

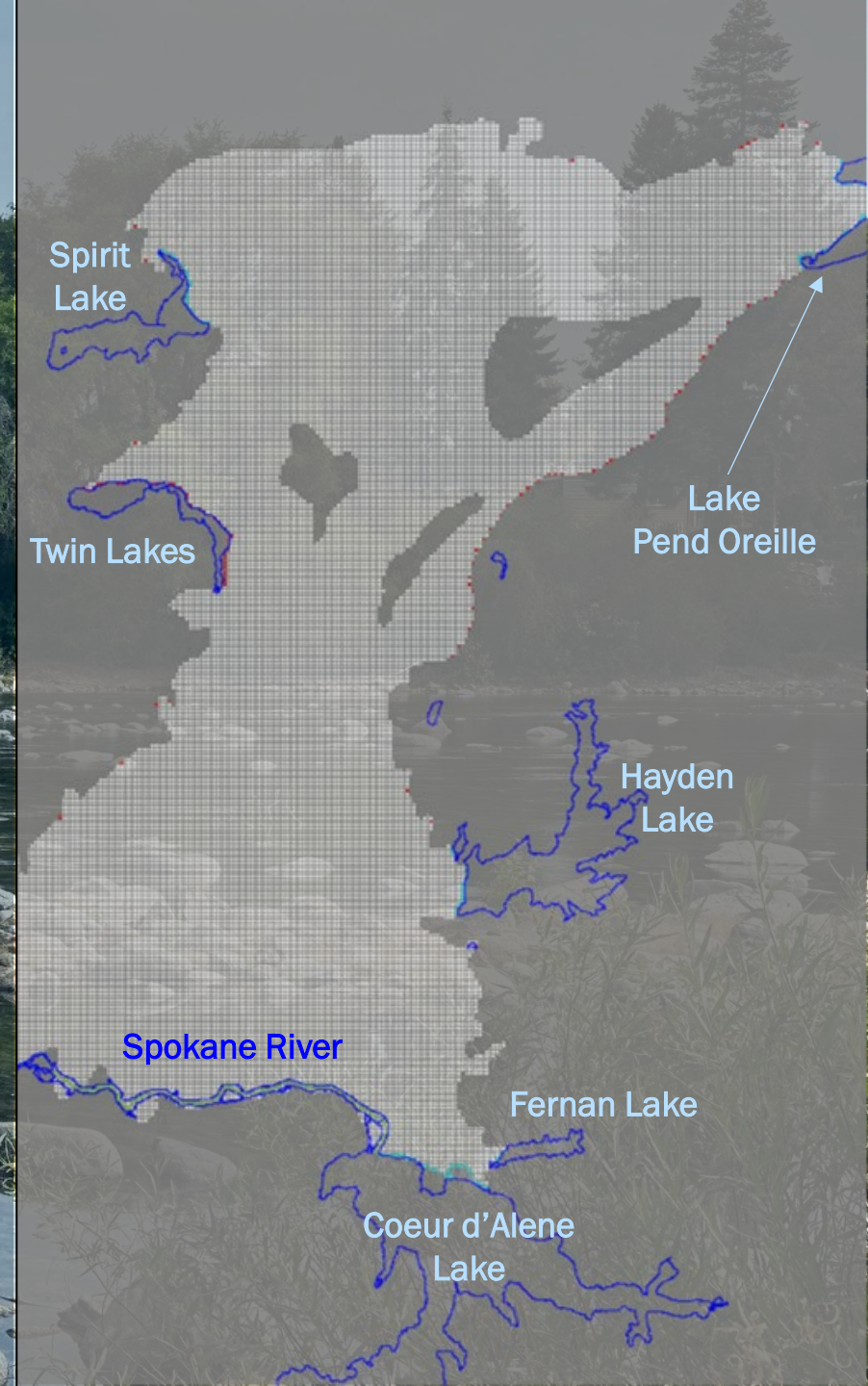
Aquifer Modeling Update

Prepared by
John J. Porcello, LHG (Washington), RG (Oregon)
GSI Water Solutions, Inc.

