

Water Shortage Preparedness and Coordination

5/18/2021

 DENVER WATER

Denver Water Facts

- Established in 1918.
- Serving 1.5 million people (25% of state's population) using less than 2% of water used in the state.
- Water supply comes from snowmelt in the Rocky Mountains feeding the South Platte and Colorado Rivers.
- Total watershed area: 4,000 square miles.
- More than 3,000 miles of pipe.
- Approximately 1,100 employees working all over the state.
- 20 dams, 12 reservoirs, 4 treatment plants and 18 pump stations.



Denver Water Water Shortage Preparedness

Denver Water

Water Shortage Restriction History

- **Mandatory watering restrictions have been implemented 28 times in our 103-year history**

- **1920s:** Increased need for water but lack of supply.
 - Moffat Tunnel completed in 1928.
 - 1922, 1923, 1924, 1925, 1926, 1927, 1928, 1929.
- **1930s:** Dust Bowl.
 - 1930, 1931, 1932, 1933, 1934, 1935, 1936.
- **1950s:** Below-normal precipitation from 1952-1957.
 - Water shortage worse than 1930s.
 - Blue River Decree.
 - Construction of Dillon Dam and Roberts Tunnel.
 - 1954, 1955, 1956.
- **1970s:** Below-normal precipitation from 1974-1978.
 - Winter 1976 one of driest in Colorado history.
 - 1977, 1978, 1979.
- **1980s:** Below-normal precipitation 1980-1982.
 - Colorado Water Shortage Response Plan.
 - 1980, 1981, 1982.
- **2000s:** Hot and dry weather from 1999-2002.
 - Denver Metro added 500,000 people in 1990s.
 - 2002, 2003, 2004.
- **2010s:** High temperatures and low precipitation 2012-2013.
 - 2013.

Continuous Improvement

“The water shortage response plan did not anticipate a situation in which a water shortage would impact Denver Water with the suddenness and intensity that it did in the spring of 2002.”

- Denver Water staff member after 2002-2003 water shortage



Annual Summer Watering Rules

- In effect every year from May 1 until October 1
 - Water during cooler times of the day — lawn watering is not allowed between 10 a.m. and 6 p.m.
 - Water no more than three days per week.
 - Do not allow water to pool in gutters, streets and alleys.
 - Do not waste water by letting it spray on concrete and asphalt.
 - Repair leaking sprinkler systems within 10 days.
 - Do not irrigate while it is raining or during high winds.
 - Use a hose nozzle with a shut-off valve when washing your car.

