

OFFICIAL FORECAST

Last Updated: Nov-2018

North Platte River Basin Forecasts

Location	Variable	Time Period	Forecast Value	Forecast Category ⓘ
Lewellen gage (NE)	streamflow	May-July	81,900 acre-feet	Below Average
Glendo reservoir (WY)	inflow	May-July	439,200 acre-feet	High Average
Alcova reservoir (WY)	inflow	May-July	301,700 acre-feet	Low Average
Pathfinder reservoir (WY)	inflow	May-July	306,700 acre-feet	Average
Seminole Reservoir (WY)	inflow	May-July	546,600 acre-feet	Average

South Platte River Basin Forecasts

Location	Variable	Time Period	Forecast Value	Forecast Category ⓘ
Julesburg gage (CO)	streamflow	May-July	69,500 acre-feet	Average
Kersey gage (CO)	streamflow	May-July	185,800 acre-feet	Average
South Platte higher elevations	max snow water equivalent	N/A	Available Jan-2019	
South Platte lower elevations	precipitation	April-June	Probability >50%: 64% Probability <33%: 6%	N/A

Note: the 5-tier category system used here is Below Average, Low Average, Average, High Average and Above Average.

Discussion

The most notable feature of global seasonal forecasts during the 2018-2019 winter continues to be the expected moderate-strength El Niño event in the tropical Pacific Ocean. However, as noted in previous research funded by PRRIP, this has little to no bearing on the North Platte basin. There is a relatively weak impact on the South Platte basin, favoring wetter springtime, which is being reflected by a 64% chance of above normal precipitation in the South Platte lower elevations. However, the impact on streamflow appears negligible at this time.

The main driver of the November 2018 forecast is the PDSI conditions across the western United States. A sharp gradient of PDSI values is noted across both the North Platte and South Platte basins with higher elevations generally having drier (i.e. negative PDSI) conditions, while lower elevations are average to wetter than average. However, overall, the basin-wide PDSI is near zero (i.e. average) and this is translating to average flow forecasts for most sites. Note that the Glendo and Alcova forecast values are both just outside of the Average category by about 10-20K acre-feet. Lewellen is currently forecasted to be Below Average (although the value of 82K acre-feet is on the very high end of the “Below Average” category), because one of the strongest predictors at Lewellen is the far upstream North Platte PDSI. This region is currently moderately drier than normal. However, it appears that the Lewellen forecast may be too low based on a lack of corroboration with other sites and very recent precipitation patterns. We expect a higher value during the December update.

PROBABILITY OF LOW FLOW

During 2018, additional forecasts were developed to inform the probability of “Low Flow” for (i) Guernsey April-September outflow and (ii) Lewellen May-July streamflow. These forecasts are being used operationally for the first time. Note that Low Flow was defined as flow below the 25th percentile at each site. This translates to 2,931 c.f.s. for Guernsey outflow and 621 c.f.s. for Lewellen.

Table 1 shows the probability of Low Flow is much higher at Lewellen than Guernsey. The main reason for the difference is due to relatively high reservoir storage (see “Reservoir Storage” below), which factors into the Guernsey prediction but does not at Lewellen. However, even the Lewellen Low Flow forecast does not exceed 50%. Furthermore, as mentioned previously, based on very recent conditions that were not factored into the forecast, we expect the Low Flow probability to drop at Lewellen during the December update.

Table 1: Probability of low flow at Lewellen and Guernsey Reservoir.

Forecast Location	Time Period	Probability of flow <25%
Guernsey reservoir outflow	Apr - Sep	17%
Lewellen streamflow	May - Jul	44%

RESERVOIR STORAGE

As of November 1, 2018, the total reservoir storage at the five main reservoirs upstream of Lake McConaughy (Seminoe, Pathfinder, Alcova, Glendo and Guernsey) was 1,637,763 acre-feet. Using data from 1959-present, this value is in the 55th percentile for November 1. Although total storage has decrease significantly over the past 2 years, it likely remains high enough to buffer against any significant precipitation deficits for at least one more runoff season during winter/spring 2019.

COMPARISON TO OTHER FORECASTS

Forecasts developed herein are compared to similar forecasts from the US Bureau of Reclamation (USBR), the Natural Resources Conservation Service (NRCS) and the Climate Prediction Center (CPC).

USBR

Forecasts for WY2019 are not available until January.

NRCS

Forecasts for WY2019 are not available until January.

CPC

The graphic below shows the March-May 2019 precipitation forecast from the CPC. Precipitation is expected to be around average for both the North Platte and South Platte basin, though slightly above normal precipitation is expected across southeastern Colorado. Thus, the current CPC forecast is generally in line with the forecast presented herein at this time.

