
Meadow Creek	Canal USGS 06223000	May 28, 2026	4 TAF	4 TAF	5 TAF	6 TAF
Willow Creek	Canal USGS 06223500	May 28, 2026	4 TAF	6 TAF	7 TAF	8 TAF
Bull Lake Creek	Reservoir USGS 06224000	May 28, 2026	99 TAF	94 TAF	112 TAF	131 TAF
N.F. Little Wind R.	Gage USGS 06228800	May 28, 2026	34 TAF	26 TAF	36 TAF	47 TAF
S.F. Little Wind R.	Reservoir USGS 06228350	May 28, 2026	39 TAF	34 TAF	44 TAF	55 TAF
Upper Green River	Gage USGS 09188500	May 28, 2026	93 TAF (At Roaring Fork confluence)	122 TAF (At Gage)	142 TAF (At Gage)	163 TAF (At Gage)
Pine Creek	Gage USGS 09196500	May 28, 2026	58 TAF	54 TAF	63 TAF	72 TAF

An exceedance probability of X% indicates that on average over many years, there is roughly an X% chance that the actual volumetric water supply in any particular year will be larger than the forecast exceedance value.

DHSVM-WSF Forecasts: Historical Comparison

For contextual interpretation, current forecasts for several key watersheds are shown here in a relative ranking with the most recent decade of observed runoff volumes:

Dinwoody Creek		
Water Year	**Water Yield (June – September)**	**Value Type**
2026	50 TAF	Forecast – 90% Exceedance
2025	61 TAF	Historical
2026	61 TAF	Forecast – 50% Exceedance
2024	70 TAF	Historical
2021	72 TAF	Historical
2016	73 TAF	Historical
2026	74 TAF	Forecast – 10% Exceedance
2022	81 TAF	Historical
2018	84 TAF	Historical
2020	87 TAF	Historical
2019	90 TAF	Historical
2023	93 TAF	Historical
2017	126 TAF	Historical

Bull Lake Creek		
Water Year	**Water Yield (June – September)**	**Value Type**
2026	94 TAF	Forecast – 90% Exceedance
2025	101 TAF	Historical
2026	112 TAF	Forecast – 50% Exceedance
2021	120 TAF	Historical
2020	125 TAF	Historical
2016	127 TAF	Historical
2024	130 TAF	Historical
2026	131 TAF	Forecast – 10% Exceedance
2022	146 TAF	Historical
2018	157 TAF	Historical
2019	172 TAF	Historical
2023	182 TAF	Historical
2017	285 TAF	Historical

DHSVM-WSF Forecasts: Historical Comparison

South Fork Little Wind River		
Water Year	**Water Yield (June – September)**	**Value Type**
2026	34	Forecast – 90% Exceedance
2025	38	Historical
2020	39	Historical
2021	44	Historical
2026	44	Forecast – 50% Exceedance
2026	55	Forecast – 10% Exceedance
2024	57	Historical
2018	58	Historical
2022	59	Historical
2016	65	Historical
2023	78	Historical
2019	79	Historical
2017	129	Historical

Upper Green River		
Water Year	**Water Yield (June – September)**	**Value Type**
2026	122 TAF	Forecast – 90% Exceedance
2025	135 TAF	Historical
2026	142 TAF	Forecast – 50% Exceedance
2021	146 TAF	Historical
2016	155 TAF	Historical
2026	163 TAF	Forecast – 10% Exceedance
2024	170 TAF	Historical
2022	185 TAF	Historical
2020	208 TAF	Historical
2023	218 TAF	Historical
2019	224 TAF	Historical
2018	248 TAF	Historical
2017	414 TAF	Historical

DHSVM-WSF Forecasts: Monthly

Runoff timing is more uncertain than total runoff volume, but monthly values are given here for key watersheds:

Watershed	Month	Runoff: 90% Exceedance	Runoff: 50% Exceedance	Runoff: 10% Exceedance
Dinwoody Creek	June	22 TAF	27 TAF	32 TAF
Dinwoody Creek	July	11 TAF	14 TAF	18 TAF
Dinwoody Creek	August	9 TAF	12 TAF	17 TAF
Dinwoody Creek	September	5 TAF	8 TAF	11 TAF

Watershed	Month	Runoff: 90% Exceedance	Runoff: 50% Exceedance	Runoff: 10% Exceedance
Bull Lake Creek	June	58 TAF	69 TAF	79 TAF
Bull Lake Creek	July	15 TAF	19 TAF	24 TAF
Bull Lake Creek	August	9 TAF	13 TAF	19 TAF
Bull Lake Creek	September	6 TAF	10 TAF	15 TAF

Watershed	Month	Runoff: 90% Exceedance	Runoff: 50% Exceedance	Runoff: 10% Exceedance
South Fork Little Wind River	June	24 TAF	31 TAF	38 TAF
South Fork Little Wind River	July	6 TAF	8 TAF	10 TAF
South Fork Little Wind River	August	2 TAF	3 TAF	5 TAF
South Fork Little Wind River	September	1 TAF	2 TAF	4 TAF

Watershed	Month	Runoff: 90% Exceedance	Runoff: 50% Exceedance	Runoff: 10% Exceedance
Upper Green River	June	72 TAF	81 TAF	90 TAF
Upper Green River	July	24 TAF	29 TAF	37 TAF
Upper Green River	August	12 TAF	16 TAF	25 TAF
Upper Green River	September	9 TAF	14 TAF	18 TAF

Snowpack Analysis

Overall, there is slightly more snow storage in the Wind River Range compared to the same time last year. Compared to the June 1-2, 2025, survey, the May 28, 2026 survey has:

- 29% MORE snow storage in the Bull Lake Creek watershed
- 24% MORE snow storage in the Little Wind River watersheds
- 11% MORE snow storage in the Green River headwaters

For reference, last year's report can be downloaded here:
https://mountainhydrology.com/snowwatersupplyforecastreport_windriverrange_2025-june/

Summer (June-September) precipitation can vary from approximately 5-20 cm (2-8 inches) of rain across the mountains, which is the same order of magnitude as the area-average snow storage at the start of June this year (24 cm / 9 inches). Thus, uncertainty in the summer precipitation contributes to substantial fractional uncertainty in the total runoff, since future precipitation could be anywhere from 17% to 45% of the total water balance input.