2020

Water Shortage Response Implementation Plan

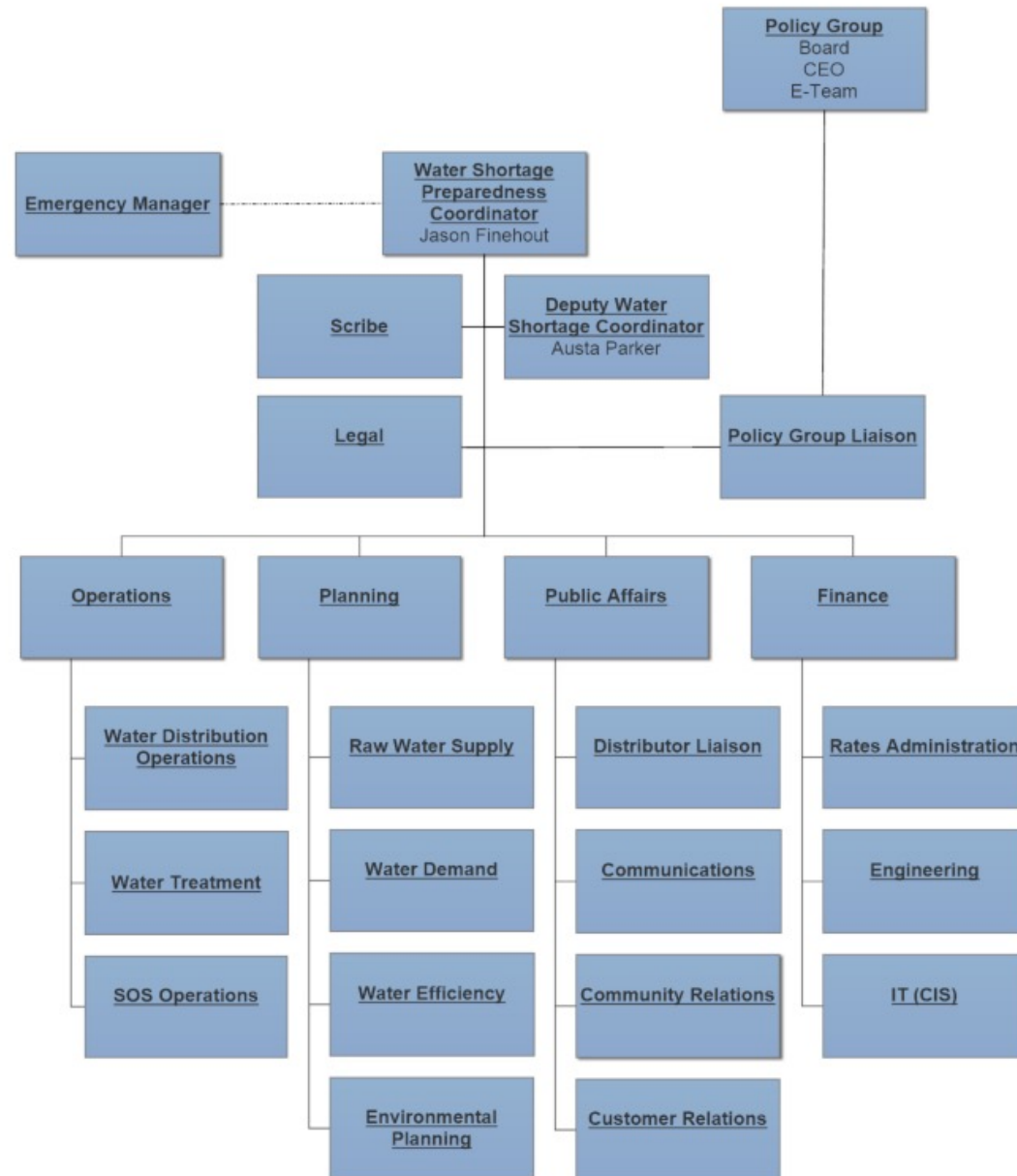


Dillon Reservoir

Communicating drought

denverwater.org/Shortage

Water Shortage Preparedness Committee Organizational Structure



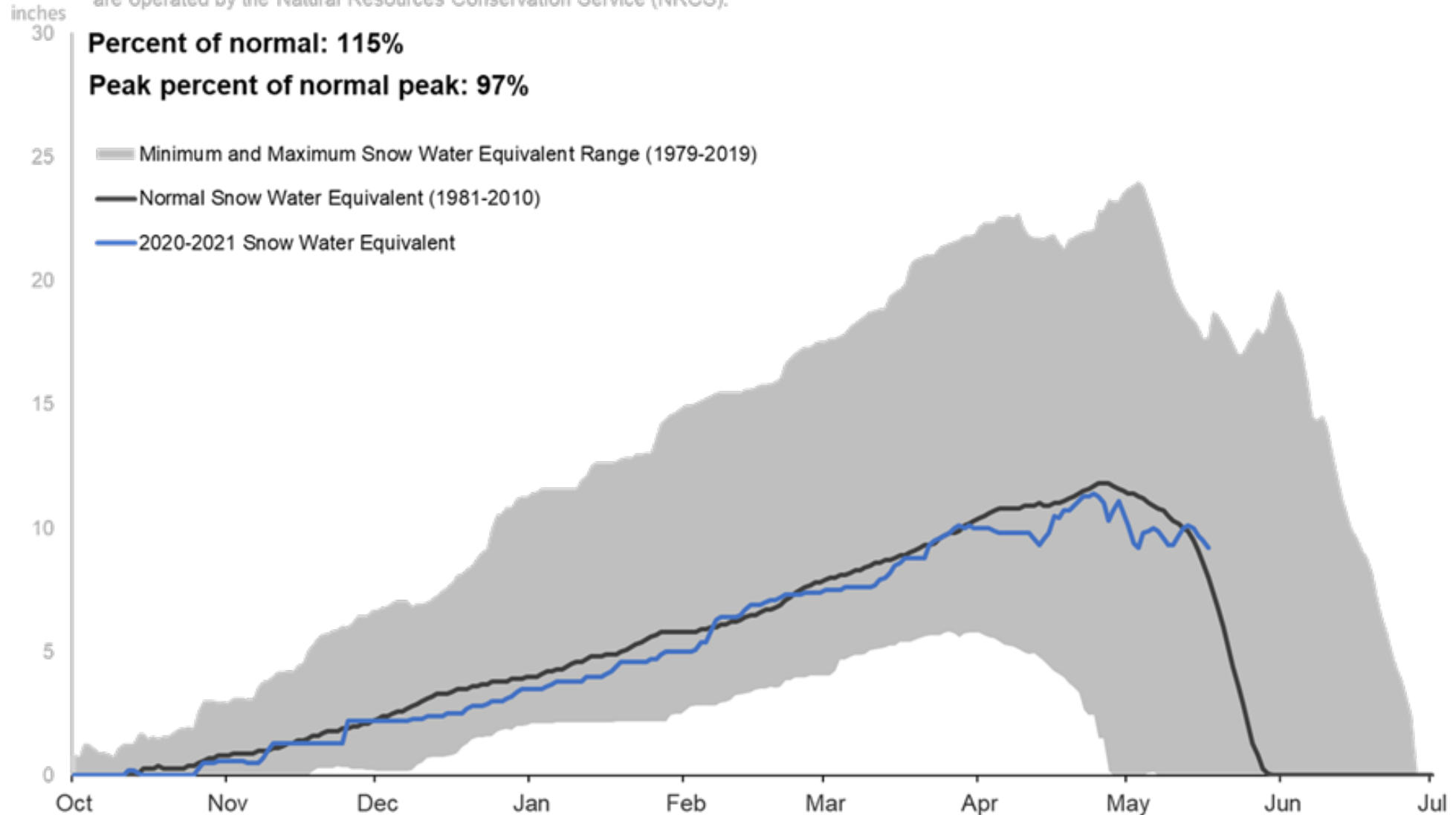
Drought Response Stages

- **Drought watch**
 - Voluntary and some mandatory restrictions for fixed amount contracts.
- **Stage 1 restrictions**
 - One or two days per week outdoor irrigation.
- **Stage 2 restrictions**
 - Ban on most outdoor irrigation.
- **Stage 3 restrictions**
 - Rationing of indoor water use.

