Utah Water Assessment & Conditions Monitoring (Drought Webinar)

The meeting will begin shortly

Thank you to our contributors
Utah Water Assessment & Conditions Monitoring Webinar

October 11, 2022
Southern latitudes saw warmer than normal temps while northern latitudes experienced one of the hottest summers on record.
Active monsoon season improved the short-term drought pressure, but the long-term water-year perspective remains problematic thanks to under-performing snowpack and spring rains.
SPI (30-day and 12-month)

30-day SPI shows the positive rainfall to start the fall; recent weather has been warm and dry, so expect the 30-day SPI to begin to slide more negative in upcoming weeks. 12-month SPI shows ongoing drought pressure in most areas with only a few pockets of the state saw-above normal precipitation for WY2022.
Limited evaporative demand is helping preserve soil moisture, but recent weather is beginning to dry the landscape. Still, year-over-year improvements are noted as positives to consider for next years runoff efficiency.

Agency - Utah Climate Center
Presenter - Jon Meyer
Seasonal outlook reflects expected weak La Nina conditions (third year in a row). Expect this to limit the snowpack's ability to make meaningful hydrologic drought improvements next spring/summer.
Summary:
Recent weather hasn’t “hurt” and added further drought stress, and maybe even helped in areas, but most importantly, the summer and early fall hasn’t exacerbated the drought problem. “Bought us some time” for subsequent favorable seasonal conditions to start the road to recovery.

State needs to preserve as much soil moisture over next two months before snow accumulation season descends the mountainside. Also prefer to see more frequent storm systems than the last two weeks has provided (Christine, please help us order those storms!)

Entering the period of the year where status quo is the default drought recommendation while we wait to see how spring snowpack looks. Are we comfortable with current drought classifications in the state?
WAI values

- WAI values combine current streamflow and reservoir volume
- Percentiles are compared to 30-year average WAI values

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**Utah Climate and Water Report**

**Oct 1, 2022 | Water Availability Index (WAI)**

<table>
<thead>
<tr>
<th>Basin or Region</th>
<th>Reservoir Storage\textsuperscript{1} (KAF)\textsuperscript{a}</th>
<th>Monthly Flow</th>
<th>Flow + Storage (KAF)\textsuperscript{b}</th>
<th>WAI\textsuperscript{p}</th>
<th>Percentile\textsuperscript{c} (%)</th>
<th>Similar Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bear</td>
<td>381.6</td>
<td>4.3</td>
<td>385.9</td>
<td>-2.03</td>
<td>25</td>
<td>[1990, 2006]</td>
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<tr>
<td>Woodruff Narrows</td>
<td>11.8</td>
<td>1.8</td>
<td>13.6</td>
<td>-1.26</td>
<td>35</td>
<td>[1981, 2021]</td>
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<tr>
<td>Little Bear</td>
<td>5.1</td>
<td>1.4</td>
<td>6.5</td>
<td>0.4</td>
<td>55</td>
<td>[2000, 2020]</td>
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<tr>
<td>Ogden</td>
<td>38.4</td>
<td>3.6</td>
<td>42.0</td>
<td>-1.84</td>
<td>28</td>
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<td>Weber</td>
<td>109.1</td>
<td>10.0</td>
<td>119.1</td>
<td>0.36</td>
<td>54</td>
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<tr>
<td>Provo</td>
<td>259.5</td>
<td>2.8</td>
<td>262.3</td>
<td>-2.82</td>
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<td>Western Uintas</td>
<td>127.2</td>
<td>15.2</td>
<td>142.4</td>
<td>-1.26</td>
<td>35</td>
<td>[2010, 2020]</td>
</tr>
<tr>
<td>Eastern Uintas</td>
<td>16.5</td>
<td>9.0</td>
<td>25.5</td>
<td>-2.42</td>
<td>21</td>
<td>[2003, 2020]</td>
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<tr>
<td>Blacks Fork</td>
<td>5.9</td>
<td>3.4</td>
<td>9.4</td>
<td>0.21</td>
<td>52</td>
<td>[1985, 2006]</td>
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<tr>
<td>Smiths Fork</td>
<td>5.2</td>
<td>3.9</td>
<td>9.1</td>
<td>1.25</td>
<td>65</td>
<td>[1993, 2009]</td>
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<tr>
<td>Price</td>
<td>11.6</td>
<td>0.3</td>
<td>11.9</td>
<td>-2.03</td>
<td>26</td>
<td>[2003, 2007]</td>
</tr>
<tr>
<td>Joes Valley</td>
<td>29.7</td>
<td>6.1</td>
<td>35.8</td>
<td>-2.03</td>
<td>26</td>
<td>[2012, 2018]</td>
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<td>Ferron Creek</td>
<td>8.4</td>
<td>0.7</td>
<td>9.1</td>
<td>-1.45</td>
<td>33</td>
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<td>Moab</td>
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<td>0.4</td>
<td>2.0</td>
<td>2.78</td>
<td>83</td>
<td>[1993, 2016]</td>
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<td>Upper Sevier</td>
<td>5.4</td>
<td>0.6</td>
<td>6.0</td>
<td>-3.59</td>
<td>7</td>
<td>[1992, 2004]</td>
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<tr>
<td>San Pitch</td>
<td>0.0</td>
<td>0.4</td>
<td>0.4</td>
<td>-3.2</td>
<td>12</td>
<td>[2002, 2020]</td>
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<td>Lower Sevier</td>
<td>4.5</td>
<td>2.7</td>
<td>7.2</td>
<td>-3.78</td>
<td>5</td>
<td>[2003, 2004]</td>
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<tr>
<td>Beaver River</td>
<td>1.2</td>
<td>1.1</td>
<td>2.3</td>
<td>-3.59</td>
<td>7</td>
<td>[2002, 2004]</td>
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<tr>
<td>Virgin River</td>
<td>28.3</td>
<td>7.8</td>
<td>36.1</td>
<td>0.13</td>
<td>52</td>
<td>[2008, 2017]</td>
</tr>
</tbody>
</table>