What to watch: summer precipitation trends and subseasonal weather forecasts should help reduce the impact of future precipitation on runoff volume uncertainty over the next 1-2 months. Summer precipitation will have outsized importance for determining total runoff, since this year's snowpack arguably qualifies as a "snow drought."

Forecast Comparison

Operational statistical forecasts are issued by the Natural Resources Conservation Service (NRCS), which are useful for comparison with the physically based DHSVM-WSF forecasts with snow data assimilation provided in this report.

Considering only the May-July forecast period, the NRCS June 1 issue date forecasts indicate the following volumes at standard 90 / 50 / 10% exceedance probability levels:

- 48 / 58 / 70 for Dinwoody Creek, compared to 49 / 60 / 70 TAF from DHSVM-WSF (this report)
- 78 / 100 / 122 for Bull Lake Creek, compared to 104 / 122 / 140 TAF from DHSVM-WSF (this report)
- 95 / 120 / 156 for the Upper Green River, compared to 142 / 158 / 176 TAF from DHSVM-WSF (this report)
- 52 / 66 / 80 TAF for Pine Creek, compared to 74 / 85 / 97 TAF from DHSVM-WSF (this report)

(The same May-July time period is used for the DHSVM-WSF comparisons above to ensure consistency with the NRCS, but the nominal DHSVM-WSF forecast period is June-September elsewhere in this report.)

Overall, the NRCS forecasts indicate considerably less runoff than predicted by DHSVM-WSF with snow data assimilation. In particular, the NRCS forecast is much lower (-29% to -32%) in the Green River tributaries (Upper Green River and Pine Creek). This could be a result of high-elevation snowpack persisting later into the spring, which is not adequately reflected in low-elevation monitoring station data used by the NRCS forecasts. As such, the physically based snow data assimilation forecast system deployed here indicates a potential underestimation of Green River water supply by the NRCS forecasts.

DHSVM-WSF Comparison to Empirical Estimates

Finally, a back-of-the-envelope empirical forecast can be derived by calculating a linear relationship between 2024 and 2025 SWE vs. runoff, and extrapolating these relationships (from the last two year) to the current year.

The table below compares different back-of-the-envelope scenarios for the relationship between snow water equivalent (SWE) and cumulative runoff (Q) for the June-September period.

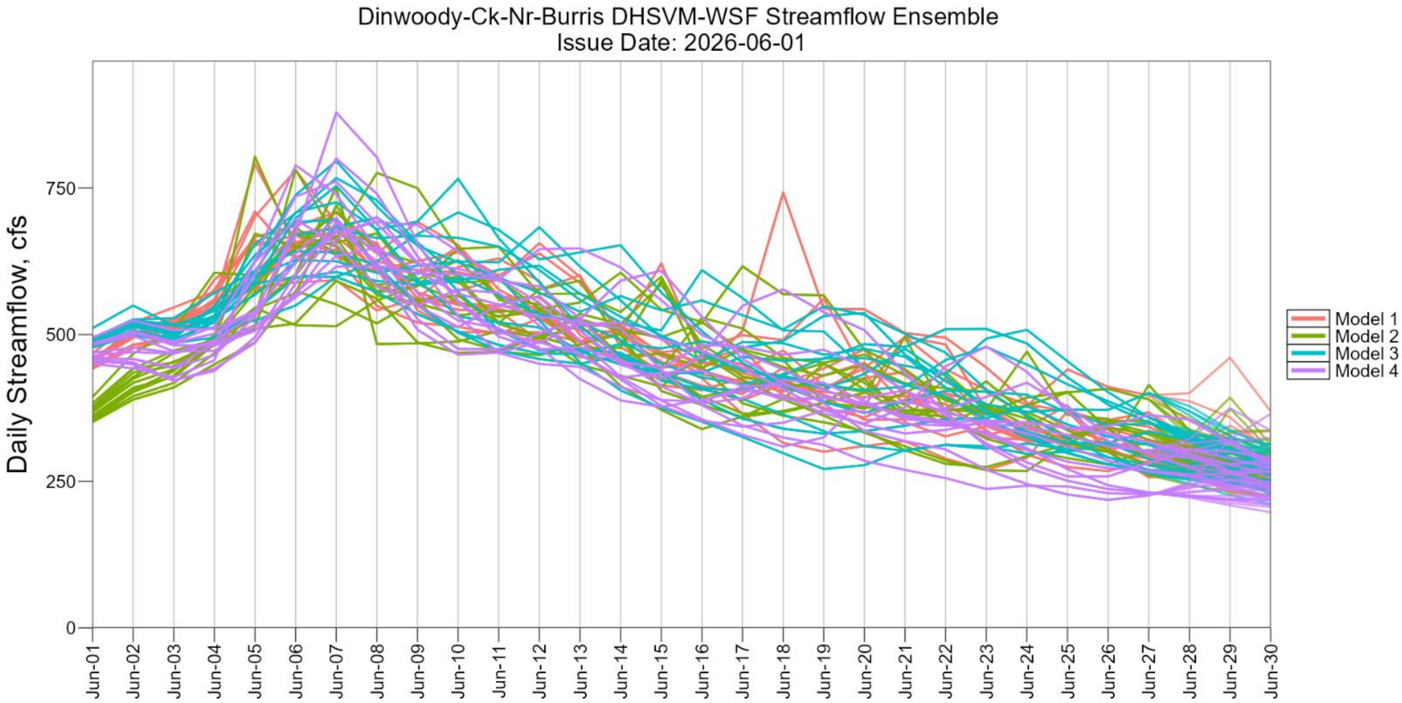
Important: these back-of-the-envelope metrics do not account for variable weather! Thus, the DHSVM-WSF forecast medians are expected to be more reliable than the simple Q vs. SWE relationships, because historical climatology shows that summer precipitation is likely to contribute a substantial fraction of the total runoff.