Current Conditions

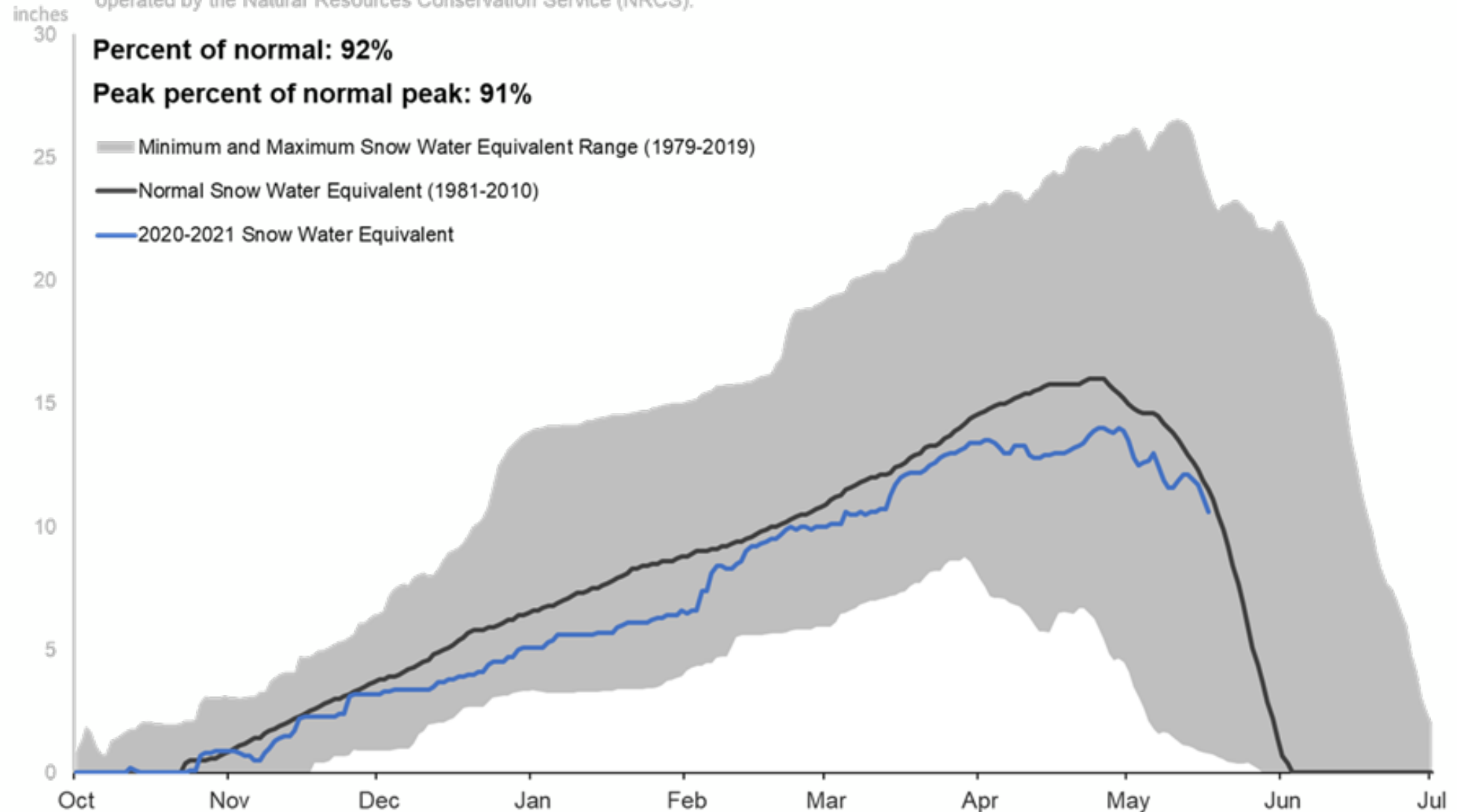
Snow Water Equivalent in S. Platte River Collection System

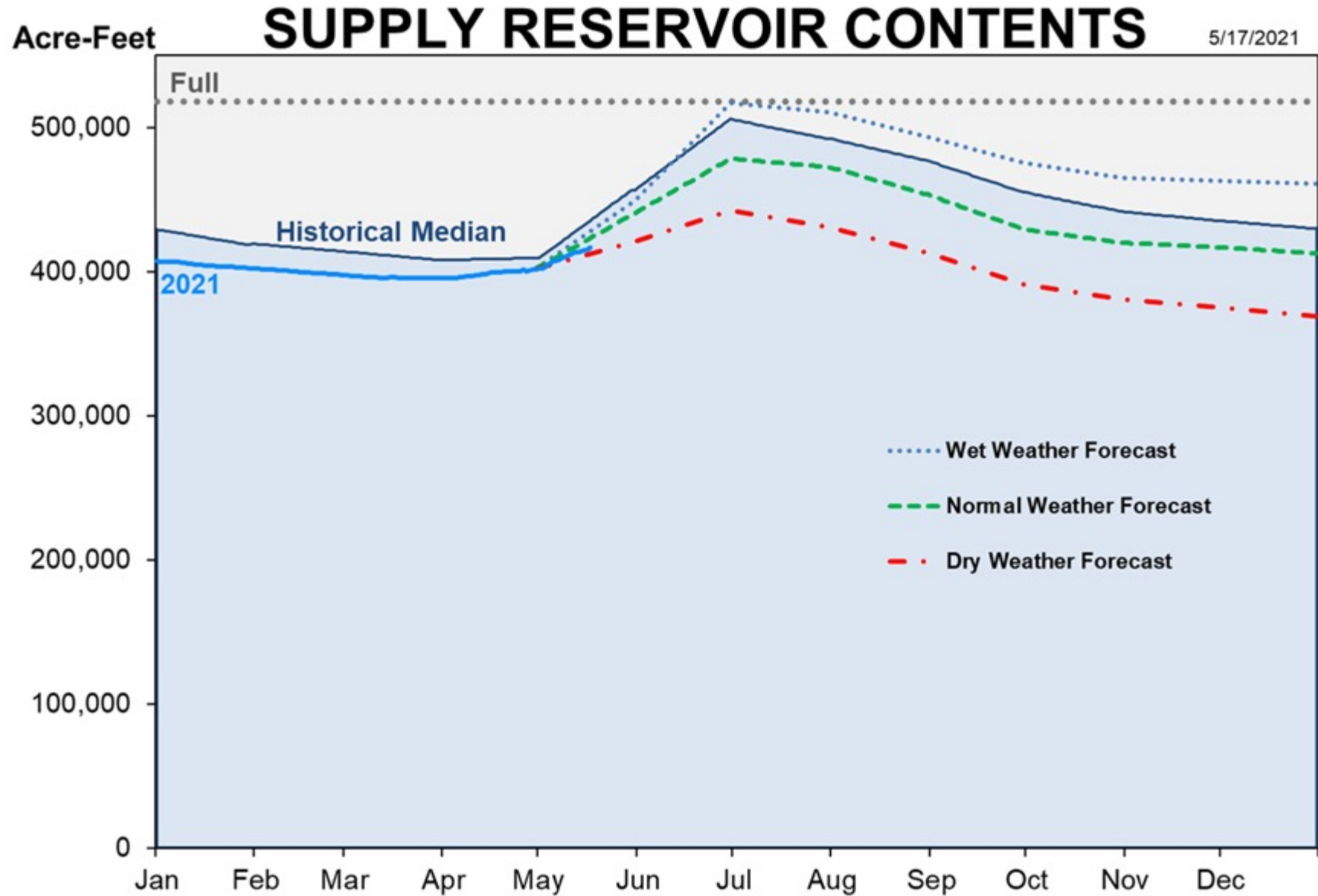
Snow water equivalent (SWE) is the amount of water contained in the snowpack, or the depth of water that would result if the snowpack suddenly melted. The information in this chart comes from seven automated SNOTEL stations, in the Upper South Platte River basin, that are operated by the Natural Resources Conservation Service (NRCS).