Prepared for the
Spokane River Forum H2O Breakfast

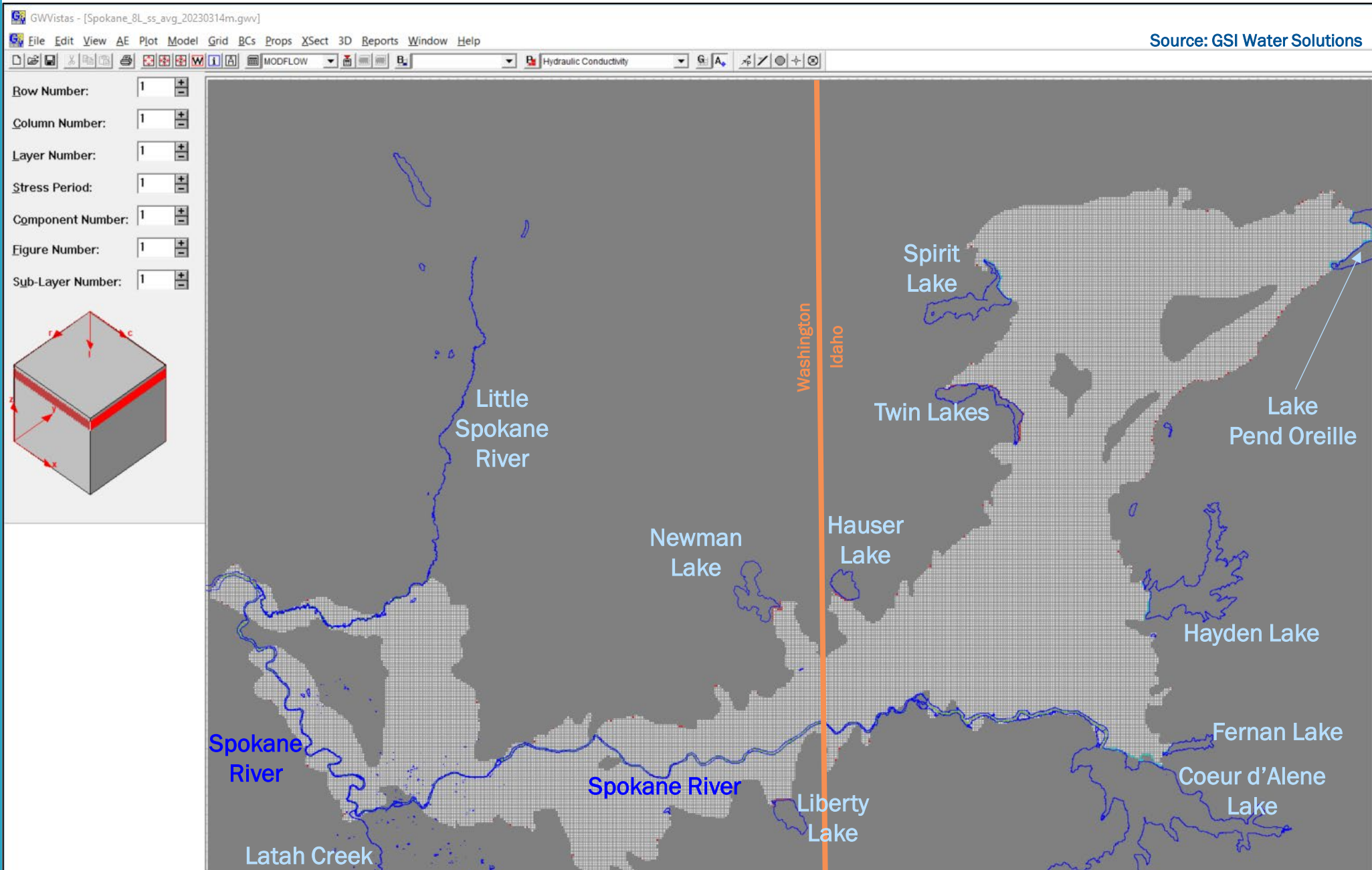
March 31, 2026

Photo by John Porcello
Sept. 11, 2025



The Local Water Purveyors' Groundwater Flow Model As Of 2025

Parent Grid



Source: GSI Water Solutions



Water Purveyor-Led Modeling History



Mid-1990s



Late 1990s



2012



2013-2016



2023-2024



2024-2025



2024-2026

Develop and Apply Model in Washington

Apply Model in Washington After Forming SAJB

Build on City Model

Expand Model into Idaho

Build on City, SAJB, and USGS Models

Apply Model to Study Aquifer Exchanges with Spokane River

Build on 2012 City Model

Upgrade Model and Evaluate Climate Change Influences on City Wells

Build on All Prior Models

Update WHP Areas and Evaluate Climate Change Influences on SAJB Wells

Build on Newest City Model

Upgrade Model in Idaho to Provide New Up-to-Date Planning Tool

Build on Newest City/SAJB Model

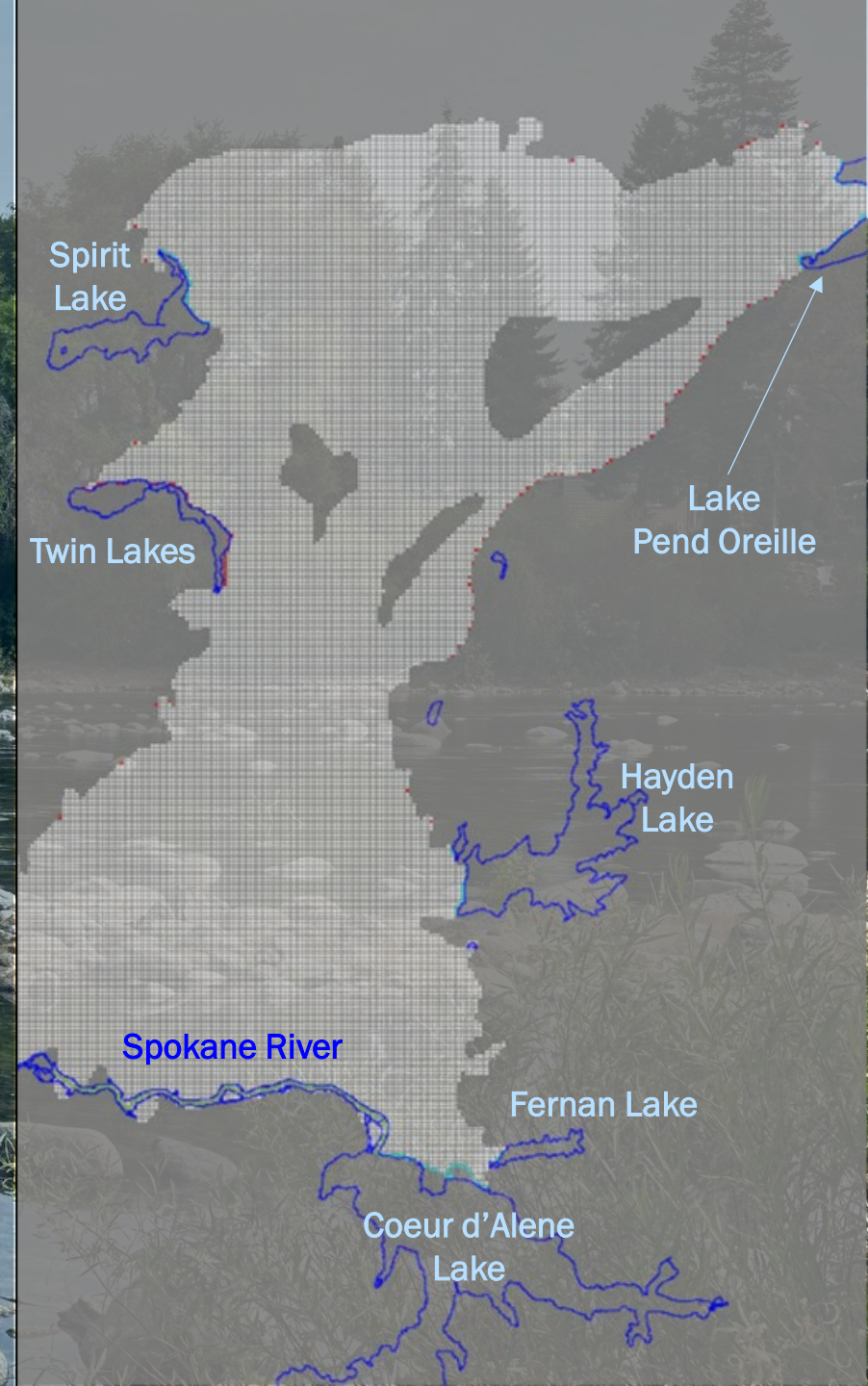
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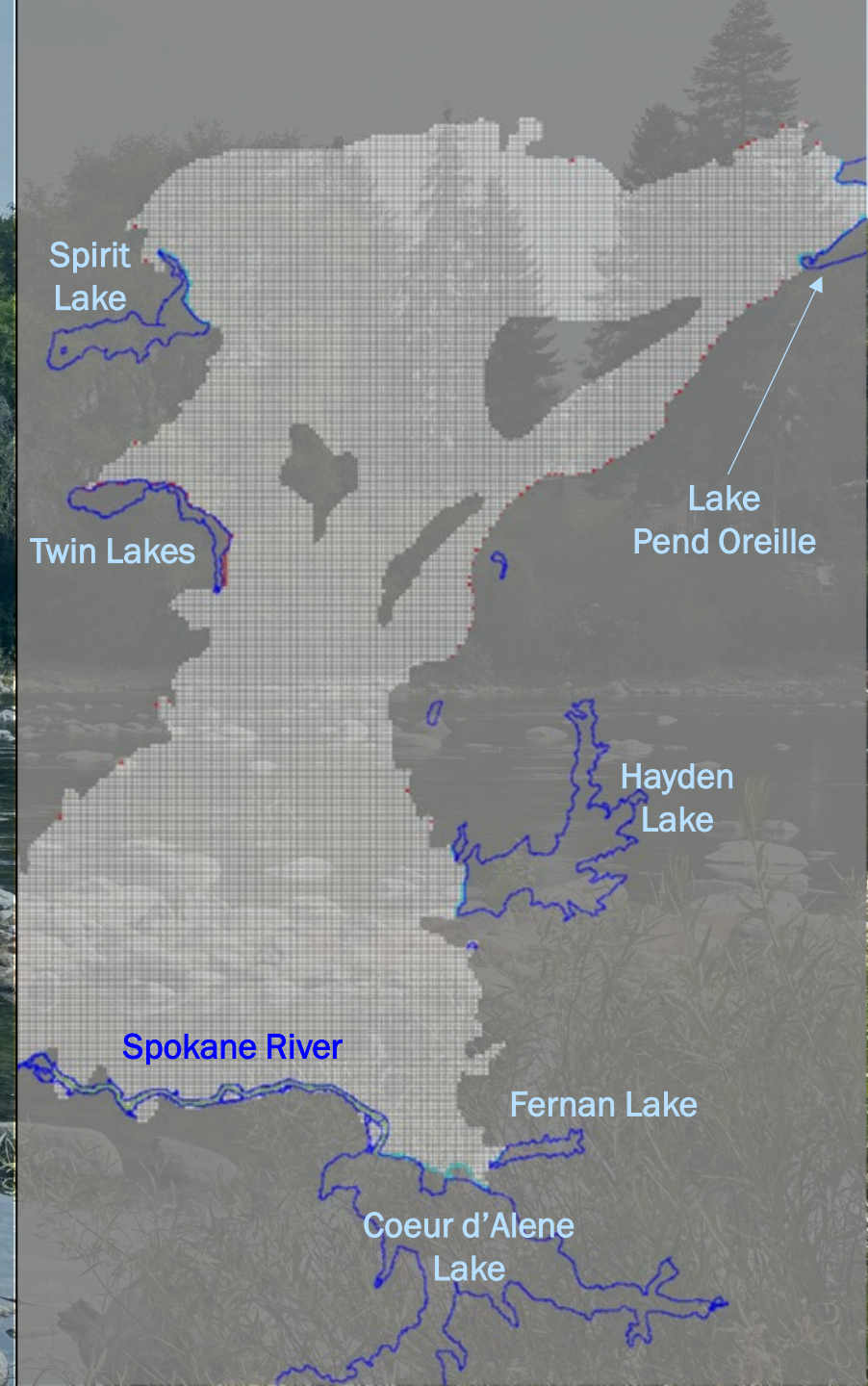
The Aquifer and the River: Partners in Water!