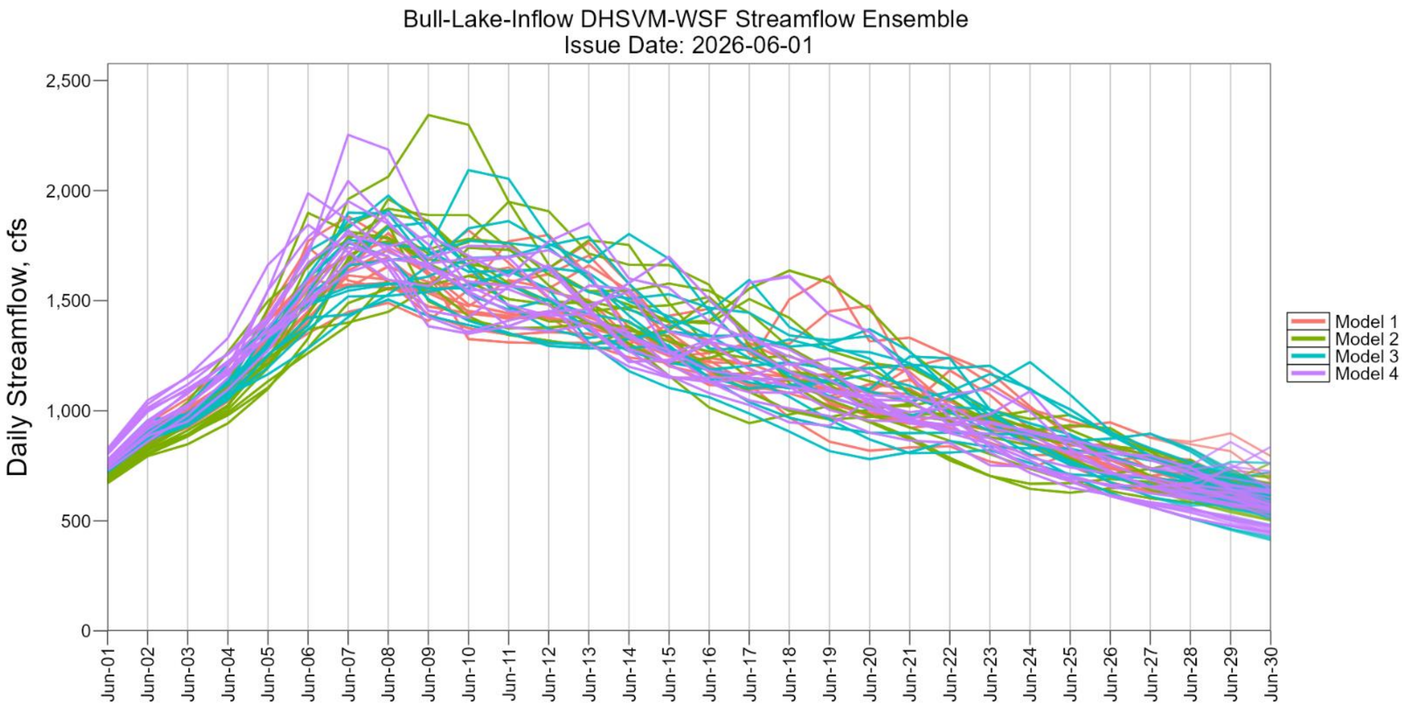
Note: these empirical estimates are only shown for a selection of example watersheds for illustrative purposes, as the DHSVM-WSF estimates are the primary forecast results.

Watershed	SWE Volume: May 31, 2024	SWE Volume: June 2, 2025	SWE Volume: May 28, 2026	Linear Relationship (2024 & 2025)	Linear Relationship Q pred. 2026	DHSVM-WSF Median Q pred. 2025
Dinwoody Creek	63 TAF	39 TAF	50 TAF	0.38*SWE + 46	65 TAF	61 TAF
Bull Lake Creek	133 TAF	77 TAF	99 TAF	0.52*SWE + 61	112 TAF	112 TAF
S.F. Little Wind R.	65 TAF	32 TAF	39 TAF	0.58*SWE +20	42 TAF	44 TAF
Upper Green River	135 TAF (At Roaring Fork confluence)	84 TAF (At Roaring Fork confluence)	93 TAF (At Roaring Fork confluence)	0.69*SWE + 77 (At Gage)	141 TAF (At Gage)	142 TAF (At Gage)

