

## Northwest River Forecast Center





## January 2021 Water Supply Briefing

Telephone Conference: (415) 930-5321 Audio Access Code: 524-795-021#







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



**Briefing Outline** 

## Recap of WY2020

Observed conditions in WY2021, model states

Future conditions, model forcings, forecasts

Additional guidance, CPC Climate Outlook

Recent addition to NWRFC products



# Take Home Messages

WY2020 was notably dry along the eastern slopes of the WA Cascades, in SW and Central Oregon and in the Big and Little Wood basins of ID.

YTD precip in WY2021 has been above normal in northern portions of the Columbia basin and below normal in southern areas.

Snowpack had a good early start but accumulation has since tapered.

Water supply forecasts currently predict below normal Apr-Sep runoff across the southern portion of our domain, with predicted volumes increasing with latitude.

The Climate Prediction Center continues forecasting La Nina conditions, potentially leading to a wet and cool winter.



# Recap of WY2020





# Recap of WY2020: Snowpack





# Recap of WY2020: Snowpack





# Recap of WY2020: Apr-Sep Runoff

<ul> <li>No Normal, No data</li> <li>&lt; 25</li> <li>25-50</li> <li>50-75</li> <li>75-90</li> <li>90-110</li> <li>110-125</li> <li>150-150</li> </ul>		112	% Normal Runoff Apr-Sep
120-150 150-175 > 175		مي <u>107</u>	
	7 10 96	9 0 106	4 119
88		98 96 0 0 0	
	Juch	- min	88 ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

UPPER COLUMBIA BASIN	% of Normal
MICA	112
DUNCAN	107
QUEENS BAY	103
LIBBY	106
HUNGRY HORSE	119
GRAND COULEE	109

#### **SNAKE RIVER BASIN**

AMERICAN FALLS	88
LUCKY PEAK	68
DWORSHAK	96
LOWER GRANITE	98

### LOWER COLUMBIA BASIN

THE DALLES	104	4

### WEST SIDE BASINS

SKAGIT NR CONCRETE	113
DUNGENESS NR SEQUIM	87
COWLITZ MAYFIELD RES	96
WILLAMETTE AT SALEM	88
ROGUE AT RAYGOLD	77



# Water Supply Forecast Briefing

## **Observed Conditions:**

- 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

Model Forcings Model Inputs



# ESP Water Supply Forecast Method

Ensemble Streamflow Prediction combines current conditions with historical temperature and precipitation pairs





# Water Supply Forecast Briefing

## Observed Conditions:

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## Future Conditions:

• 10 days of quantitative forecast precipitation (QPF)

**Model States** 

- 10 days of quantitative forecast temperature (QTF)
- Historical climate forcings appended thereafter
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Model Forcings Model Inputs

# Monthly Temperature Departure





# **Monthly Precipitation**





# Water Year to Date Precipitation





# Snowpack



### Snow data from NRCS, BC Hydro, and Alberta EP.



# Snowpack





# **Snowpack and Seasonal Precipitation**



Data as of Jan 6, 2021. Snow data from NRCS, BC Hydro, and Alberta EP.



# **Snowpack and Seasonal Precipitation**



Data as of Jan 6, 2021. Snow data from NRCS, BC Hydro, and Alberta EP.

![](_page_17_Picture_0.jpeg)

# **Snowpack and Seasonal Precipitation**

![](_page_17_Figure_2.jpeg)

Data as of Jan 6, 2021. Snow data from NRCS, BC Hydro, and Alberta EP.

![](_page_18_Picture_0.jpeg)

# YTD Adjusted Runoff

![](_page_18_Figure_2.jpeg)

% of Normal Runoff Oct 1– Jan 5				
UPPER COLUMBI	<u>A BASIN</u>			
MICA	129			
DUNCAN	124			
QUEENS BAY	91			
LIBBY	87			
HUNGRY HORSE	121			
GRAND COULEE	109			

### **SNAKE RIVER BASIN**

AMERICAN FALLS	81
LUCKY PEAK	89
DWORSHAK	97
LOWER GRANITE	85

### LOWER COLUMBIA BASIN THE DALLES 93

![](_page_19_Picture_0.jpeg)

# YTD Adjusted Runoff

![](_page_19_Figure_2.jpeg)

% of Normal Runoff Oct 1– Jan 5		
<u>WEST SIDE</u>		
SKAGIT NR CONCRETE	124	
DUNGENESS NR SEQUIM	86	
COWLITZ MAYFIELD RES	106	
WILLAMETTE AT SALEM	89	
ROGUE AT RAYGOLD	61	

![](_page_20_Picture_0.jpeg)

## **Observed Conditions:**

- Temperature
- Precipitation
- Snowpack
- Runoff

![](_page_20_Picture_7.jpeg)

## Future Conditions:

- 10 days of quantitative forecast precipitation (QPF)
- 10 days of quantitative forecast temperature (QTF)
- Historical climate forcings appended thereafter
- Water Supply Forecasts

Model Forcings

![](_page_20_Picture_14.jpeg)

![](_page_21_Picture_0.jpeg)

# Precipitation Forecast (Jan 6 -16)

Northwest River Forecast Center 10 Day QPF, Ending 12Z, 01/16/21

![](_page_21_Figure_4.jpeg)

![](_page_21_Picture_5.jpeg)

Northwest River Forecast Center 10 Day QPF (Deviation from Climatology), Ending 12Z, 01/16/21

![](_page_21_Figure_7.jpeg)

![](_page_22_Picture_0.jpeg)

# ESP10 Apr-Sep Water Supply Forecasts

![](_page_22_Figure_2.jpeg)