Prepared by
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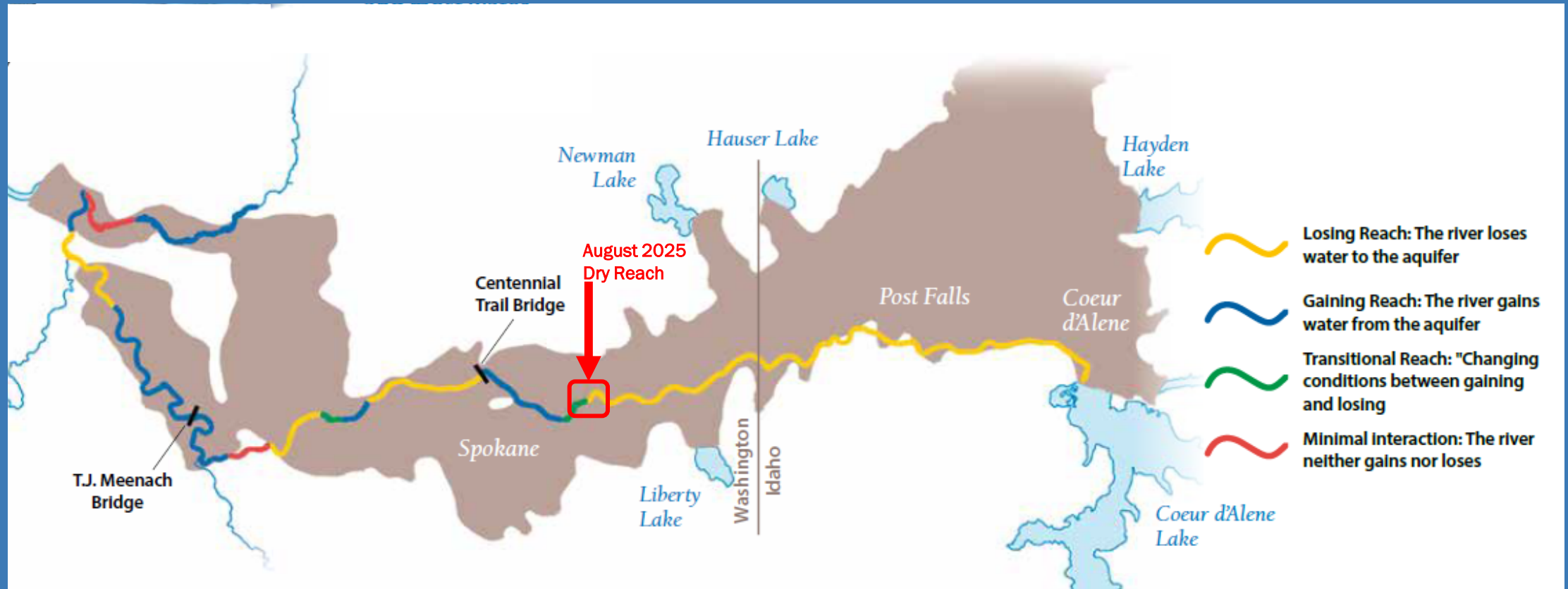
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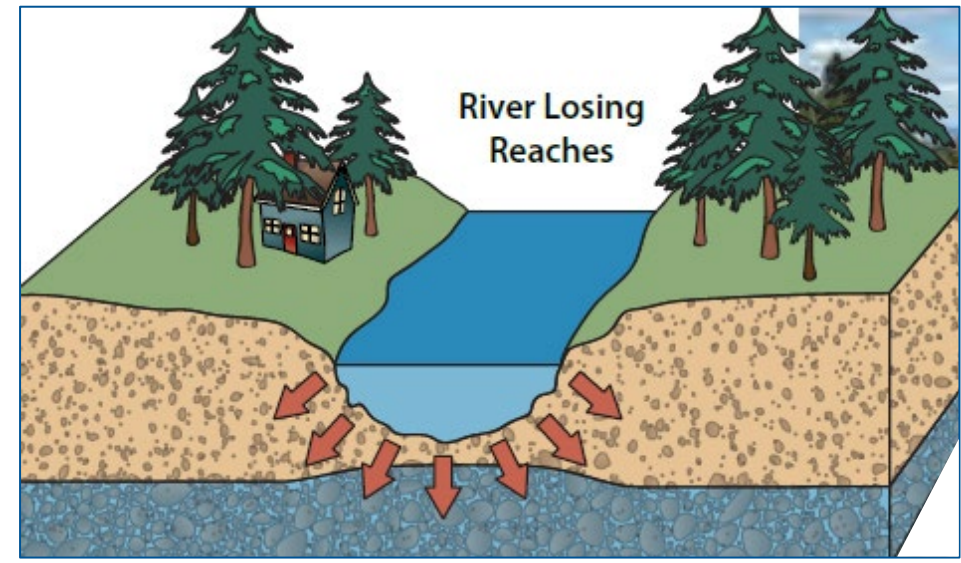
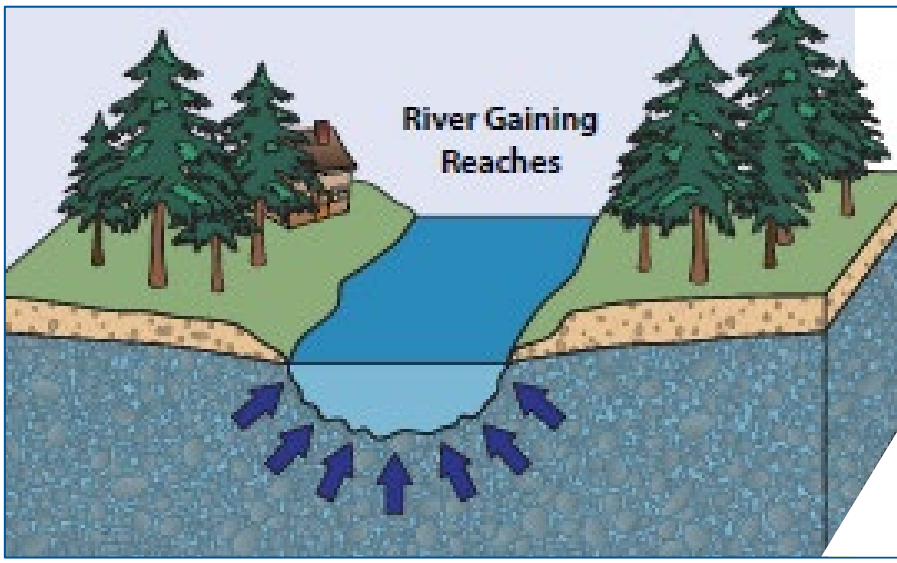
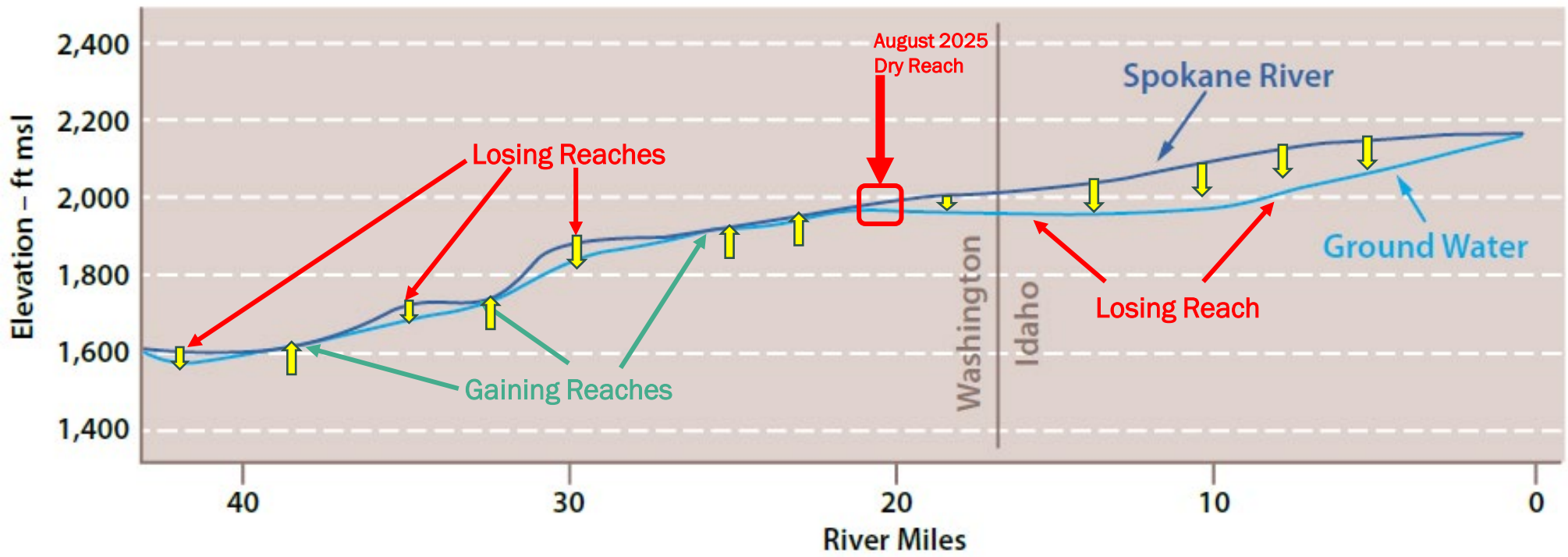


Losing and Gaining Reaches of the River (Aquifer Atlas, 2023)



Elevation Profile of the Riverbed and the Water Table

(Aquifer Atlas, 2023)



Source: Spokane Valley-Rathdrum Prairie Aquifer Atlas, Fifth Edition (2023)

What We Saw in August 2025 (Flora Road)



“I’m Standing
Near Flora
Road”

Not Your Typical Riverbed!!



“Water is Normally Up To My Waist”

“Resembles a Desert”

“Rocks and Dirt”

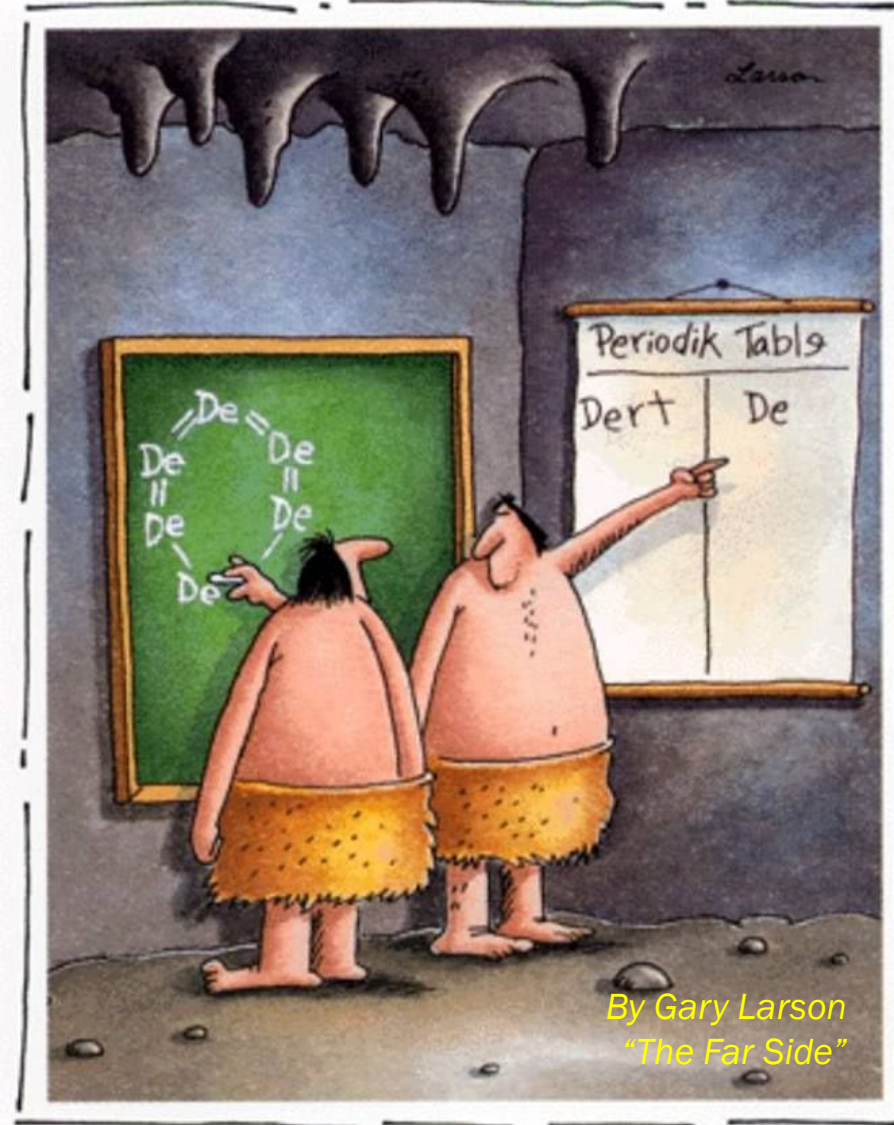
Not Your Typical Riverbed!!