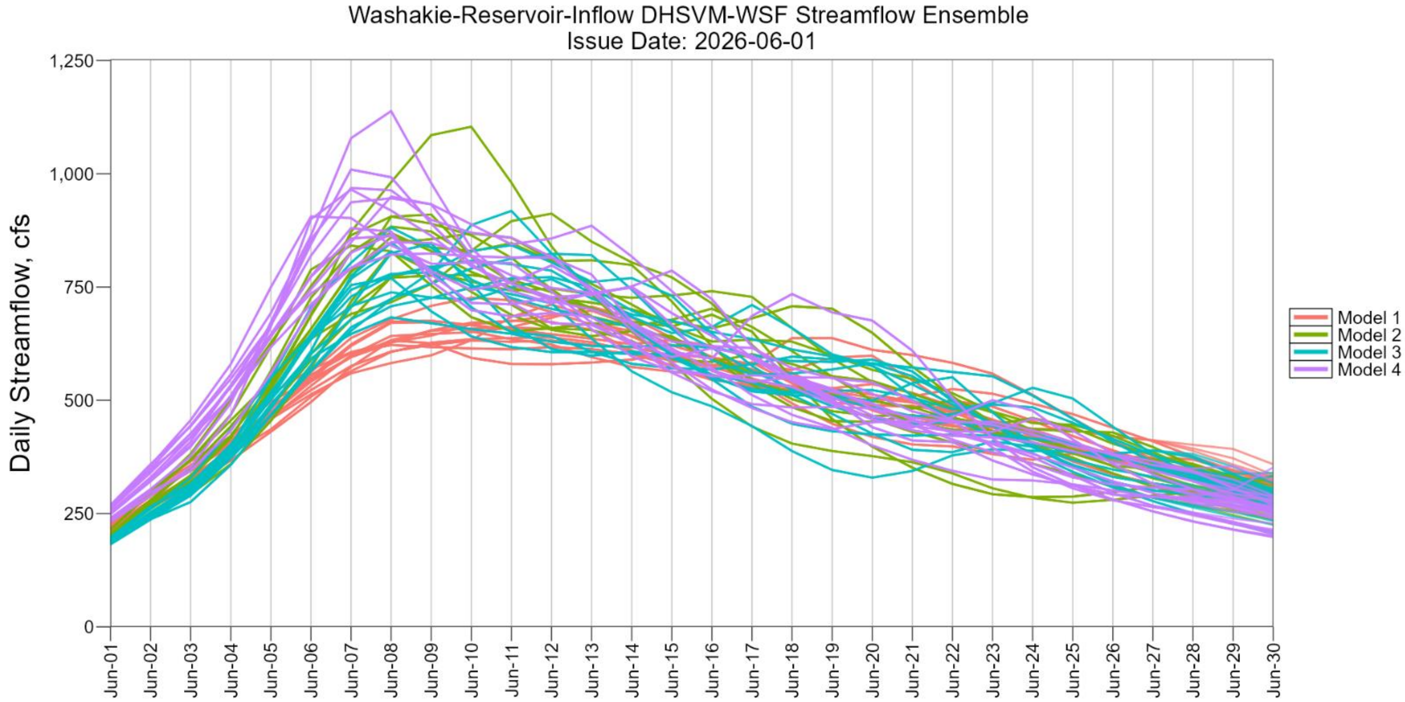
DHSVM-WSF Peak Flows

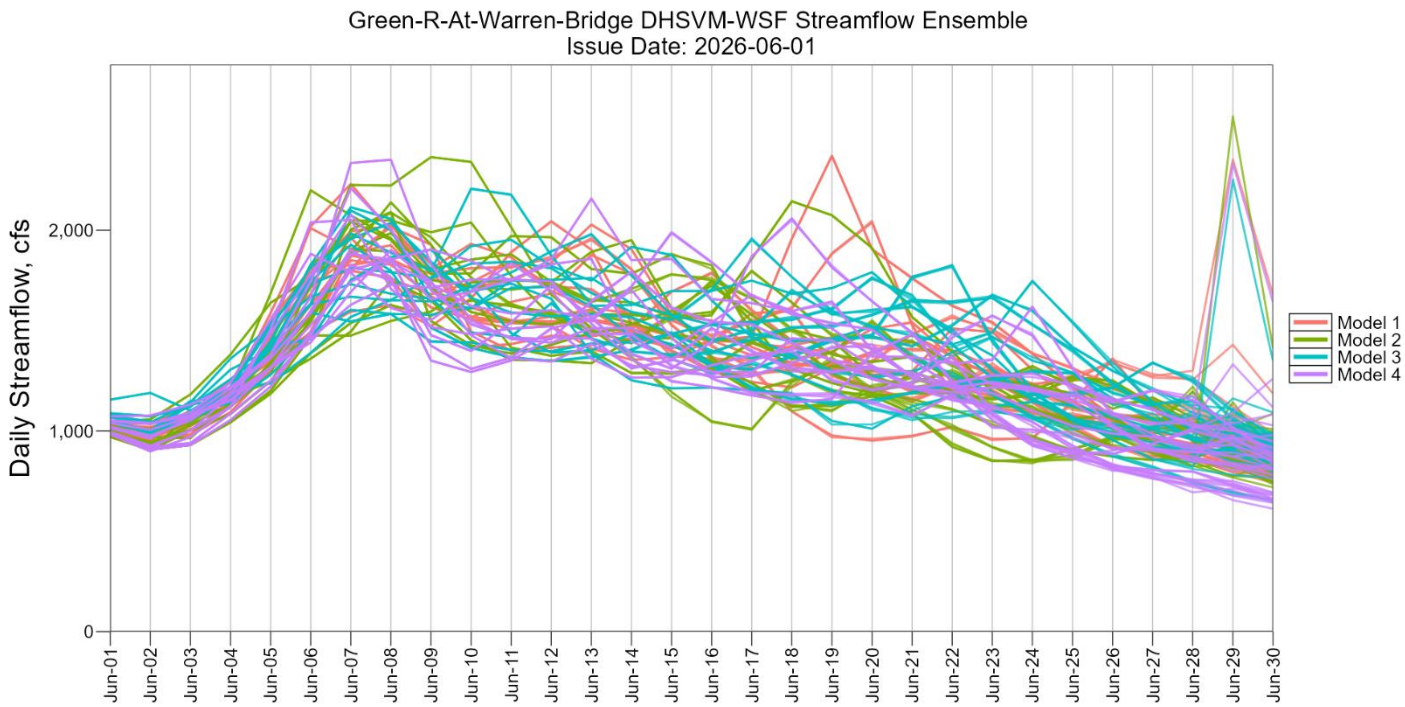
The recent warm weather and significant rainfall events in late May have already led to elevated flows. For most watersheds, the peak flow is expected in the next 1-2 weeks (around June 6-12), which is substantially earlier than normal. The following plots summarize projected daily streamflow for key sub-watersheds. Note that streamflow magnitude and timing on a daily timestep is much more uncertain than seasonal cumulative volumes, and these projections are subject to change based on updated weather forecasts.