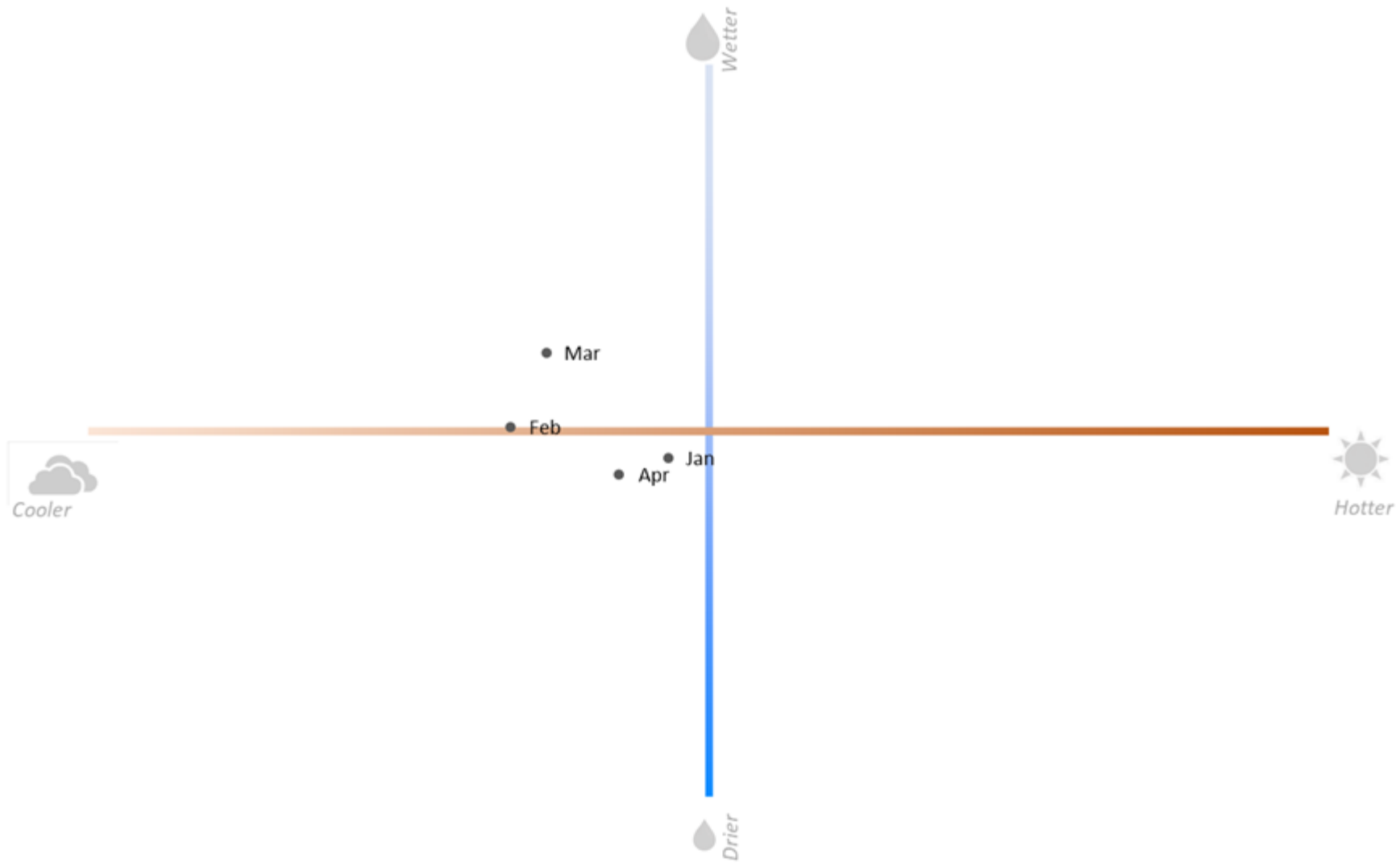
Snow Water Equivalent in Colorado River Collection System

Snow water equivalent (SWE) is the amount of water contained in the snowpack, or the depth of water that would result if the snowpack suddenly melted. The information in this chart comes from seven automated SNOTEL stations, in the Upper Colorado River basin, that are operated by the Natural Resources Conservation Service (NRCS).