<https://www.kxly.com/news/sections-of-spokane-river-are-running-dry>



NEIGHBORS SHOCKED AS SPOKANE RIVER BELOW DISAPPEARS

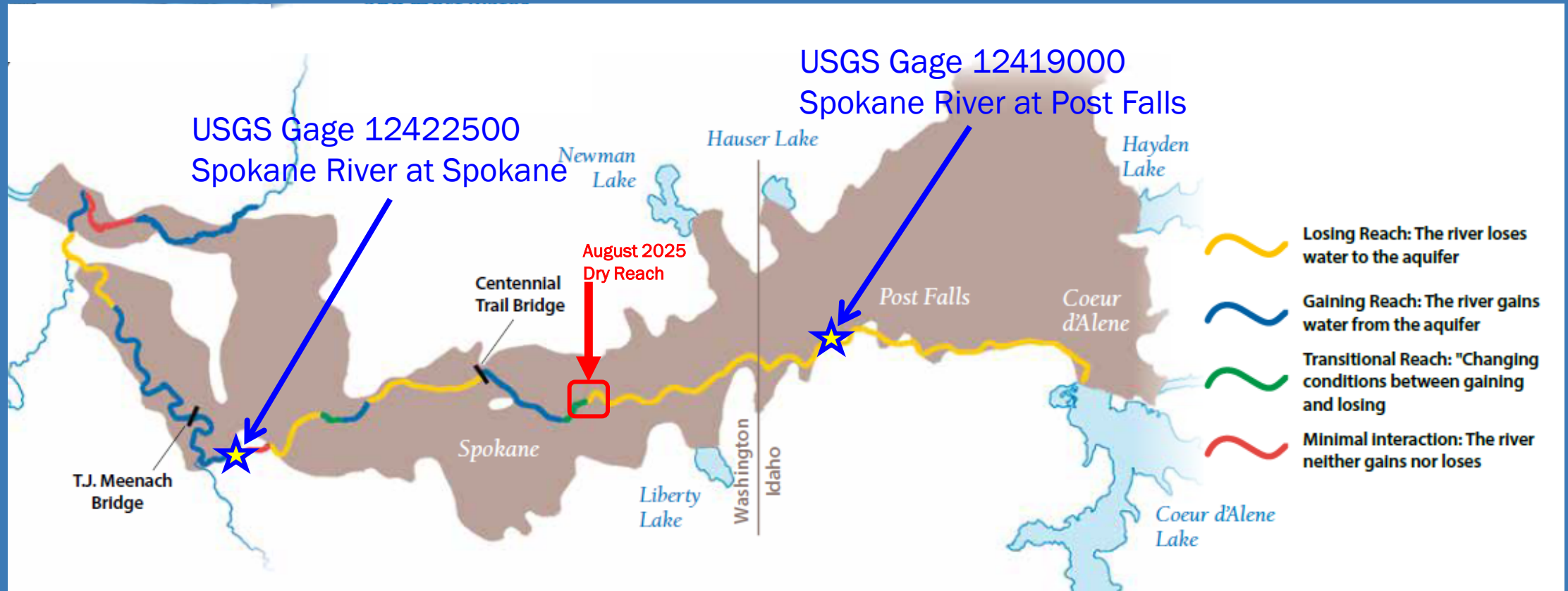
SPOKANE VALLEY



By Gary Larson
"The Far Side"

*Early chemists describe
the first dirt molecule.*

2025 Flows at Stream Gaging Stations

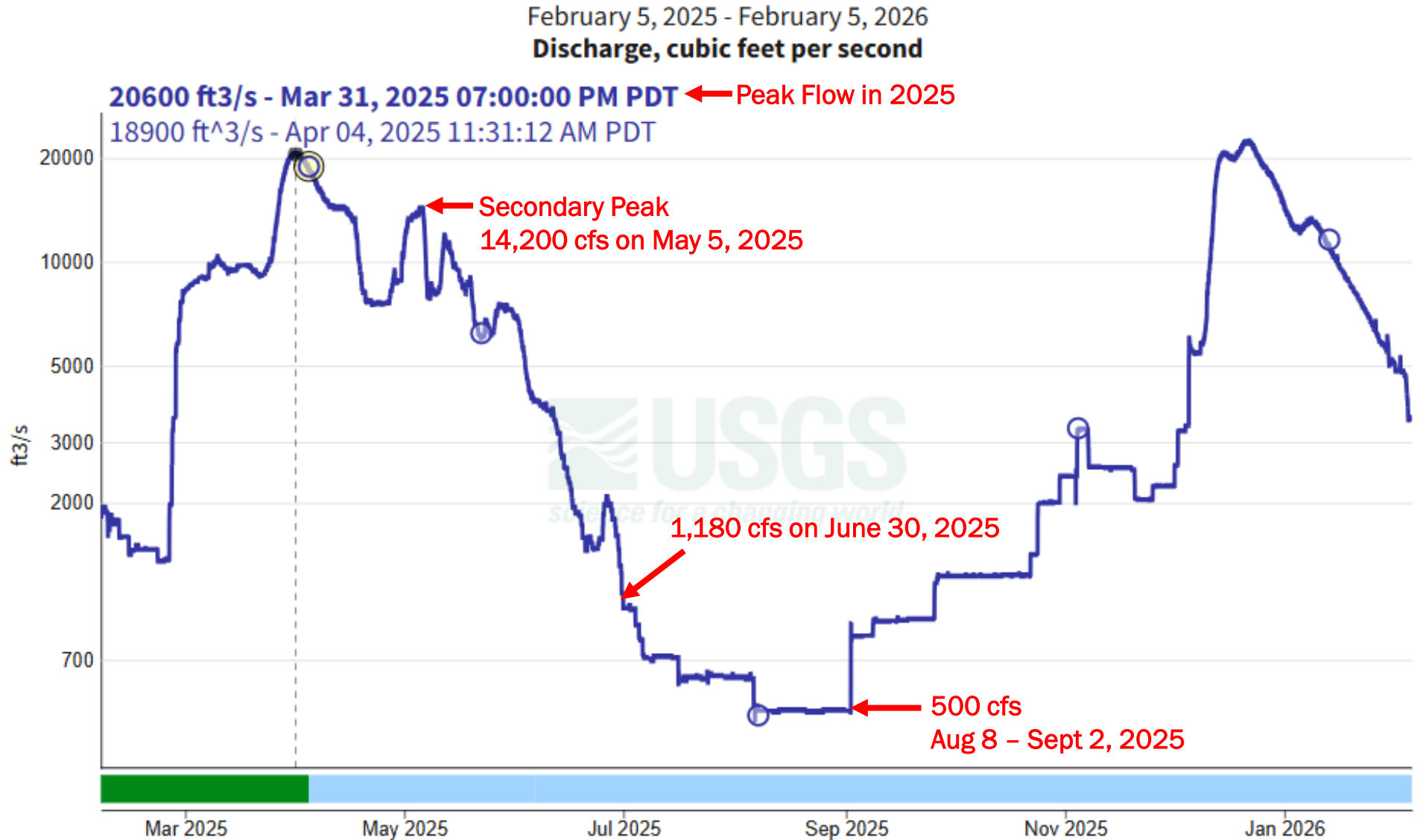


Streamflow at Post Falls (Since Early Feb 2025)

Continuous data

Spokane River near Post Falls, ID - USGS-12419000

[Subscribe to WaterAlert](#)



Streamflow at Spokane Falls

(Since Early Feb 2025)

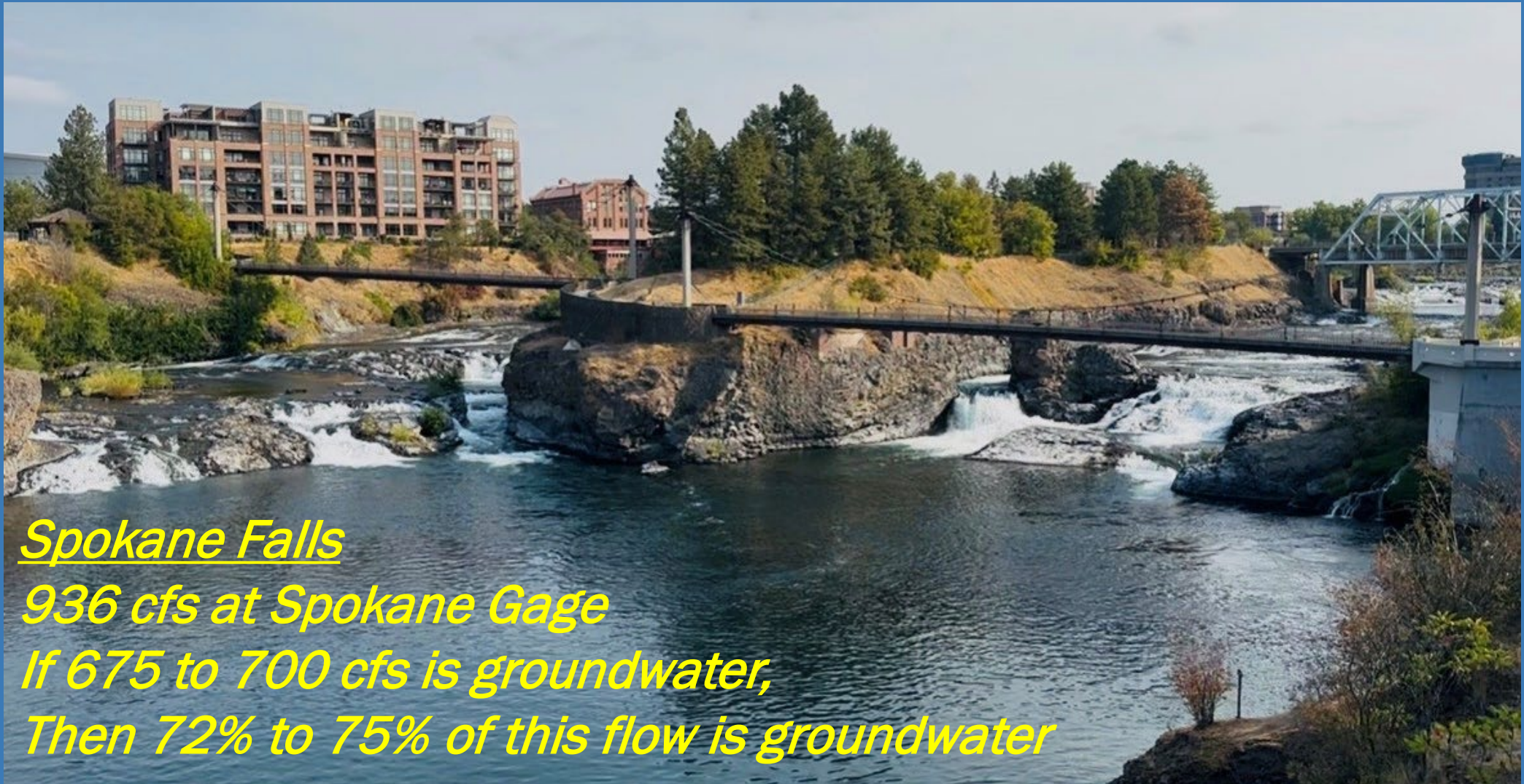
Continuous data

Spokane River at Spokane, WA - USGS-12422500

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Spokane Falls (Sept. 12, 2025 at 10 AM)