\(\textsuperscript{1}\) End of Month Reservoir Storage; \(\textsuperscript{a}\) KAF, Thousand Acre-Feet; \(\textsuperscript{p}\) WAI, Water Availability Index; \(\textsuperscript{c}\) Threshold for coloring: >75% Green, <25% Red

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**WAI’s for the Sevier, San Pitch and Beaver basins are very low**

- mainly due to poor reservoir storage
Precipitation deficits range from 3.8 to 19.4" for Utah basins

- Equivalent of 15% - 74% of annual water budgets
- Suggests statewide deficit value of approx. 12"
- Will take multiple year to recover (hopefully…)

### Precipitation deficits for Water Years 2020-2022

<table>
<thead>
<tr>
<th></th>
<th>WY20</th>
<th>WY21</th>
<th>WY22</th>
<th>Normal</th>
<th>Total Deficit</th>
<th>Total Deficit as % of Normal (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bear</td>
<td>27.7</td>
<td>25.1</td>
<td>30.1</td>
<td>31.3</td>
<td>11</td>
<td>35%</td>
</tr>
<tr>
<td>Beaver</td>
<td>21.1</td>
<td>26.3</td>
<td>27.9</td>
<td>30.1</td>
<td>15</td>
<td>50%</td>
</tr>
<tr>
<td>Deep Creek</td>
<td>15.3</td>
<td>20</td>
<td>20.8</td>
<td>20.8</td>
<td>6.3</td>
<td>30%</td>
</tr>
<tr>
<td>Dirty Devil</td>
<td>17.6</td>
<td>19.8</td>
<td>21.5</td>
<td>23.1</td>
<td>10.4</td>
<td>45%</td>
</tr>
<tr>
<td>Duchesne</td>
<td>20.5</td>
<td>24.3</td>
<td>28.4</td>
<td>26.9</td>
<td>7.5</td>
<td>28%</td>
</tr>
<tr>
<td>Escalante</td>
<td>17.1</td>
<td>19.7</td>
<td>20.9</td>
<td>23.4</td>
<td>12.5</td>
<td>53%</td>
</tr>
<tr>
<td>Lower Sevier</td>
<td>16.1</td>
<td>20.4</td>
<td>22.4</td>
<td>26.1</td>
<td>19.4</td>
<td>74%</td>
</tr>
<tr>
<td>NE Uintas</td>
<td>21.5</td>
<td>24.6</td>
<td>27.5</td>
<td>25.8</td>
<td>3.8</td>
<td>15%</td>
</tr>
<tr>
<td>Price-San Rafael</td>
<td>19.9</td>
<td>20.6</td>
<td>27</td>
<td>25.8</td>
<td>9.9</td>
<td>38%</td>
</tr>
<tr>
<td>Provo-Utah Lake-Jordan</td>
<td>27.3</td>
<td>28.9</td>
<td>33.2</td>
<td>34.2</td>
<td>13.2</td>
<td>39%</td>
</tr>
<tr>
<td>Raft</td>
<td>32</td>
<td>24.8</td>
<td>33.9</td>
<td>36.7</td>
<td>19.4</td>
<td>53%</td>
</tr>
<tr>
<td>San Pitch</td>
<td>21.1</td>
<td>20.7</td>
<td>26.9</td>
<td>27.1</td>
<td>12.6</td>
<td>46%</td>
</tr>
<tr>
<td>SE Utah</td>
<td>19.9</td>
<td>22.4</td>
<td>24.8</td>
<td>25.5</td>
<td>9.4</td>
<td>37%</td>
</tr>
<tr>
<td>SW Utah</td>
<td>20.1</td>
<td>21.3</td>
<td>25.4</td>
<td>24.2</td>
<td>5.8</td>
<td>24%</td>
</tr>
<tr>
<td>Tooele-Vernon Creek</td>
<td>24.1</td>
<td>25</td>
<td>29</td>
<td>32.3</td>
<td>18.8</td>
<td>58%</td>
</tr>
<tr>
<td>Upper Sevier</td>
<td>19.3</td>
<td>21.3</td>
<td>23.4</td>
<td>25.8</td>
<td>13.4</td>
<td>52%</td>
</tr>
<tr>
<td>Weber-Ogden</td>
<td>28.2</td>
<td>27.3</td>
<td>32.8</td>
<td>35.3</td>
<td>17.6</td>
<td>50%</td>
</tr>
<tr>
<td><strong>Avg</strong></td>
<td><strong>27.2</strong></td>
<td><strong>25.5</strong></td>
<td><strong>29.1</strong></td>
<td><strong>30.1</strong></td>
<td><strong>17.6</strong></td>
<td><strong>50%</strong></td>
</tr>
</tbody>
</table>