Denver Water Collection System Annual Weather Variation 2021

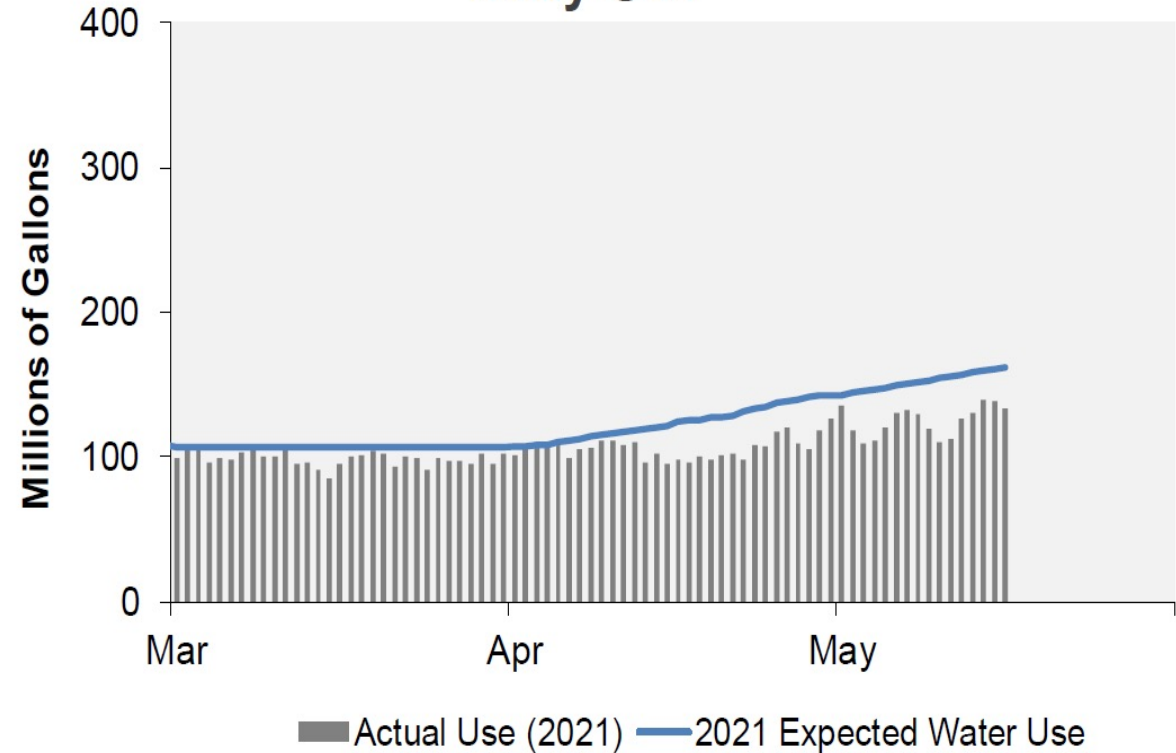


*Normal monthly weather conditions occur where the axes cross

Supply Reservoir Contents

| Reservoir | Capacity (acre-feet) | | Current Usable Contents (acre-feet) | Percent Full | | |
|------------------|-------------------------|----------------|---|--------------|------------|-------------------|
| | Total | Usable | | Current | Last Year | Historical Median |
| Antero | 19,881 | 19,826 | 19,760 | 100% | 98% | 100% |
| Eleven Mile | 97,779 | 97,779 | 97,068 | 99% | 102% | 102% |
| Cheesman | 79,064 | 79,064 | 59,510 | 75% | 62% | 92% |
| Marston | 19,256 | 13,133 | 8,998 | 69% | 59% | 75% |
| Strontia Springs | 7,863 | 7,163 | 6,543 | 91% | 89% | 94% |
| Chatfield | 27,076 | 10,782 | 11,134 | 103% | 82% | 93% |
| Dillon | 257,304 | 249,095 | 203,401 | 82% | 94% | 90% |
| Gross | 41,811 | 29,811 | 5,812 | 19% | 54% | 43% |
| Ralston | 10,776 | 7,276 | 3,559 | 49% | 51% | 77% |
| Meadow Creek | 5,370 | 4,520 | 1,267 | 28% | 4% | 26% |
| Total | 566,180 | 518,449 | 417,051 | 80% | 86% | 84% |

Daily Use



Communications, Outreach and Coordination

Communications and Outreach



Denver Water @DenverWater · Feb 11
It's that time of year to think about flowers.

Use less water, plant water-wise plants from [@ResourceCentral](#)

Visit: resourcecentral.org/gardens/



A watchful eye on the 'Big River'

Amid dry soils and struggling snowpack in Denver Water's collection area, longer-term Colorado River challenges also loom large.

February 12, 2021 | By: [Todd Hartman](#)

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Denver Water's supply managers are closely attuned to the dry weather, lagging snowpack and poor soil moisture in its mountainous collection area that [could mean heightened efforts](#) to conserve water this summer.

At the same time, the utility is closely engaged with a more persistent and growing [long-term challenge](#): a drying trend across the seven-state Colorado River Basin.



The Colorado River, which feeds into Lake Powell, begins its 1,450-mile journey in Rocky Mountain National Park near Grand Lake, Colorado. Denver Water gets half of its water from tributaries that feed into the Colorado River. Some of these tributaries include the Fraser River in Grand County and the Blue River in Summit County. Photo credit: Denver Water.

Internal and External Coordination

- **Internal**
 - Regular coordination meetings.
 - Presentations to Divisions and Sections.
 - Scenario planning.
- **External**
 - Metro Drought Coordination Group.
 - Front Range Drought Coordination Group.
 - State Municipal Water Impact Task Force.
 - Presentations to multiple agencies/stakeholders on West Slope and within metro area.

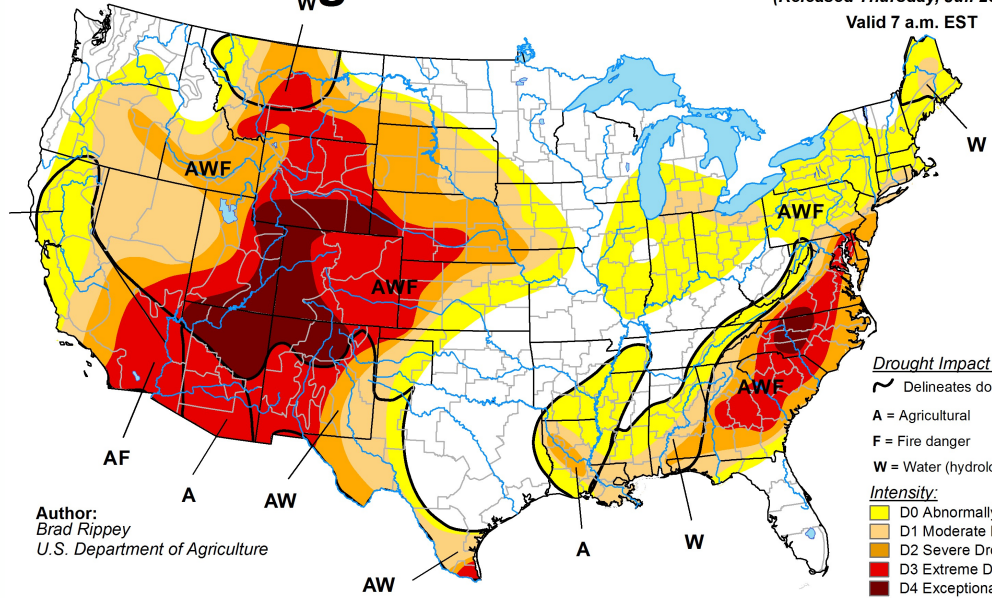
Front Range Drought Coordination Group

- *City of Arvada*
- *City of Aurora - Aurora Water*
- *City of Boulder*
- *City of Brighton*
- *City and County of Broomfield*
- *Castle Rock Water*
- *City of Centennial*
- *Centennial Water and Sanitation District*
- *Colorado Springs Utilities*
- *Consolidated Mutual Water Company*
- *Denver Water*
- *East Cherry Creek Valley Water & Sanitation District*
- *Town of Erie*
- *Eagle River Water & Sanitation District*
- *Evergreen Metro District*
- *Fort Collins Utilities*
- *City of Fountain*
- *City of Golden*
- *City of Greeley*
- *City of Lafayette*
- *City of Longmont*
- *City of Louisville*
- *Mulhern MRE (Inverness)*
- *North Table Mountain Water and Sanitation District*
- *Northern Colorado Water Conservancy District*
- *City of Northglenn*
- *Parker Water & Sanitation District*
- *Platte Canyon Water and Sanitation District*
- *Pueblo Water*
- *Roxborough Water & Sanitation District*
- *Ruedi Water and Power Authority*
- *South Adams County Water and Sanitation District*
- *South Metro Water Supply Authority*
- *South Metro WISE Authority*
- *Sterling Ranch*
- *City of Thornton*
- *City of Westminster*