Spokane Falls

936 cfs at Spokane Gage

If 675 to 700 cfs is groundwater,

Then 72% to 75% of this flow is groundwater

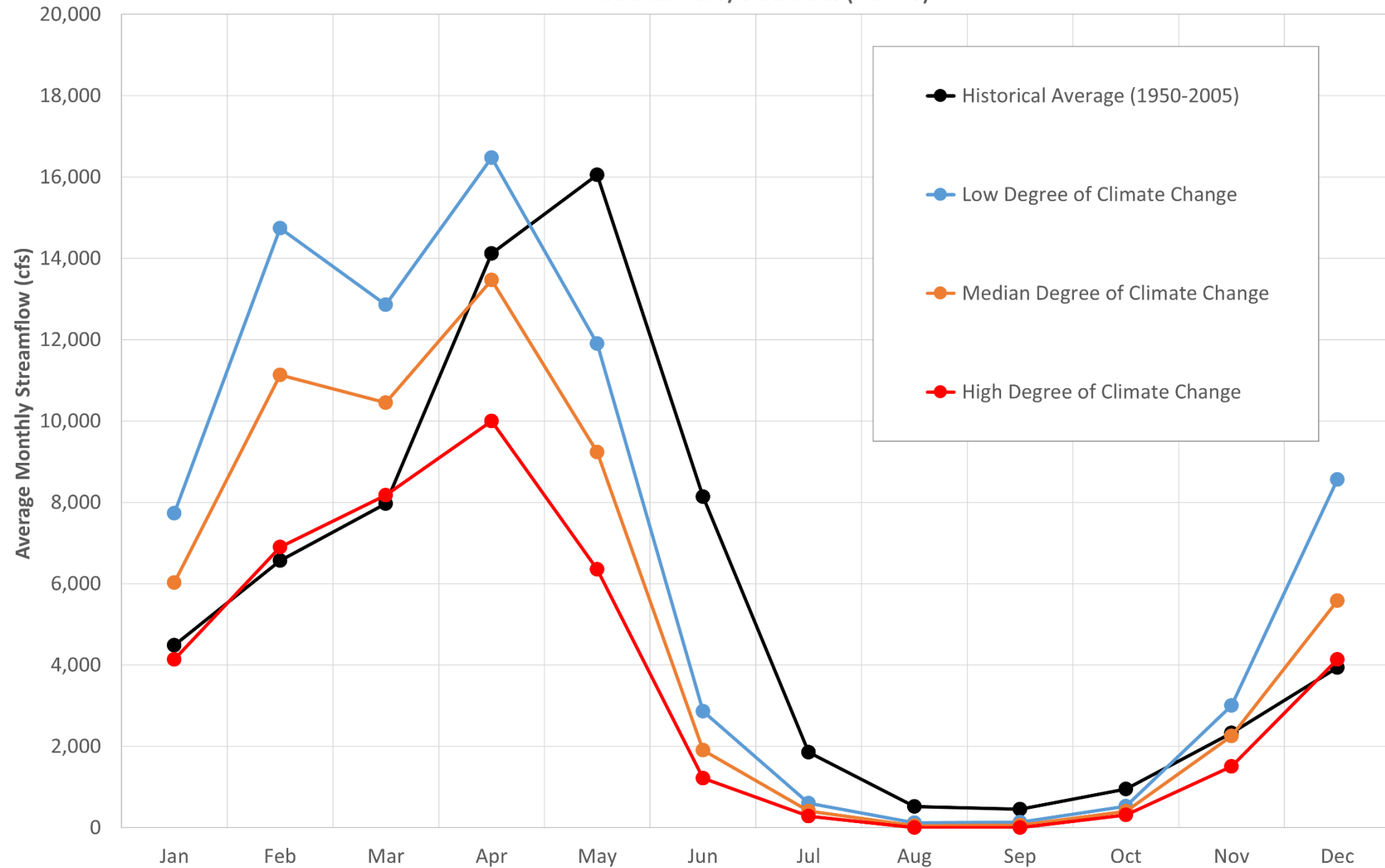
So What Might the Future Hold?



Monthly Simulated Streamflows at Barker Road/Greenacres

Optimistic Scenario for the 2070s thru 2090s

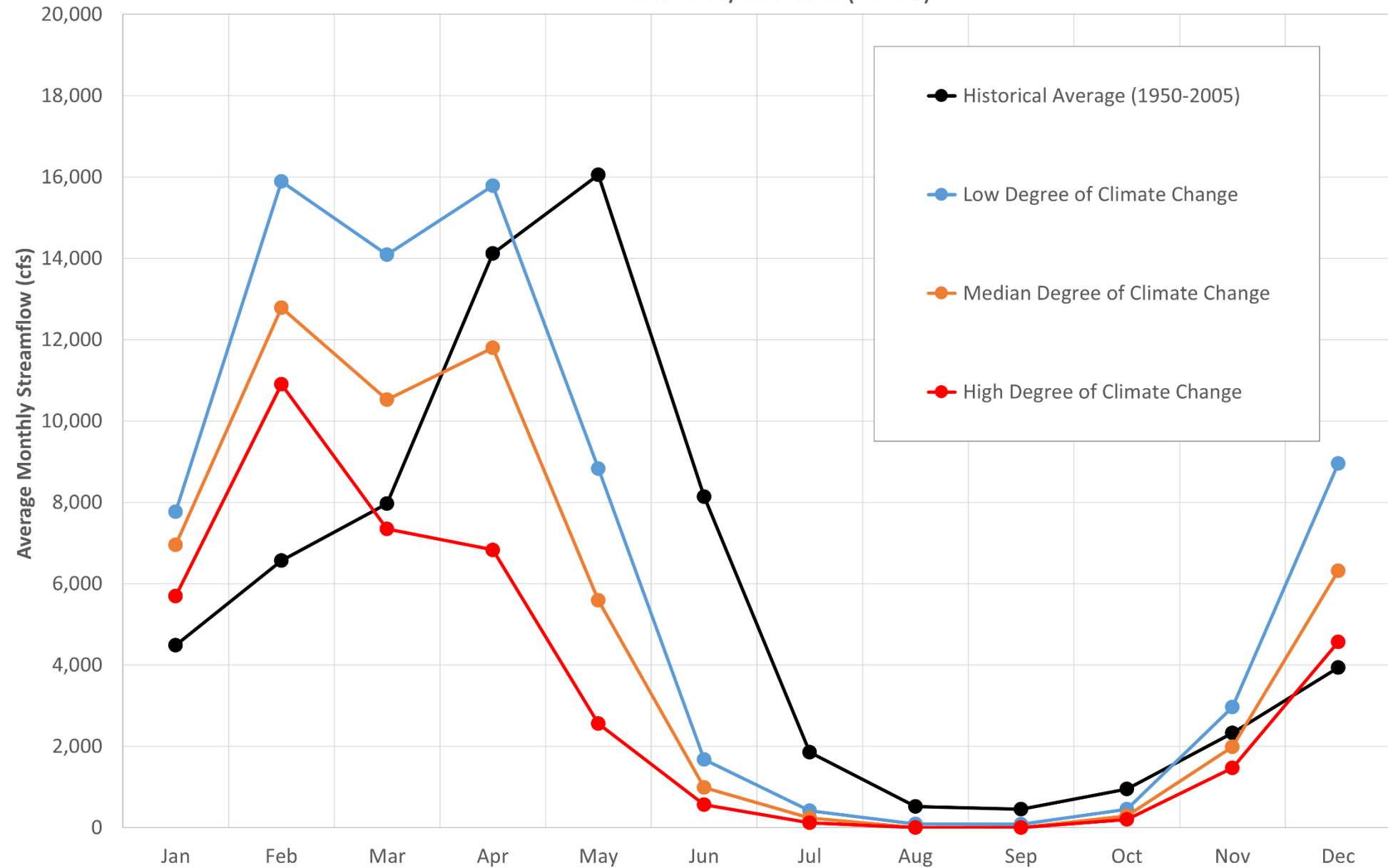
Projected Monthly Flow Rates in 2070-2099 for the Spokane River
At Barker Road/Greenacres (RCP 4.5)