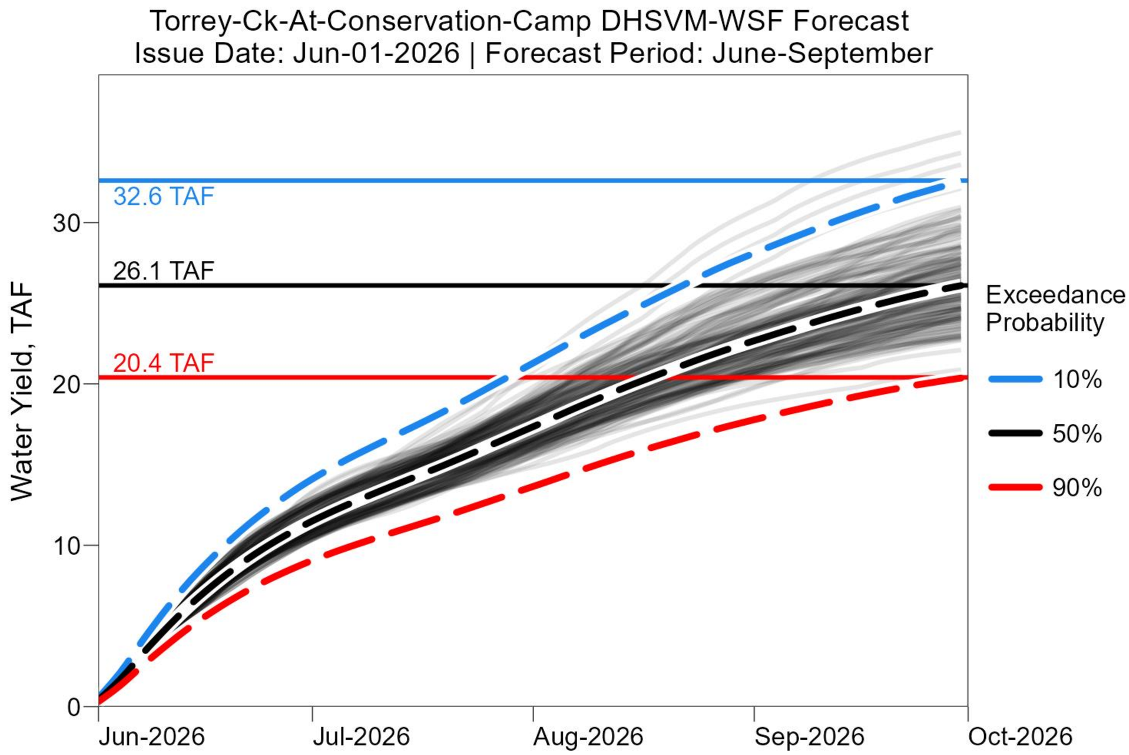


DHSVM-WSF Peak Flows

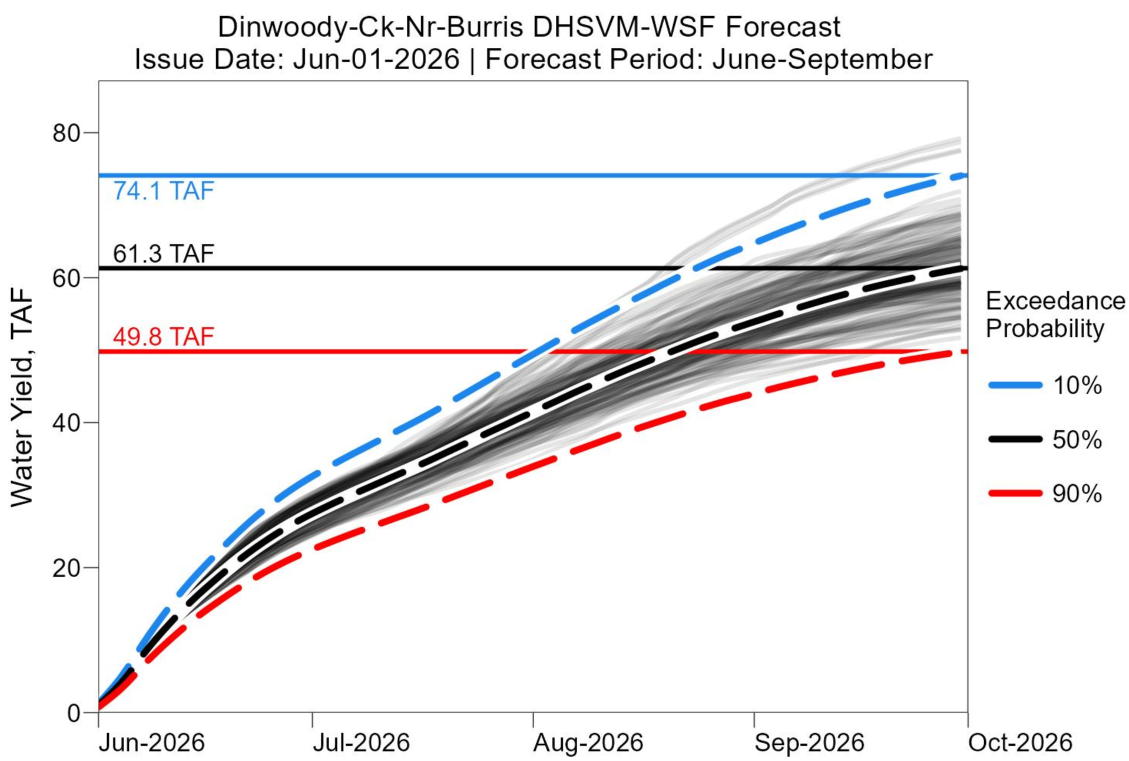




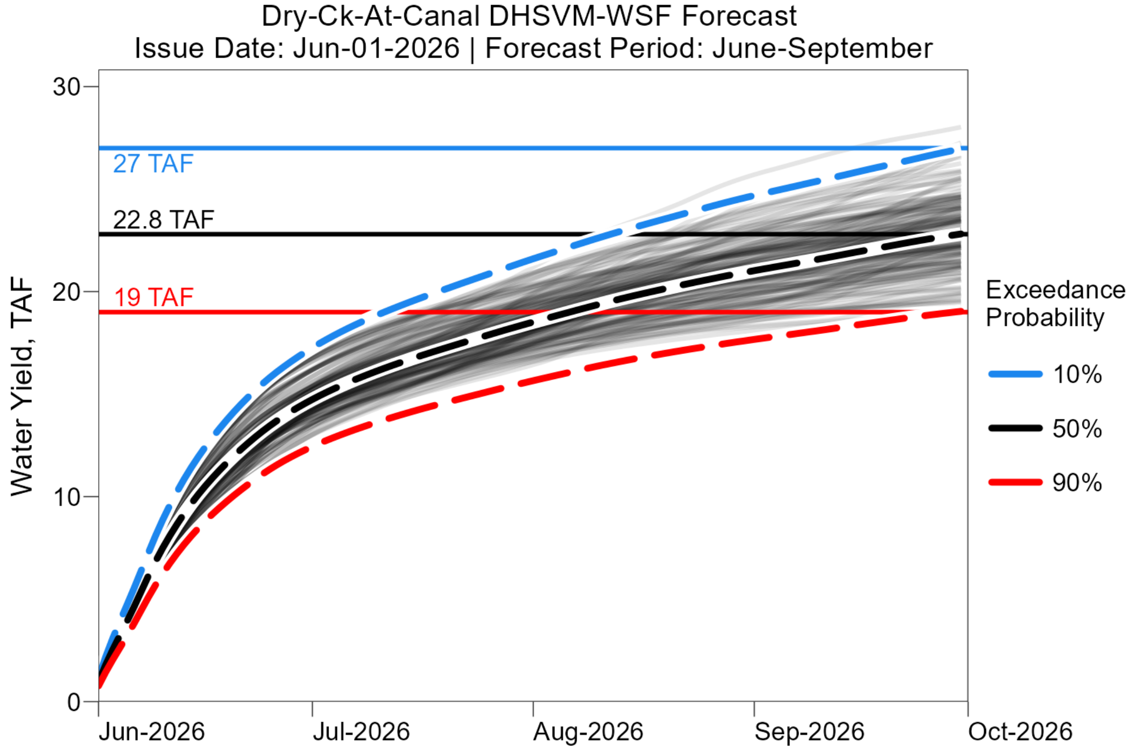
DHSVM-WSF Forecast: Torrey Creek



