Colorado Basin Water Supply Briefing

February 7 2019

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Please mute your phone until the question period
Today’s Presentation

Weather review
    Quite a different start from than last year

Current Snowpack

Soil moisture conditions

2019 Water supply forecasts
    Select forecast site review

Early season forecast error

Upcoming weather

Contacts & Questions

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A much different start compared to last year

Water Year (October – January) Precipitation

Water Year Precipitation, October 2017 - January 2018
(Averaged by Basin)

Water Year Precipitation, October 2018 - January 2019
(Averaged by Basin)
A much different start compared to last year

February 6th Snow Conditions
(CBRFC hydrologic model)
Current Snow Conditions – SNOTEL

Most areas better than last year except upper Green. Some areas have exceeded last year's peak.
2018: Strong ridge / blocking pattern
Infrequent storms – extended dry periods

2019: Progressive pattern
Warmer Pacific / stronger southern jet stream

Mean atmospheric pattern
Dec 1 – Jan 15
2018 vs 2019
Dry soils entering the winter – May act to reduce some runoff volumes
Conditions contributing to dry soil moisture conditions

Very low runoff volumes in 2018, low flows throughout the summer
Dry summer over most runoff producing areas
Little monsoonal impact last summer
Conditions contributing to dry soil moisture conditions

Very dry September (No monsoonal impact)
Some rebound in baseflow due to a wet October
Dry again most of November into December over most areas.
Upper Colorado: Green-Yampa-White-Duchesne

Forecasts as of Feb 1 2019

Volume 1000’s acre feet /% of 1981-2010 average

- **Fontenelle**: 500 / 69%
- **Yampa-Deerlodge**: 1130 / 91%
- **Flaming Gorge**: 630 / 64%
- **Duchesne-Randlett**: 335 / 87%
- **Little Snake-Lily**: 280 / 81%
- **White-Watson**: 250 / 89%
- **Elk-Milner**: 310 / 97%

**Duchesne Basin**
Increased 15-35 percent of average over forecasts issued in January

Forecast range: ~ 60% to 115% average
Upper Colorado: Colorado River Mainstem

Forecasts as of Feb 1 2019
Volume in 1000’s acre-feet / % of 1981-2010 average

- Plateau Ck - Cameo: 110/ 89%
- Colorado-Cameo: 2100/ 89%
- Roaring Fork-Glenwood: 590 / 86%
- Eagle-Gypsum: 1270/ 91%
- Ruedi Res: 120 / 86%
- Dillon Res: 155 / 95%
- Williams Fork Res: 84/ 88%

Forecast range: ~ 85% to 95% average
Forecasts as of Feb 1 2019
Volume in 1000’s acre-feet / % of 1981-2010 average

Forecast range: ~ 70% to 90% average
Forecast range: ~ 55%-to 70 % average
Increase of 5 to 10 % of average over January forecasts
Upper Colorado
April-July Streamflow
Volume Forecasts
(% of 1981-2010 average)

Forecast as of Feb 1 2019

Lake Powell:
5300 KAF / 74% average
Lower Colorado (Virgin River) April-July Streamflow Volume Forecasts

Forecasts as of Feb 1 2019

Forecast range:
~ 70% to 90% average
~115 to 140% median
Increase of 25-30 % of average of January Forecasts
Lower Colorado Feb-May forecast streamflow volumes
(1000’s acre-feet / % of 1981-2010 median)

Forecasts as of Feb 1 2019

- Verde-Horseshoe: 148 / 109%
- Tonto Ck-Roosevelt: 148 / 109%
- Chevelon Ck-Winslow: 9.0 / 65%
- Salt-Roosevelt: 260 / 91%
- San Francisco-Glenwood: 16.0 / 89%
- Little Co.-Lyman*: 4.0 / 61%
- Gila-Gila: 45 / 90%

Forecast range: ~ 50% to 110% median

* Feb-June forecast period
Click on Fontenelle Reservoir point
Forecast Evolution Plot: Fontenelle Reservoir Inflow

Water Supply Forecast

Green - Fontenelle Res, Fontenelle Nr (GBRW4)
Period: Apr-Jul, Official 50% Forecast (2019-02-01): 500 kaf (69% Average, 77% Median)
ESP is Unregulated and No Precipitation Forecast Included

50% exceedance forecast (the "official" forecast)
70% chance above the historical median

ESP – Ensemble Streamflow Prediction

www.cbrfc.noaa.gov select “Water Supply” from dropdown menu
Increase due to January storms
Forecaster accounted for upcoming storms.
Forecast Evolution Plot: Dillon Reservoir Inflow

Water Supply Forecast

Blue - Dillon Res (DIRC2)
Period: Apr-Jul, Official 50% Forecast (2019-02-01): 155 kaf (95% Average, 97% Median)
ESP is Unregulated and No Precipitation Forecast Included

Future weather
Wetter scenario
Drier scenario

2019/02/01:
Max 1984: 275.99
Min 2002: 54.07
Average: 163
Median: 159
ESP: 155
Official 10: 205
Official 30: 175
Official 50: 155
Official 70: 130
Official 90: 108
McPhee inflow was near 50 KAF in 2018

Snow conditions and model guidance have increased slightly since the Feb forecast
Snow above Navajo continues to inch higher and now is near last year’s peak. Additional February precipitation is likely.
Since early January Lake Powell inflow forecast increased 750 KAF (about a 10% of average increase)
Forecast Validation: Historical model error improves January to February

Historical Model Error
1981-2010

Generally improvement in model mean absolute forecast error between January and February

Forecasts are better than just going with average

Error tends to decrease each month into the spring

Where We Do Better:
- Headwaters
  - Primarily snow melt basins
  - Known diversions / demands

Where We Do Worse:
- Lower elevations (rain or early melt)
  - Downstream of diversions / irrigation
  - Little is known about diversions / demands
The early February precipitation was taken into account for many of the water supply forecasts.
Upcoming Weather – Quick moving system impacting northern areas Feb 10-11
Potentially more potent system impacting entire area late next week Feb 15-16
Pattern remains progressive into the 3rd week of February
Upcoming Weather – Active pattern likely through at least mid month

Weak storm system impacting the northern areas Feb 10-11
Potentially a more significant storm impacting the entire area late next week (Feb 15-16)
Models suggest active weather possibly beyond that (less confidence in the details)

An increase in snowpack over most areas between now and mid/late February stands a good chance.

Above average precipitation for the month of February appears likely.
2019 monthly water supply briefings for the Colorado Basin

Thursday March 7th @ 11 am MT
Thursday April 4th @ 11 am MT
Tuesday May 7th @ 11 am MT

Great Basin webinars are same dates at 1:30 pm MT (there is one today)

Peak flow briefing early March. Additional briefings scheduled as needed.

Date/Times are subject to change. All registration information has been posted to the CBRFC web page.
Please contact us with any questions

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