Monthly Simulated Streamflows at Barker Road/Greenacres

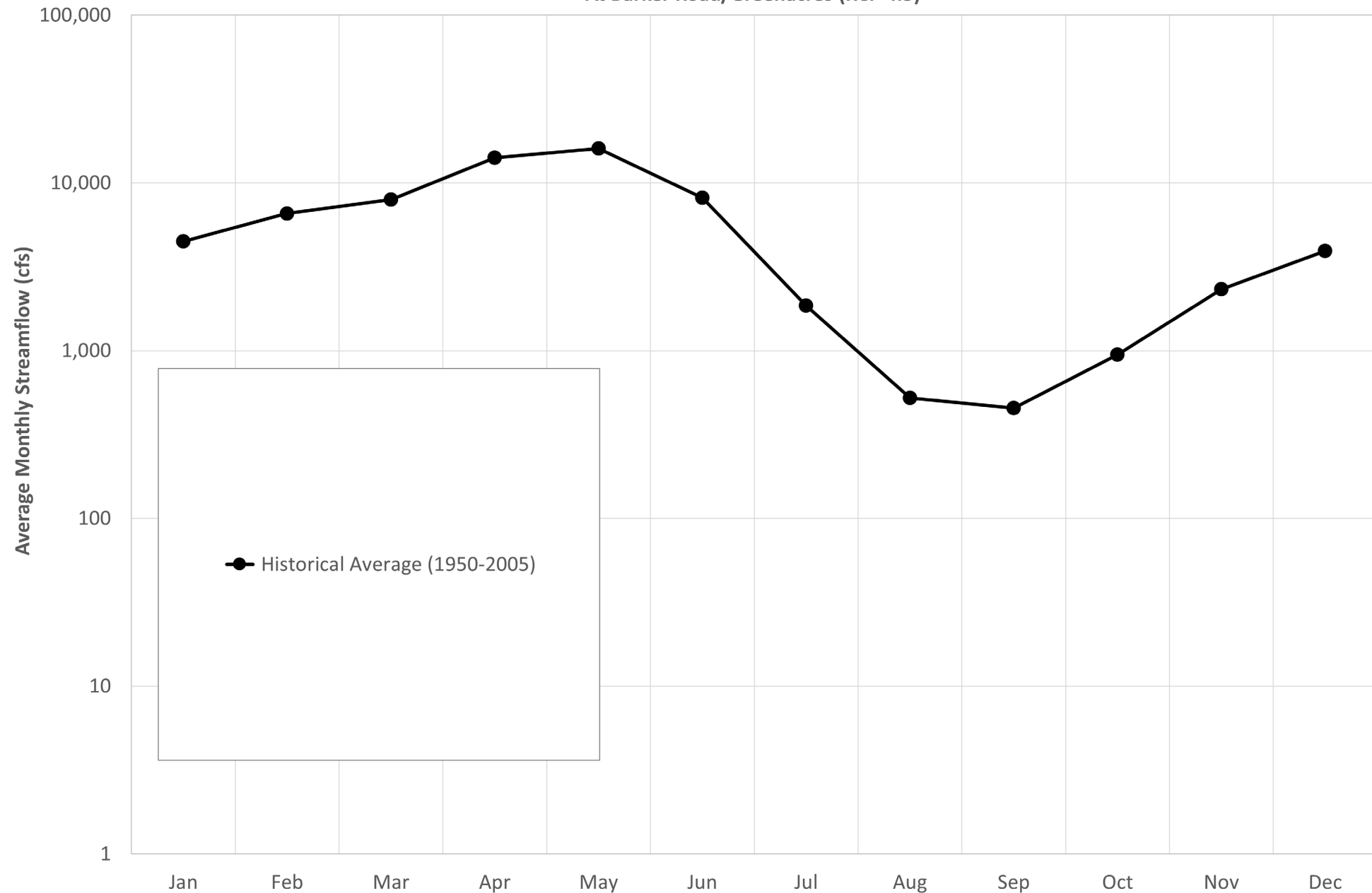
Pessimistic Scenario for the 2070s thru 2090s

Projected Monthly Flow Rates in 2070-2099 for the Spokane River
At Barker Road/Greenacres (RCP 8.5)



Monthly Simulated Streamflows at Barker Road/Greenacres
Optimistic Scenario for the 2070s thru 2090s

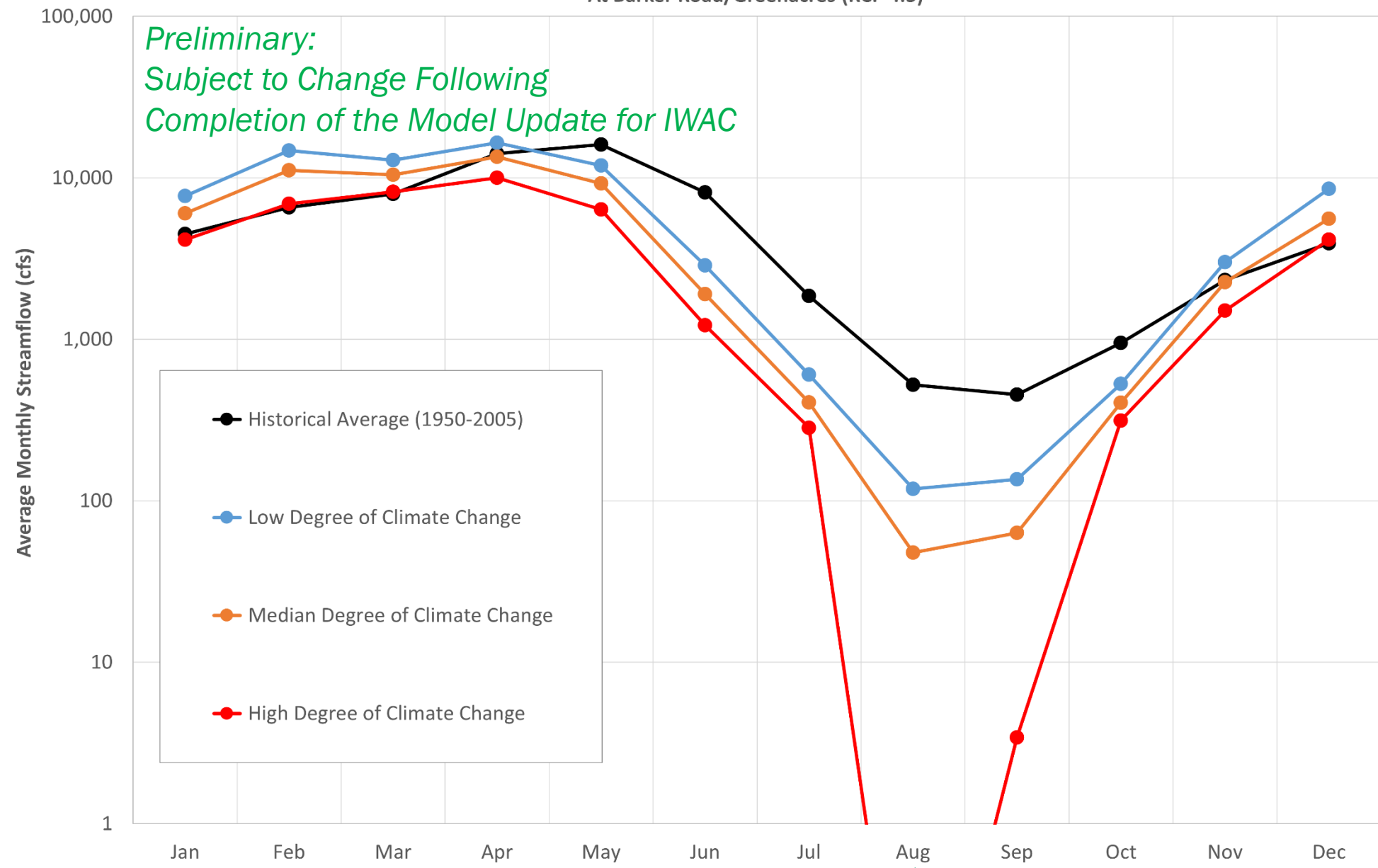
Projected Monthly Flow Rates in 2070-2099 for the Spokane River
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Monthly Simulated Streamflows at Barker Road/Greenacres

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Projected Monthly Flow Rates in 2070-2099 for the Spokane River At Barker Road/Greenacres (RCP 4.5)