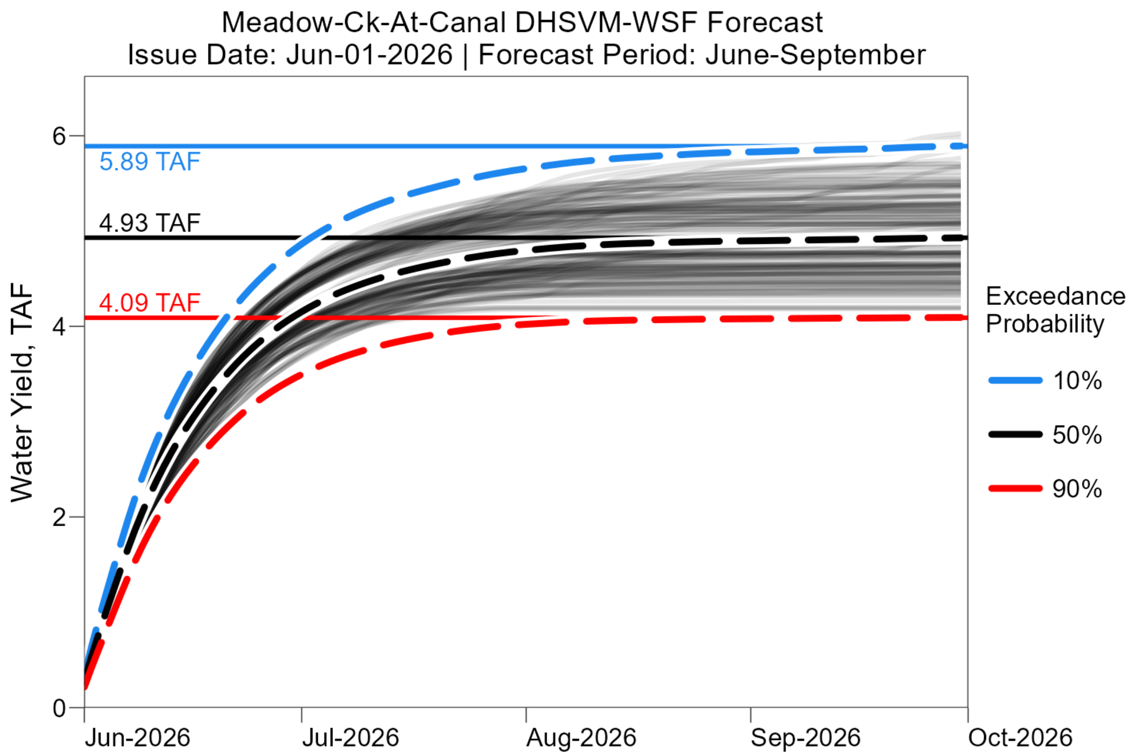
DHSVM-WSF Forecast: Dinwoody Creek



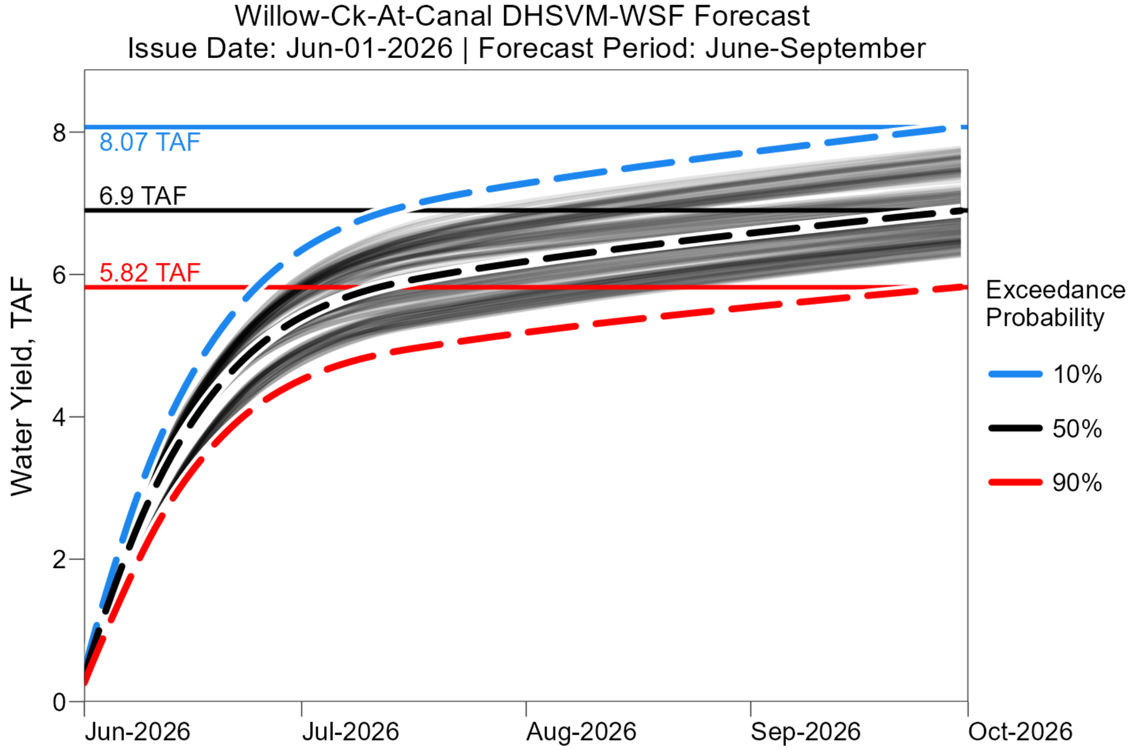
DHSVM-WSF Forecast: Dry Creek



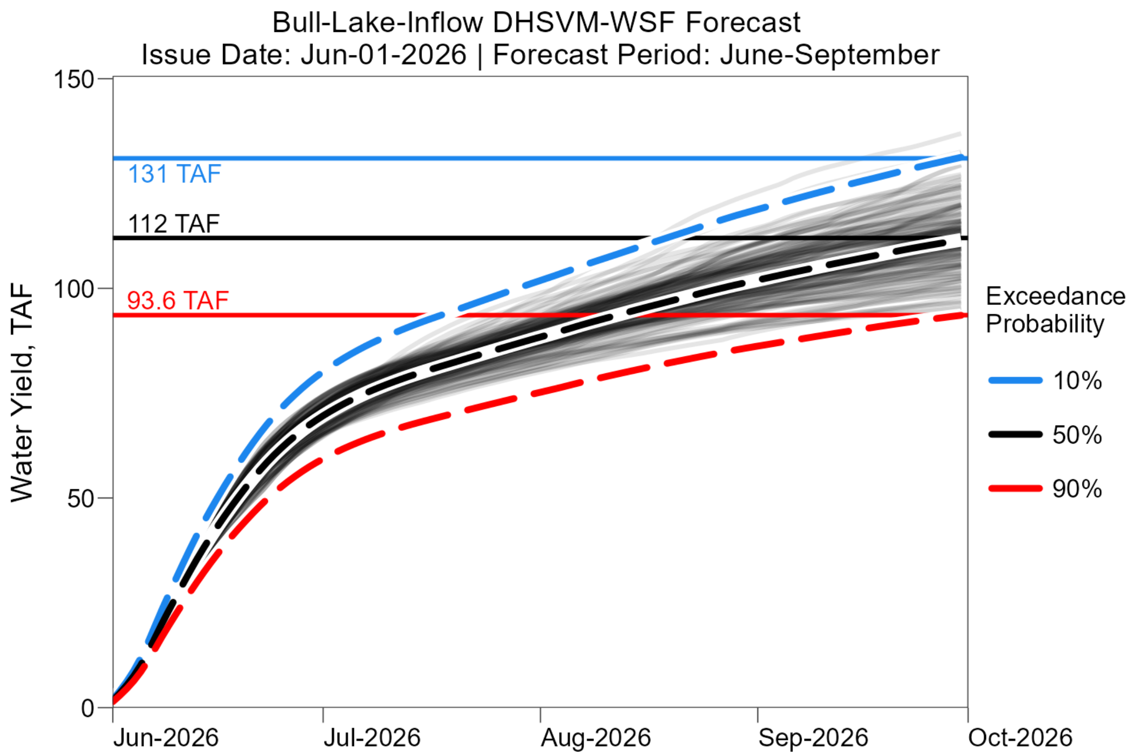