2003 vs. 2021

U.S. Drought Monitor

July 23, 2002
 (Released Thursday, Jul. 25, 2002)
 Valid 7 a.m. EST

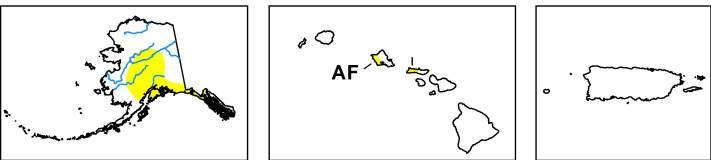


Author:
 Brad Rippey
 U.S. Department of Agriculture

Drought Impact Types:
 ~ Delineates dominant impacts
 A = Agricultural
 F = Fire danger
 W = Water (hydrological)

Intensity:
 D0 Abnormally Dry
 D1 Moderate Drought
 D2 Severe Drought
 D3 Extreme Drought
 D4 Exceptional Drought

The Drought Monitor focuses on scale conditions. Local conditions vary. See accompanying text for forecast statements.

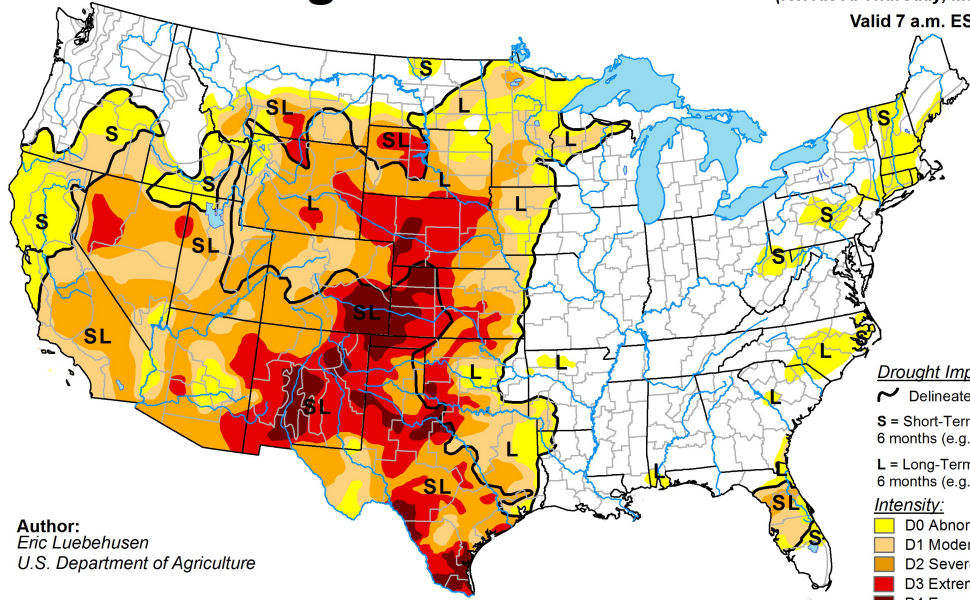


<http://droughtmonitor.unl.edu>



U.S. Drought Monitor

April 30, 2013
 (Released Thursday, May 2, 2013)
 Valid 7 a.m. EST

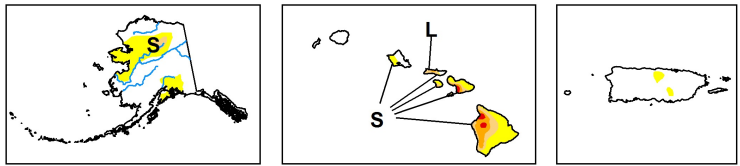


Drought Impact Types:
 ~ Delineates dominant impacts
 S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
 L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

Intensity:
 D0 Abnormally Dry
 D1 Moderate Drought
 D2 Severe Drought
 D3 Extreme Drought
 D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
 Eric Luebehusen
 U.S. Department of Agriculture

