March 2019 Water Supply Briefing
National Weather Service / Northwest River Forecast Center

Telephone Conference : (415) 655-0060
Pass Code : 217-076-304#

Audio PIN provided when logging into the webinar and will be required if you wish to ask questions at the end of presentation

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(503)326-7291
Water Supply Forecast Briefing Outline

- Observed Conditions WY2019:
  - Temperature
  - Precipitation
  - Snowpack
  - Runoff

- Future Conditions:
  - 10 days of quantitative forecast precipitation (QPF)
  - 10 days of quantitative forecast temperature (QTF)
  - Historical climate forcings appended thereafter

- Water Supply Forecasts

- Additional Guidance
  - CPC Climate Outlook

- Summary
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Model States

Model Inputs

Model Forcings
Monthly Temperature Anomaly

Water Year

<table>
<thead>
<tr>
<th>Year</th>
<th>2019</th>
<th>2018</th>
<th>2017</th>
<th>2015</th>
</tr>
</thead>
</table>

Upper Columbia

Pend Oreille

Kootenai

Data as of March 1, 2019
Monthly Temperature Anomaly

Snake River

Snake abv American Falls

Snake abv Hells Canyon

Snake abv Ice Harbor

Columbia abv The Dalles

Water Year

- 2019
- 2018
- 2017
- 2015

Data as of March 1, 2019
Monthly Temperature Anomaly

Westside Basins

Willamette River

Rogue River

Skagit River

Cowlitz River

Water Year
2019
2018
2017
2015

Temp Anomaly (°F)

Oct
Nov
Dec
Jan
Feb

Data as of March 1, 2019
Observed % Normal Seasonal Precipitation

Seasonal Precipitation
Oct 1, 2018 – Feb 28, 2019

Seasonal Precipitation (Percent Normal)
- Below 50%
- 50 – 70%
- 70 – 90%
- 90 – 110%
- 110 – 130%
- Above 130%

Current Month Precipitation
Mar 1, 2019 – Mar 05, 2019

Monthly Precipitation (Percent Normal)
- Below 50%
- 50 – 70%
- 70 – 90%
- 90 – 110%
- 110 – 130%
- Above 130%

Creation Time: Friday, Mar 1, 2019
Northwest River Forecast Center

Creation Time: Wednesday, Mar 6, 2019
Northwest River Forecast Center
Snowpack and Seasonal Precipitation

Snow data from NRCS, BC Hydro, and Alberta EP.
SWE vs. Elevation (March 6, 2019)

Data as of March 1, 2019. Snow data from NRCS, BC Hydro, and Alberta EP.
Data as of March 6, 2019. Snow data from NRCS, BC Hydro, and Alberta EP.
Snowpack and Seasonal Precipitation

Data as of March 6, 2019. Snow data from NRCS, BC Hydro, and Alberta EP.
Snowpack and Seasonal Precipitation

Data as of March 6, 2019. Snow data from NRCS, BC Hydro, and Alberta EP.
Snowpack and Seasonal Precipitation

Westside Basins

Skagit
- Precip. (% Ave.): 81%

Cowlitz
- Precip. (% Ave.): 72%

Willamette
- Precip. (% Ave.): 81%

Rogue
- Precip. (% Ave.): 95%

Data as of March 6, 2019. Snow data from NRCS, BC Hydro, and Alberta EP.
% of Normal Oct 1– Feb 5

**UPPER COLUMBIA BASIN**
- MICA: 91
- DUNCAN: 93
- QUEENS BAY: 75
- LIBBY: 80
- HUNGRY HORSE: 76
- GRAND COULEE: 89

**SNAKE RIVER BASIN**
- JACKSON LAKE: 96
- PALISADES: 100
- DWORSHAK: 72
- LOWER GRANITE: 78

**LOWER COLUMBIA BASIN**
- THE DALLES: 81
Current Adjusted Runoff Conditions

% of Normal Oct 1– Mar 11

**UPPER COLUMBIA BASIN**
- MICA: 89
- DUNCAN: 90
- QUEENS BAY: 69
- LIBBY: 76
- HUNGRY HORSE: 72
- GRAND COULEE: 80

**SNAKE RIVER BASIN**
- JACKSON LAKE: 104
- PALISADES: 99
- DWORSHAK: 59
- LOWER GRANITE: 73

**LOWER COLUMBIA BASIN**
- THE DALLES: 74
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### ESP10 Apr-Sep Water Supply Forecasts

(Slide from February 7, 2019 WS Briefing)

#### Baseline % 30 yr Normal

<table>
<thead>
<tr>
<th>Basin</th>
<th>% 30 yr Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Columbia River - Mica Dam</td>
<td>92%</td>
</tr>
<tr>
<td>Kootenai River - Libby Dam</td>
<td>79%</td>
</tr>
<tr>
<td>Coeur d'Alene R - Coeur d'Alene Lake</td>
<td>91%</td>
</tr>
<tr>
<td>SF Flathead River - Hungry Horse Dam</td>
<td>86%</td>
</tr>
<tr>
<td>Clark Fork River - Above Missoula</td>
<td>107%</td>
</tr>
<tr>
<td>Bitterroot R - Above Missoula</td>
<td>92%</td>
</tr>
<tr>
<td>Pend Oreille R-Albeni Falls Dam</td>
<td>87%</td>
</tr>
<tr>
<td>Columbia River - Grand Coulee Dam</td>
<td>89%</td>
</tr>
<tr>
<td><strong>Upper Snake River</strong></td>
<td></td>
</tr>
<tr>
<td>- Jackson Lake Dam</td>
<td>86%</td>
</tr>
<tr>
<td>- Palisades Dam</td>
<td>84%</td>
</tr>
<tr>
<td>- at Heise</td>
<td>84%</td>
</tr>
<tr>
<td><strong>Middle Snake Tribs</strong></td>
<td></td>
</tr>
<tr>
<td>- Lucky Peak Dam</td>
<td>74%</td>
</tr>
<tr>
<td>- Owyhee Dam</td>
<td>43%</td>
</tr>
<tr>
<td>- Bruneau R nr Hot Springs</td>
<td>67%</td>
</tr>
<tr>
<td><strong>NF Clearwater River-Dworshak Dam</strong></td>
<td>94%</td>
</tr>
<tr>
<td><strong>Lower Snake River-Lower Granite Dam</strong></td>
<td>86%</td>
</tr>
<tr>
<td><strong>Lower Columbia - The Dalles Dam</strong></td>
<td>87%</td>
</tr>
</tbody>
</table>