DHSVM-WSF Forecast: Meadow Creek



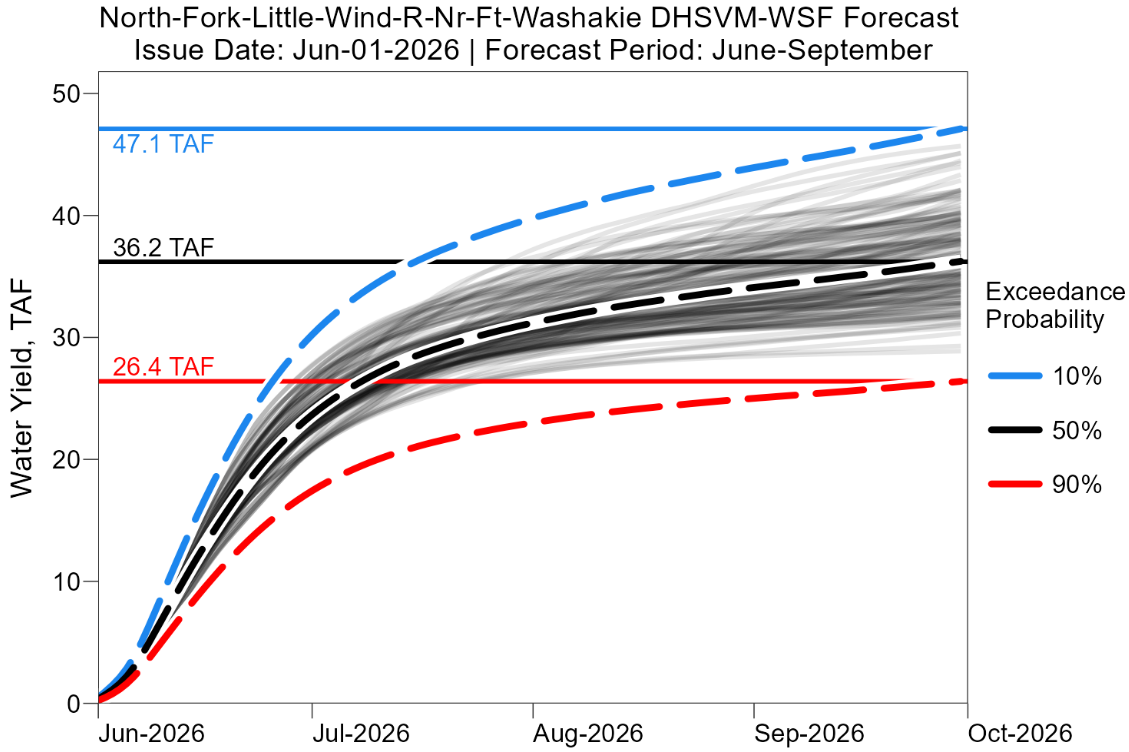
DHSVM-WSF Forecast: Willow Creek



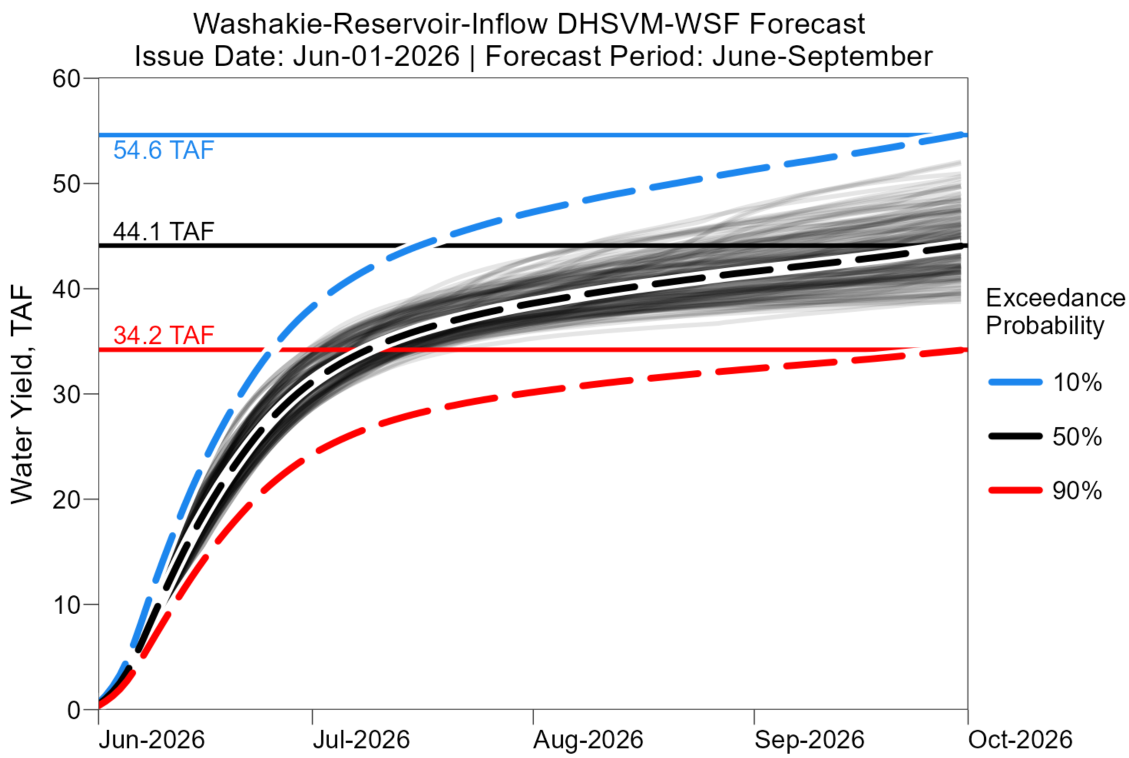
DHSVM-WSF Forecast: Bull Lake Creek