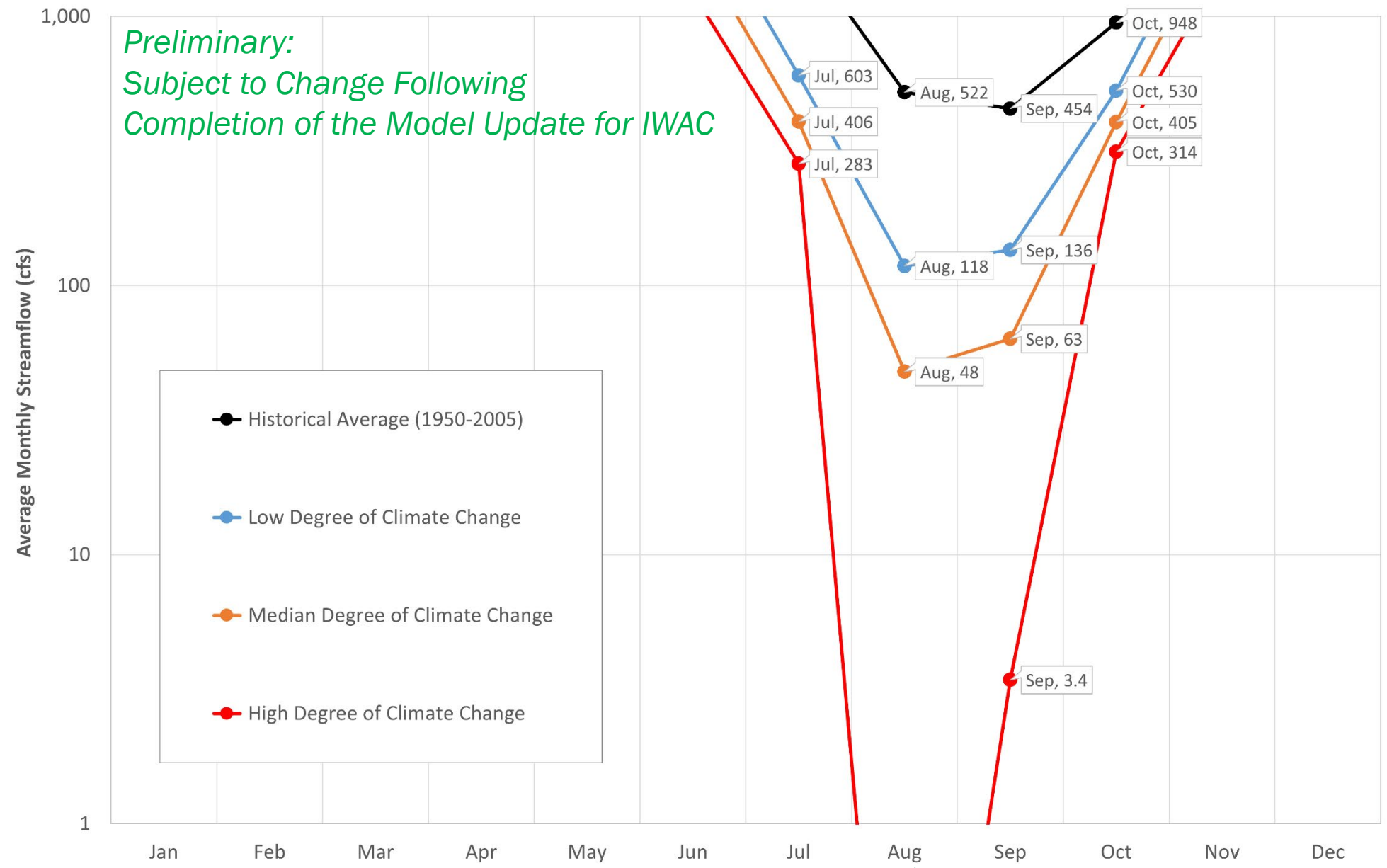
Red Line Has Zero Flow in August



Monthly Simulated Streamflows at Barker Road/Greenacres

Optimistic Scenario for the 2070s thru 2090s

Projected Monthly Flow Rates in 2070-2099 for the Spokane River At Barker Road/Greenacres (RCP 4.5)

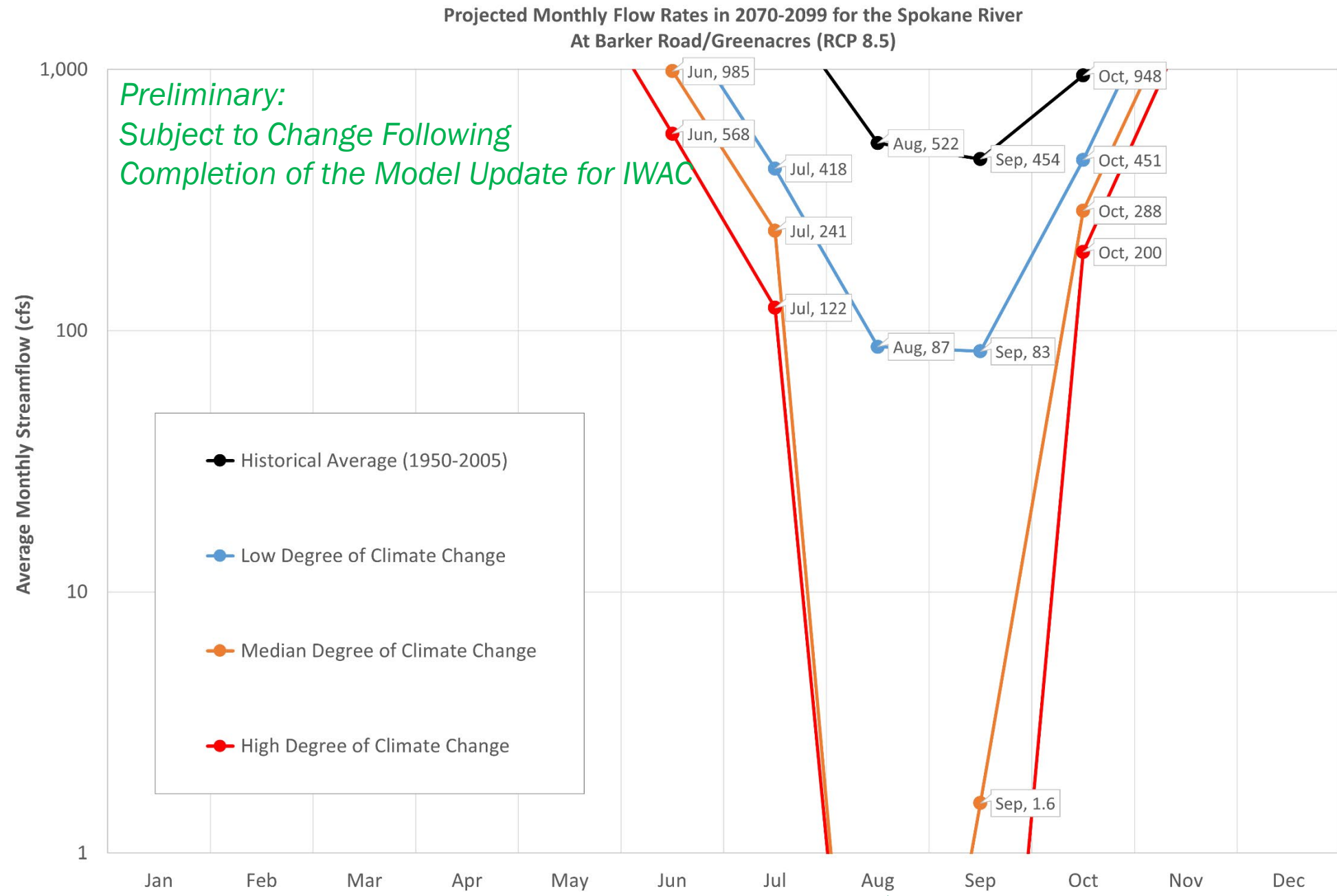


Red Line Has Zero Flow in August



Monthly Simulated Streamflows at Barker Road/Greenacres

Pessimistic Scenario for the 2070s thru 2090s



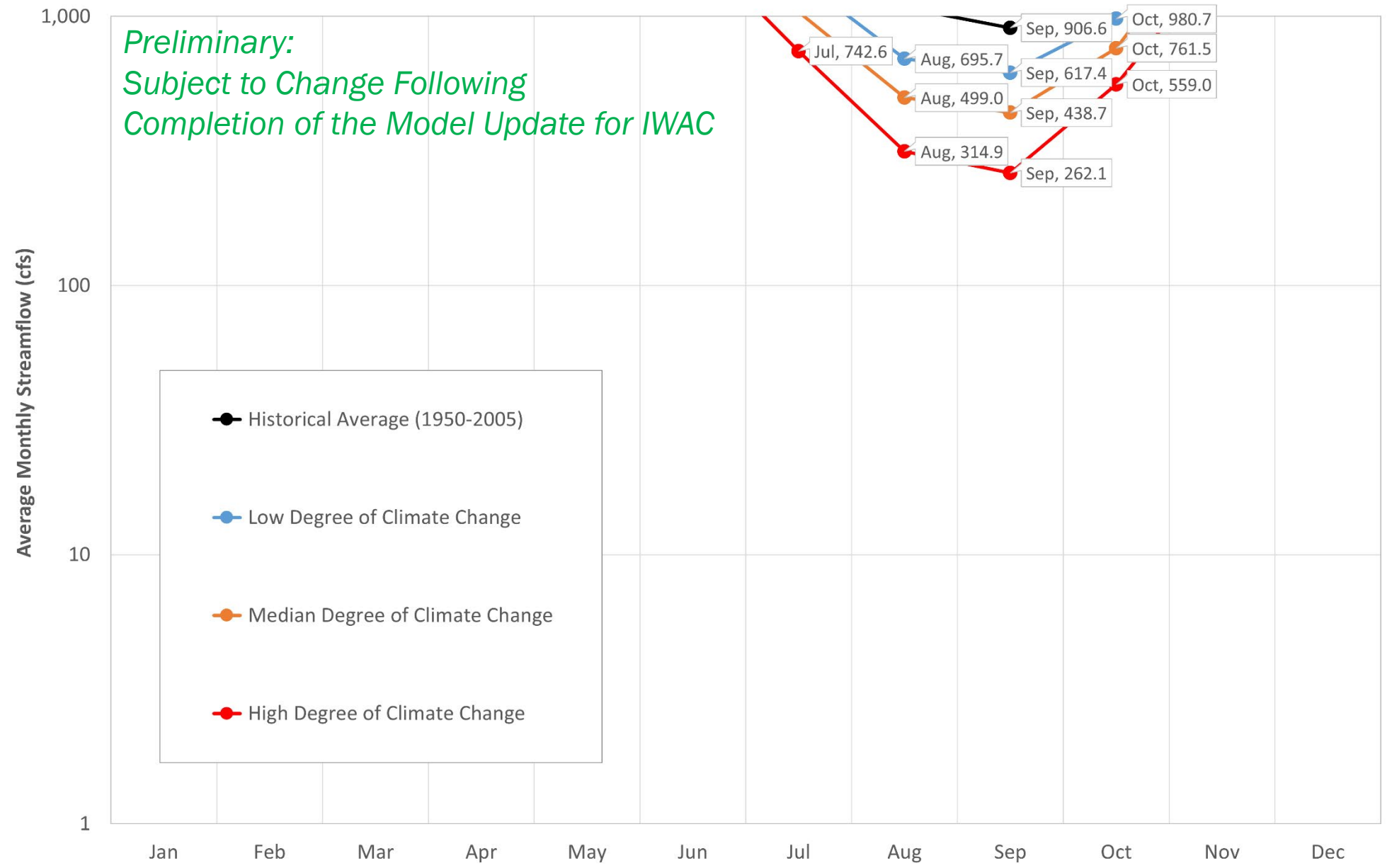
Orange and Red Lines Have Zero Flow in August