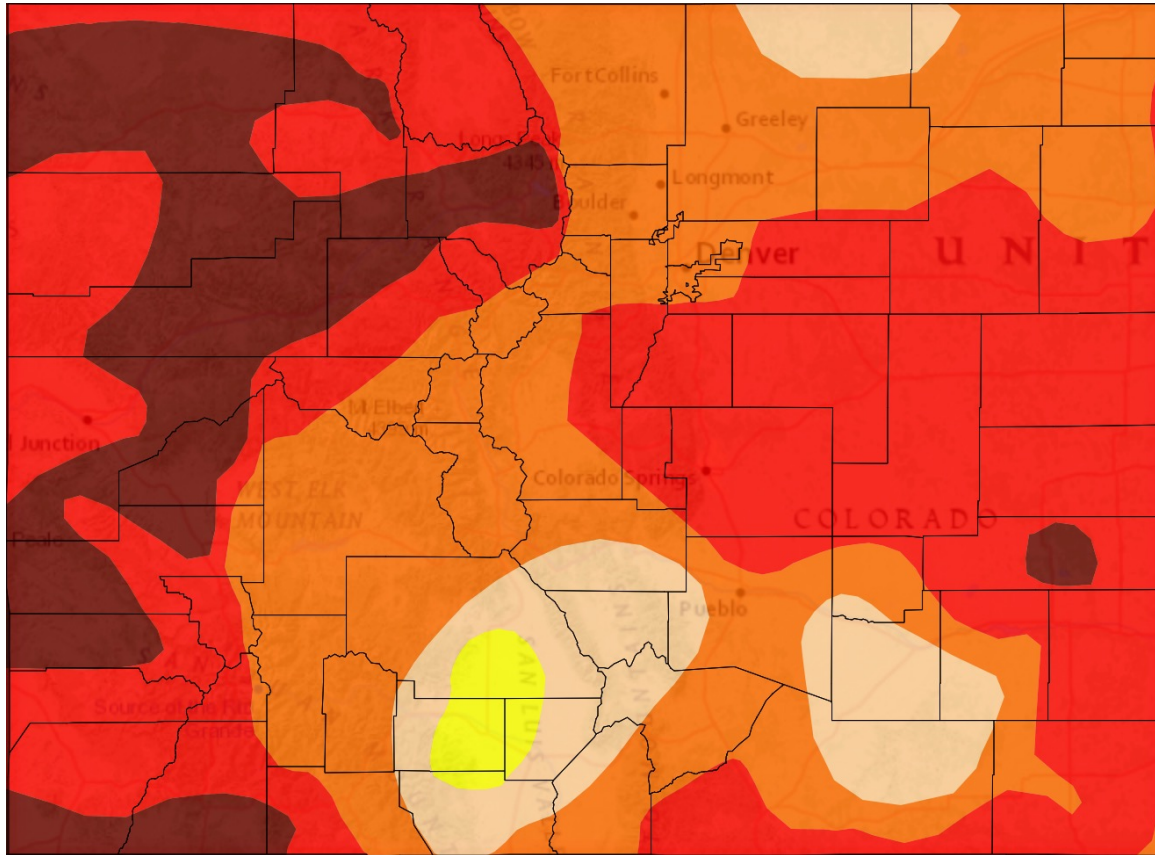


USDA
 National Drought Mitigation Center
<http://droughtmonitor.unl.edu/>

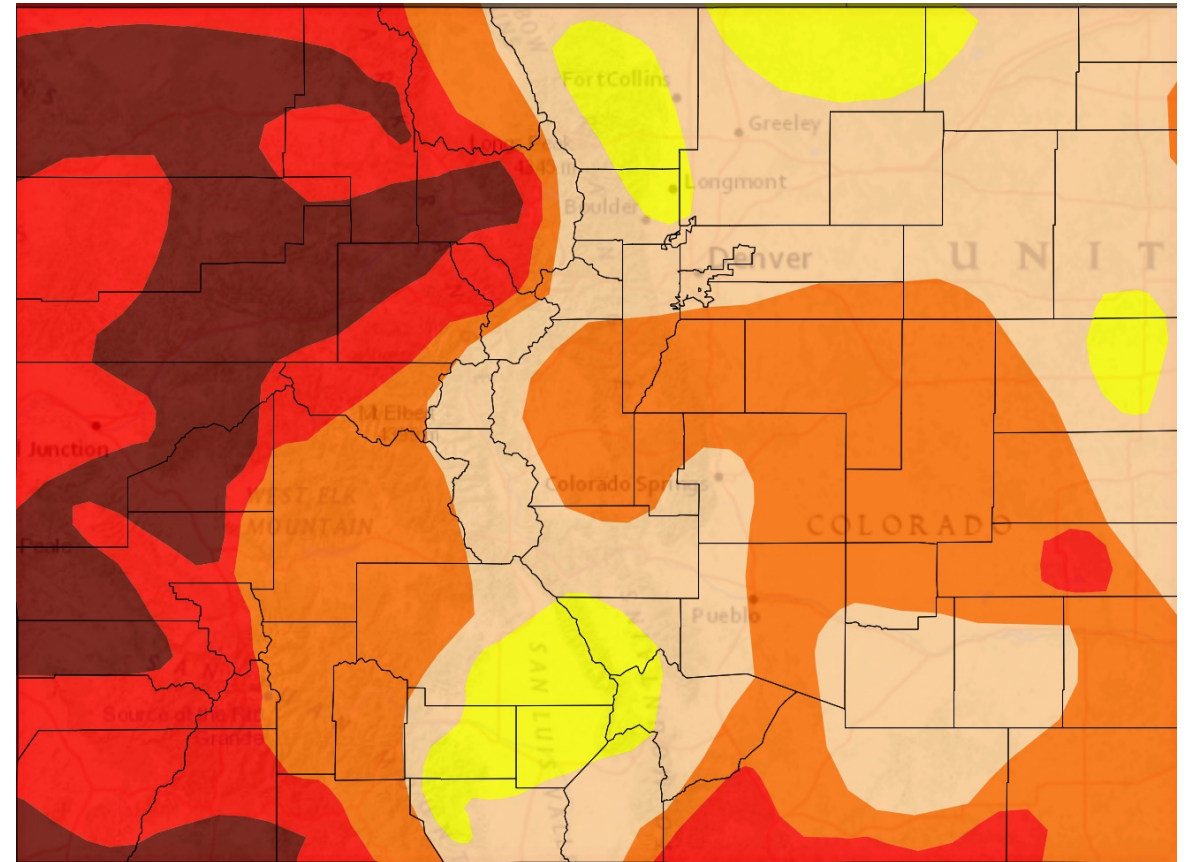


High Line Canal @ Alameda
 September, 2013 Flooding Event
 \$17 Million in over-all DW Damage