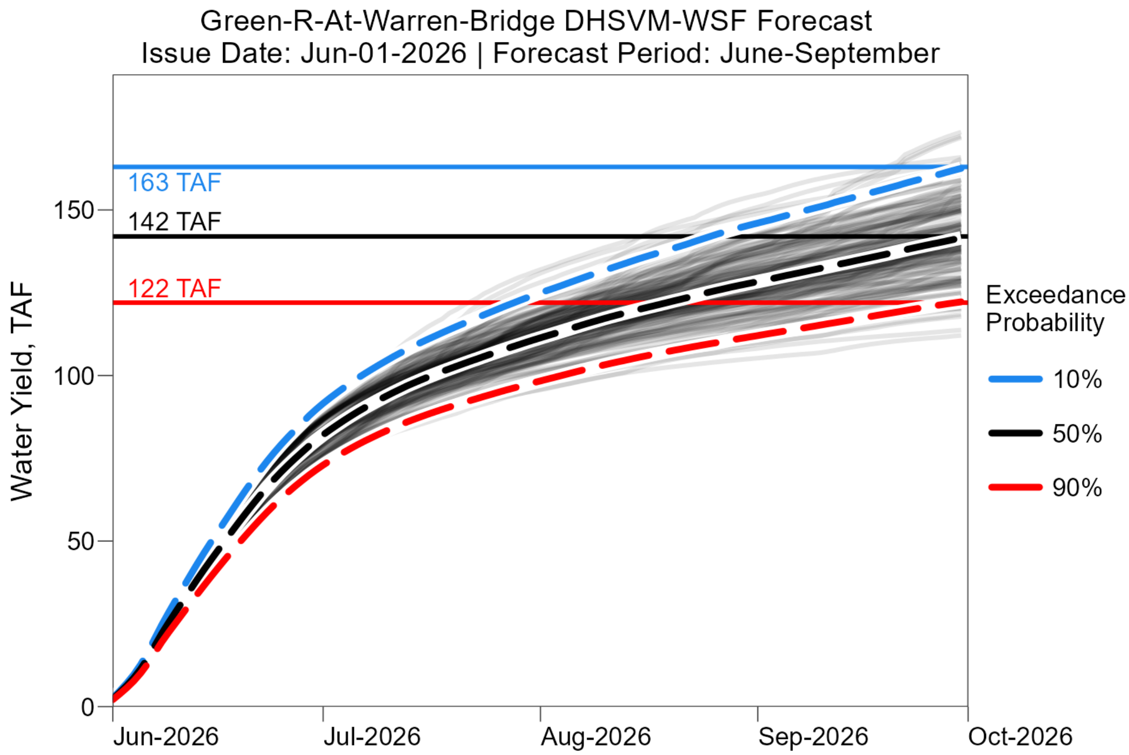
DHSVM-WSF Forecast: North Fork Little Wind River



DHSVM-WSF Forecast: South Fork Little Wind River



DHSVM-WSF Forecast: Upper Green River



DHSVM-WSF Forecast: Pine Creek