*NRCS - Natural Resources Conservation Service*
Willard Bay: current 38%, last year 37%, median 65%
Rockport: current 54%, last year 26%, median 64%
Deer Creek: current 42%, last year 59%, median 65%
Starvation: current 60%, last year 59%, median 75%
Scofield: current 17%, last year 21%, median 35%
Yuba: current 2%, last year 9%, median 24%
Ken’s Lake: current 70%, last year 31%, median 30%
Piute: current 2%, last year 4%, median 19%
Sand Hollow: current 57%, last year 69%, median 77%
Cumulative Flow of 28 Headwater Streams

Daily Values (1990-2021)
- Maximum
- Median
- Minimum
- WY2022

Streamflow (million acre-feet)

- Sep 30, 2022
  - Maximum: 2.11
  - Median: 0.89
  - Minimum: 0.52
  - WY2022: 0.78
Weather Forecast Office Utah Day 1-7 Outlook

Agency - National Weather Service Weather Forecast Office
Presenter - Christine Kruse
Climate Prediction Center 8 to 14 Day Outlooks - Temperature

8-14 Day Temperature Outlook

Valid: October 18 - 24, 2022
Issued: October 10, 2022

Above
Near Normal
Below

Agency - National Weather Service Weather Forecast Office
Presenter - Christine Kruse
La Niña Advisory Remains in Effect

La Niña is favored to continue through Northern Hemisphere winter 2022-23, with a 91% chance in October-November, decreasing to a 54% chance in January-March 2023.

Forecast will be updated Oct 13.
La Niña Advisory Remains in Effect

Number of All La Niñas* With Above Ave Temps

Western Region
Central Region
Eastern Region
Southern Region

28 La Niñas Since 1925

Count
26 to 28
21 to 25
16 to 20
12 to 15
7 to 11
3 to 6
0 to 2

Source: PRISM grids for Lower 48 and Climgrid in Alaska. Each year in the analysis is compared against its own 30-year climate period.

Agency - National Weather Service Weather Forecast Office
Presenter - Christine Kruse
Near normal snowpack conditions in January led to forecasts in the area that were higher than what was observed. A historically dry February impacted the trajectory of forecasts.
CBRFC Forecast Verification - April

By April, most of the forecasts in the area were very accurate. Model successfully captured the impacts of dry conditions over the basin, and a lack of extreme weather events did not impact the forecast.
Current Streamflow Conditions

Day-of-Year Status

- All-time high for this day-of-year: 0.7% 0.0%
- Much above normal for this day-of-year: 2.9% 1.5%
- Above normal for this day-of-year: 5.8% 3.6%
- Normal for this day-of-year: 42.3% 35.9%
- Below normal for this day-of-year: 19.0% 22.6%
- Much below normal for this day-of-year: 13.9% 20.4%
- All-time low for this day-of-year: 3.6% 4.4%
- Not ranked - insufficient record: 7.3% 8.0%
- Not ranked - stream not flowing: 1.5% 3.6%
Area Based Cumulative Runoff for Utah

- Area based runoff computed from mixed regulated and unregulated streamflows
- WY2022 ends just below 25th percentile

Agency - USGS UT WSC
Presenter - Ryan Rowland
GSL Marina water levels too low for Saltair gage (Station USGS 10010000 GREAT SALT LAKE AT SALTAIR BOAT HARBOR, UT PROVISIONAL DATA SUBJECT TO REVISION)

Available data for this site: Time-series: Daily data

Click to hide station-specific text

Station operated by the U.S. Geological Survey, with Cooperative Matching Funds with the Utah Department of Natural Resources, Division of Forestry, Fire, and State Lands.

NOTICE (09/29/2022)
Due to low lake levels, the Saltair Lake Elevation Gage can no longer measure accurate water levels. To see current lake elevation of the S. Arm of GSL, please visit USGS Gage; GSL S. Side of Causeway, East of Lakeside, UT (10010024).
Great Salt Lake Water Surface Elevation

- Mean daily value
  - 10/10/2022 = 4,188.9’
- Mean daily value
  - 9/19/2022 = 4,189.1’

Agency - USGS UT WSC
Presenter - Ryan Rowland
U.S. Drought Monitor

Utah

October 4, 2022
(Released Thursday, Oct. 6, 2022)
Valid 8 a.m. EDT

Intensity:
- None
- 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. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

Author:
Brad Pugh
CPC/NOAA

droughtmonitor.unl.edu