Issued Feb. 5, 2019

(Slide from February 7, 2019 WS Briefing)
ESP10 Apr-Sep Water Supply Supply Forecasts

Issued
March 6, 2019

<table>
<thead>
<tr>
<th>Basin</th>
<th>% 30 yr Normal</th>
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<tbody>
<tr>
<td>Columbia River - Mica Dam</td>
<td>98% (+6)</td>
</tr>
<tr>
<td>Kootenai River - Libby Dam</td>
<td>77% (-6)</td>
</tr>
<tr>
<td>Coeur d'Alene R - Coeur d'Alene Lake</td>
<td>89% (-2)</td>
</tr>
<tr>
<td>SF Flathead River - Hungry Horse Dam</td>
<td>82% (-2)</td>
</tr>
<tr>
<td>Clark Fork River - Above Missoula</td>
<td>106% (-1)</td>
</tr>
<tr>
<td>Bitterroot R - Above Missoula</td>
<td>92% (-- )</td>
</tr>
<tr>
<td>Pend Oreille R-Albeni Falls Dam</td>
<td>83% (-4)</td>
</tr>
<tr>
<td>Columbia River - Grand Coulee Dam</td>
<td>87% (-2)</td>
</tr>
</tbody>
</table>

**Upper Snake River**
- Jackson Lake Dam 106% (+20)
- Palisades Dam 96% (+12)
- at Heise 103% (+19)

**Middle Snake Tribs**
- Lucky Peak Dam 113% (+29)
- Owyhee Dam 74% (+31)
- Bruneau R nr Hot Springs 92% (+25)

NF Clearwater River-Dworshak Dam 94% (--)

Lower Snake River-Lower Granite Dam 95% (+9)

Lower Columbia - The Dalles Dam 87% (--)

(change in % since Feb 5, 2019 in parenthesis)
ESP10 Natural Apr-Sep Forecasts
ESP Natural - Western Oregon and Washington

<table>
<thead>
<tr>
<th>Basin</th>
<th>% 30 yr Normal</th>
</tr>
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<tbody>
<tr>
<td>Skagit River near Concrete</td>
<td>84% (-3)</td>
</tr>
<tr>
<td>Green River Howard Hanson Res</td>
<td>86% (+1)</td>
</tr>
<tr>
<td>Cowlitz River Mossyrock Reservoir</td>
<td>90% (+1)</td>
</tr>
<tr>
<td>Cowlitz River Mayfield Reservoir</td>
<td>89% (-)</td>
</tr>
<tr>
<td>North Santiam At Mehama</td>
<td>95% (+13)</td>
</tr>
<tr>
<td>Willamette River At Salem</td>
<td>81% (+7)</td>
</tr>
<tr>
<td>Rogue River Applegate Reservoir</td>
<td>113% (+28)</td>
</tr>
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Feb. 5, 2019
MAR 6, 2019
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IRI/CPC Pacific Niño
3.4 SST Model Outlook

ENSO Alert System Status: El Niño Advisory

El Niño conditions are present.

Weak El Niño conditions are expected to continue through the Northern Hemisphere spring 2019 (~55% chance).

Figure and text from CPC:
Water Year 2019 Summary

- Impressive February for much of the Upper and Mid Snake River Basins, as well as Southern Oregon.
  - Seasonal precipitation now normal to above normal for Snake River basins.
  - Upper Columbia and Northern WA Cascades remain below to near normal for seasonal precipitation.
- February was cold basin wide. This pattern continued for the first week of March.
- Water supply forecasts:
  - 79-107 % in Columbia River Basins above Grand Coulee
  - 66-140 % in Snake River Basins—big improvements since Feb 1
  - 81-94 % in on the west side of the Cascades
  - Increases in Apr-Sep ESP10 Volume forecasts in the Snake Basins were countered by slight decreases in Upper Columbia.
    - Result is little change in Apr-Sep ESP10 Volume at the Dalles
  - Weak El Nino conditions are present and likely to persist through Spring and early Summer.
### 2019 Schedule for Live Water Supply Briefings

<table>
<thead>
<tr>
<th>April</th>
<th>May</th>
<th>June</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>

All presentations held at 10:00 am PST/PDT unless noted otherwise.

**Telephone Conference Call Number**  
(same for each month's brief):  
(415) 655-0060  
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Questions?

In order to ask questions using your phone, you will need to enter the AUDIO PIN followed by the # sign using your phone keypad. The AUDIO PIN was provided when you logged into the webinar. If you need to enter the PIN after you are connected, try #PIN#

You will be muted until the presenter unmutes you. If you have a question, use the ‘Raise Hand’ function to let us know to unmute your phone.