% of Normal Apr-Sep <u>EAST SIDE</u>

<b>UPPER COLUMBIA</b>	BASIN
MICA	105
DUNCAN	101
QUEENS BAY	96
LIBBY	96
HUNGRY HORSE	94
GRAND COULEE	97

### **SNAKE RIVER BASIN**

AMERICAN FALLS	74
LUCKY PEAK	82
DWORSHAK	92
LOWER GRANITE	86

LOWER COLUMBIA BASIN THE DALLES 94

![](_page_23_Picture_0.jpeg)

# ESP10 Apr-Sep Water Supply Forecasts

![](_page_23_Figure_2.jpeg)

% of Normal Apr-Sep				
WEST SIDE				
SKAGIT NR CONCRETE	102			
DUNGENESS NR SEQUIM	109			
COWLITZ MAYFIELD RES	101			
WILLAMETTE AT SALEM	92			
ROGUE AT RAYGOLD	85			

![](_page_24_Picture_0.jpeg)

OCT-SEP

111762

# ESP10 Apr-Sep Water Supply Forecasts

COLUMBIA - THE DALLES DAM (TDAO3) Forecasts for Water Year 2021								Water Supply Forecasts COLUMBIA - THE DALLES DA Period APR to SEP
ESP with	<mark>Of</mark> 10 Days QF	<mark>ficial W</mark> PF Ensen	/ater Sup	o <mark>ply</mark> 01-06 Issue	<b>d:</b> 2021-01-06			
		Forecasts	s Are in KAF		30 Year		149	9 - NURR
Forecast Period	90 %	50 %	% Average	10 %	Average (1981-2010)			
APR-SEP	74826	88117	95	105899	92704			
APR-JUL	62670	74668	94	91154	79855		400	
APR-AUG	69066	82416	94	100401	87532	]	129	9 - T T
JAN-SEP	91455	109296	96	128255	114216	AF		
JAN-JUL	80231	96440	95	111696	101368	N S		Pril I I I I I I I I I I I I I I I I I I I
OCT-SEP	106626	124466	95	143426	130518	mes	100	I I I I I I I I I I I I I I I I I I I
HEFS with	<b>Expe</b> 15 days EG	rimenta NPF Ensel	al Water mble: 2021-	Supply 01-06 Issu	<b>ed:</b> 2021-01-06	nal Volu	109	
APR-SEP	75827	92114	99	108359	92704	aso		
APR-JUL	65067	77615	97	93973	79855	Se	89	
APR-AUG	71404	86434	99	101839	87532			
JAN-SEP	96591	114269	100	132624	114216			
JAN-JUL	85015	100550	99	118440	101368			

#### Reference

99

129439

147794

130518

ESP with 0 Days QPF Ensemble: 2021-01-06 Issued: 2021-01-06

APR-SEP	74743	92456	100	108373	92704
APR-JUL	64078	78591	98	95523	79855
APR-AUG	70362	87014	99	103242	87532
JAN-SEP	95338	114681	100	134287	114216
JAN-JUL	83882	100687	99	119702	101368
OCT-SEP	110510	129851	99	149458	130518

![](_page_24_Figure_6.jpeg)

Imax Scale ○ Scale To Data ○ Scale To Last 45 Days □ Show Min/Max Ensemble Volume □ Show Tooltips Help

![](_page_25_Figure_0.jpeg)

![](_page_25_Figure_1.jpeg)

![](_page_26_Picture_0.jpeg)

# **CPC One-Month Outlook**

![](_page_26_Figure_2.jpeg)

![](_page_27_Picture_0.jpeg)

# **CPC Model Predictions**

![](_page_27_Figure_2.jpeg)

![](_page_28_Picture_0.jpeg)

# Oceanic Nino Index vs Runoff

![](_page_28_Figure_2.jpeg)

![](_page_29_Picture_0.jpeg)

**Briefing Outline** 

### Recap of WY2020

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![](_page_30_Picture_0.jpeg)

# **Precipitation Forecast Trend Tool**

![](_page_30_Figure_2.jpeg)

![](_page_31_Picture_0.jpeg)

# Take Home Messages

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![](_page_32_Picture_0.jpeg)

WY2021 Schedule for Live Water Supply Briefings						
Feb	Mar	Apr	May			
4	4	1	6			
All presentations held at 10:00 am PST/PDT unless noted otherwise						

Telephone Conference Call Number (same for each month's brief): (415) 930 - 5321

Pass Code : 524-795-021#

![](_page_33_Picture_0.jpeg)

# Links to NWRFC Water Supply Products

Water Supply forecasts: https://www.nwrfc.noaa.gov/ws/index.html

Snow pack: https://www.nwrfc.noaa.gov/snow/index.html

10 day forecast: https://www.nwrfc.noaa.gov/weather/10\_day.cgi

Precip forecast trend tool: <u>https://www.nwrfc.noaa.gov/weather/trend/</u>

CPC 1 month outlook: https://www.cpc.ncep.noaa.gov/products/predictions/30day/

![](_page_34_Picture_0.jpeg)

![](_page_34_Picture_1.jpeg)

Climate

Weather Forecasts

NWRFC

# 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.

> NWRFC.watersupply@noaa.gov (503) 326-7291

![](_page_34_Picture_8.jpeg)

![](_page_35_Picture_0.jpeg)

## Addition of 2020 Burn Scar Boundaries

Burn area overlays added, can be combined with other layers

- Weather grids
- NWRFC river basin boundaries
- River forecasts/observations

![](_page_35_Figure_6.jpeg)

![](_page_36_Picture_0.jpeg)

# NWRFC Flood Threshold Color Changes

Flood threshold category colors updated to be consistent throughout the NWS

### Most notable change:

- Minor Flood now Orange (was Red)
- Moderate Flood now Red (was Blue)

![](_page_36_Figure_6.jpeg)

www.nwrfc.noaa.gov

![](_page_36_Figure_8.jpeg)