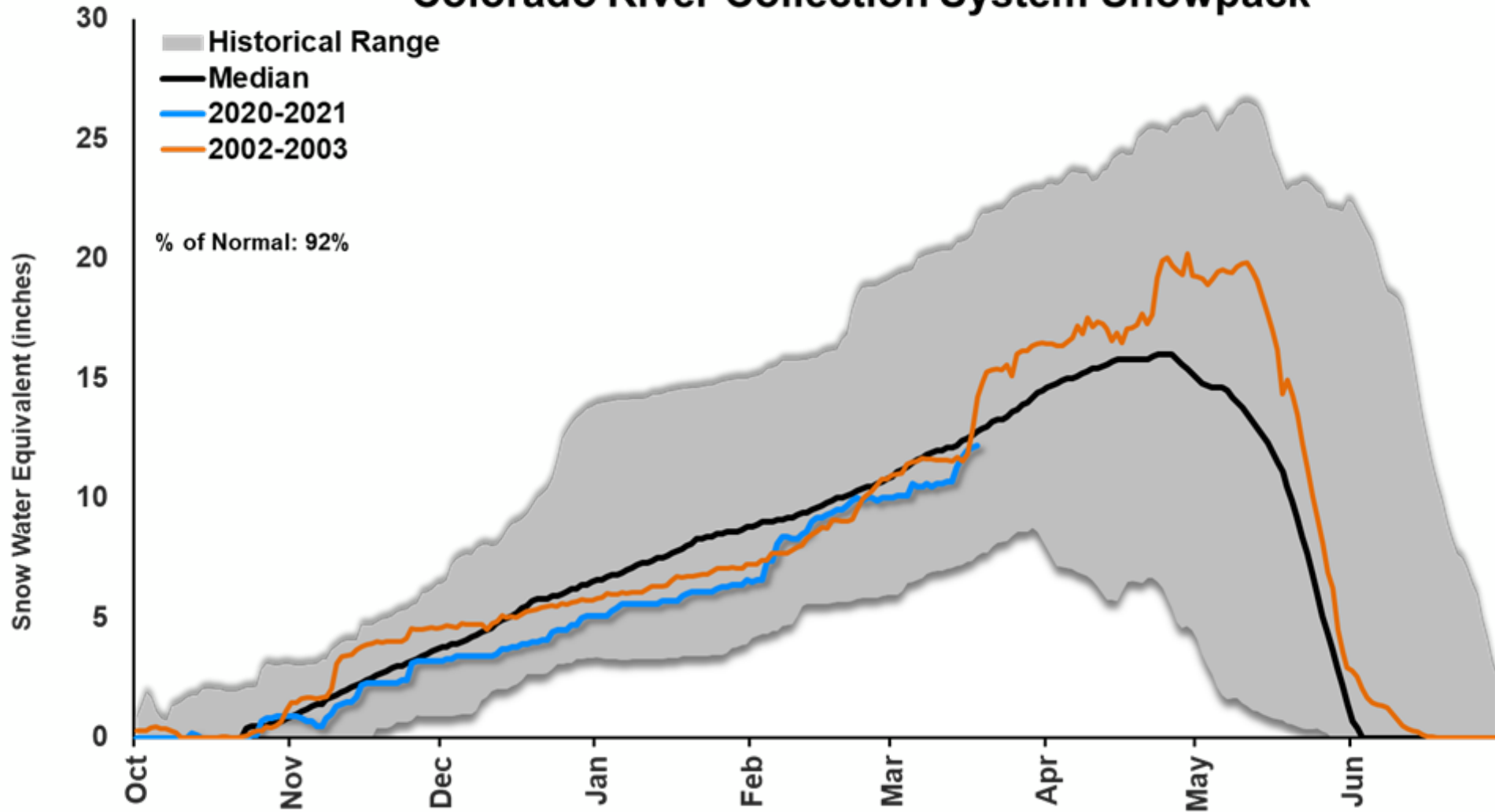
3/06/2021



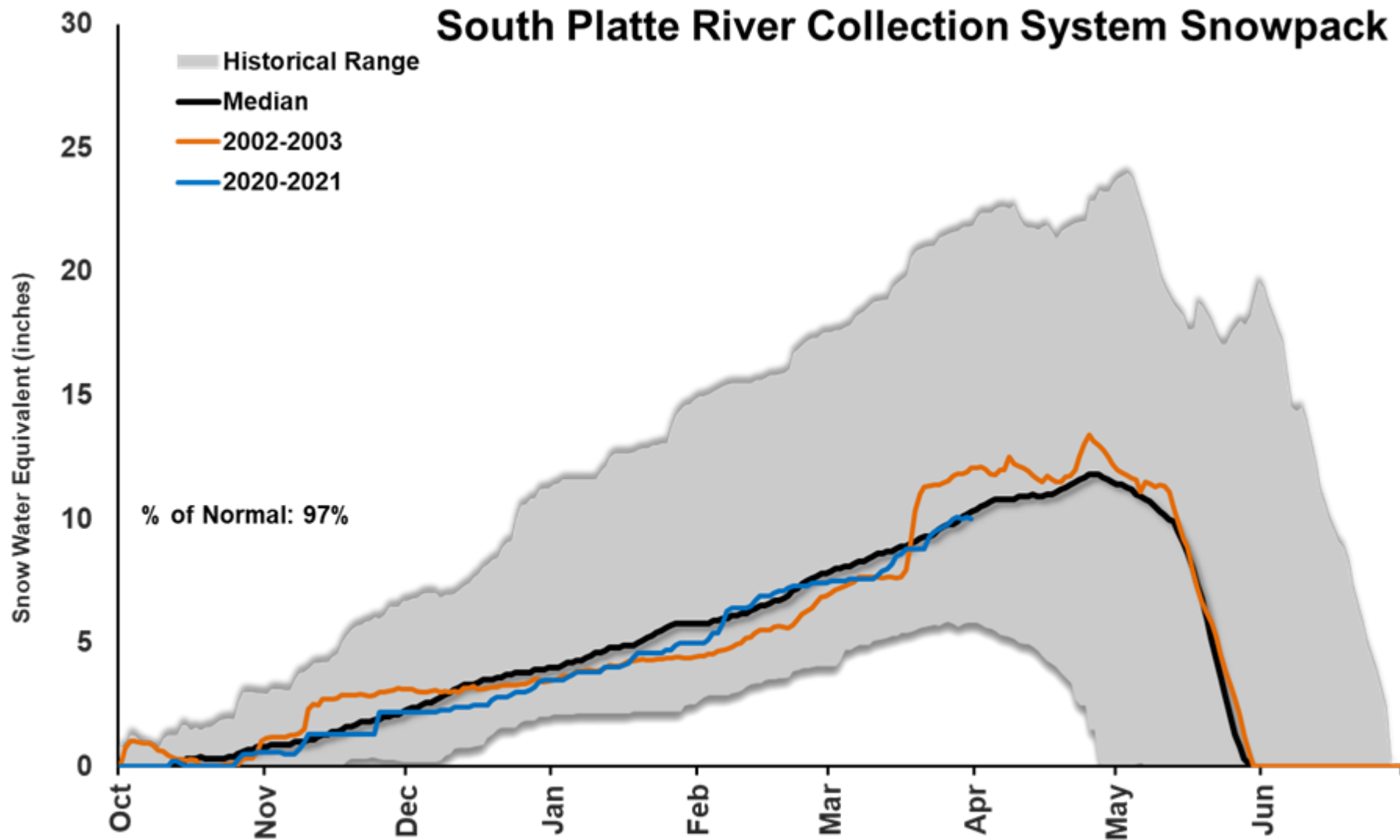
4/06/2021



Colorado River Collection System Snowpack



Data are from the 7 Snotel stations above Denver Water's Upper Colorado diversion facilities.



Data are from the 7 Snotel stations above Denver Water's Upper South Platte diversion facilities.

THANK YOU!