Monthly Simulated Streamflows at Downtown Spokane

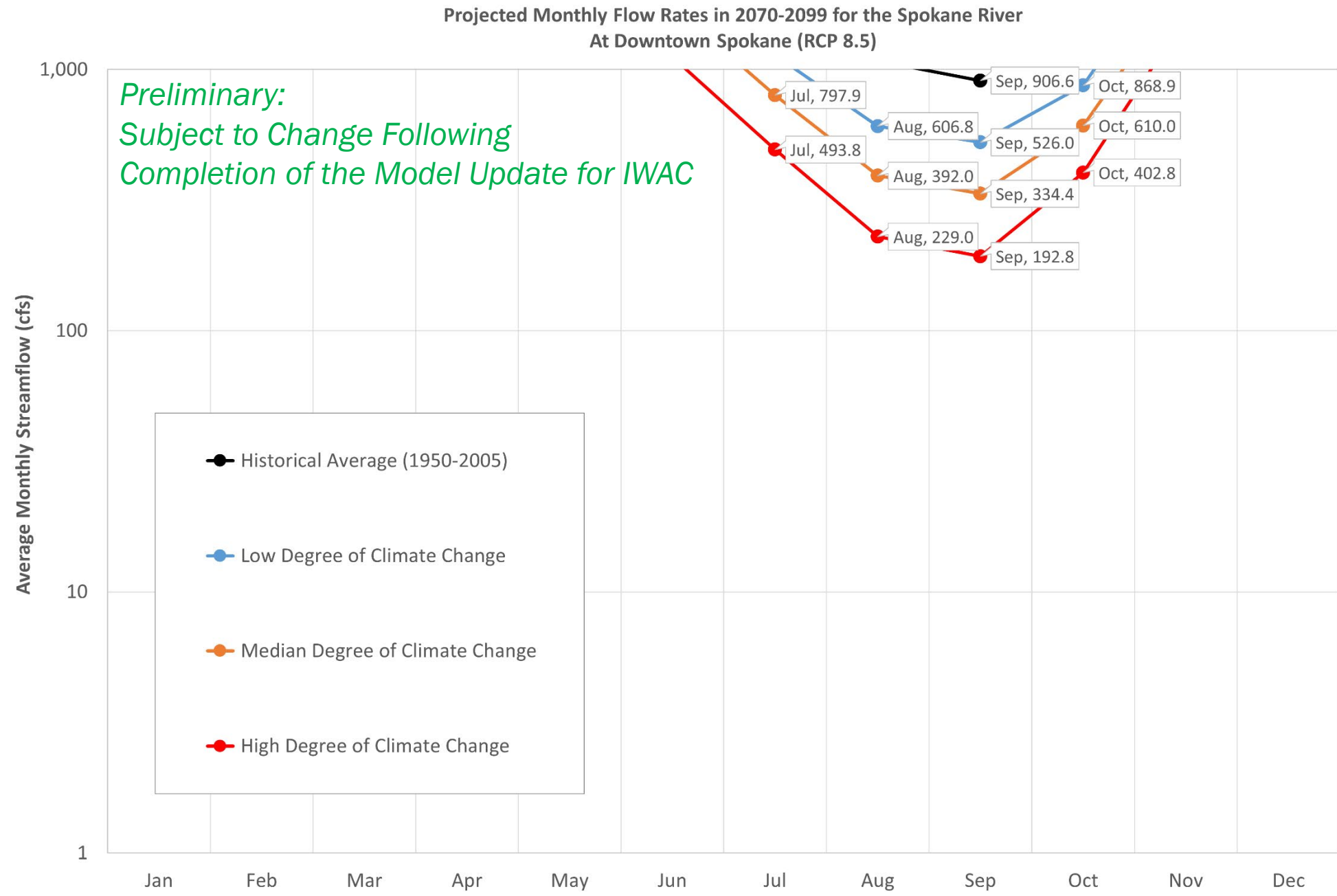
Optimistic Scenario for the 2070s thru 2090s

Projected Monthly Flow Rates in 2070-2099 for the Spokane River At Downtown Spokane (RCP 4.5)

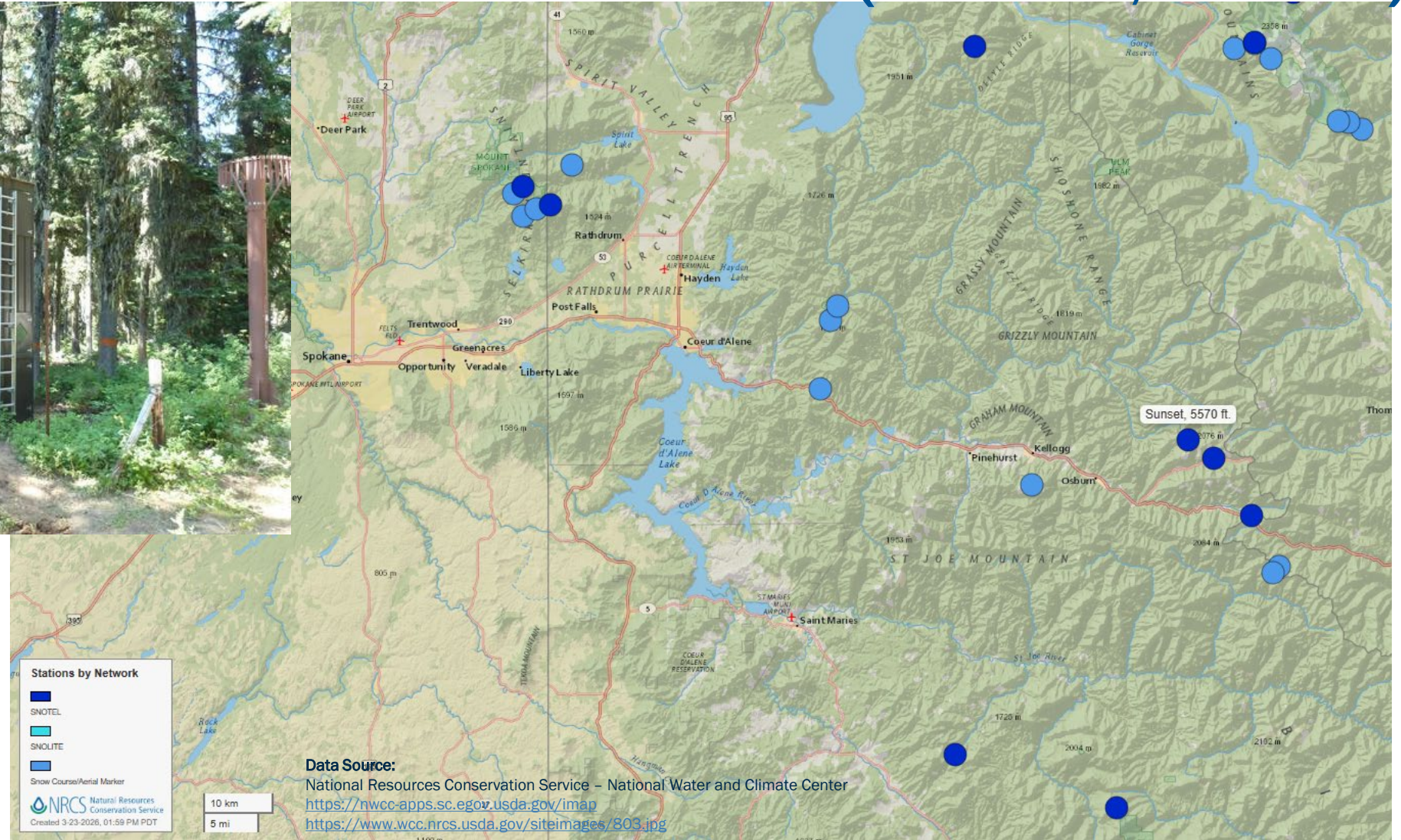


Monthly Simulated Streamflows at Downtown Spokane

Pessimistic Scenario for the 2070s thru 2090s



SWE at Sunset SNOTEL Station (Elev. 5,570 ft)



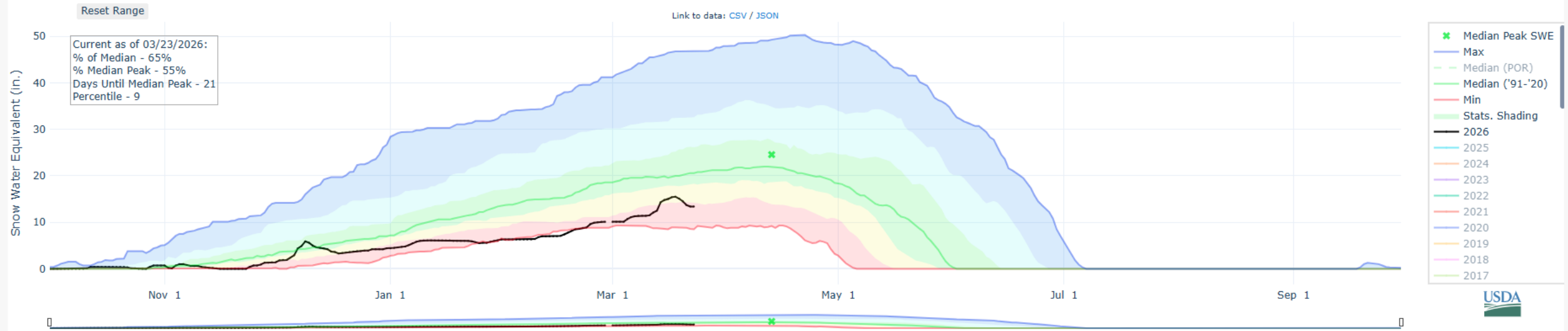
SWE at Sunset SNOTEL Station (Elev. 5,570 ft)

AWS Plot | SUNSET, ID (803) SNOW WATER EQUIVALENT

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Statistical shading percentiles are calculated from period of record (POR) data, excluding the current water year. Percentile categories range from: minimum to 10th percentile, 10th - 30th, 30th - 70th, 70th - 90th, and 90th - maximum.

For more information visit: [30-Year Hydroclimatic Normals](#)

Updated: Monday, Mar 23, 2026 11 AM CST

Data Source:

National Resources Conservation Service - National Water and Climate Center
<https://nwcc-apps.sc.egov.usda.gov/awdb/site-plots/POR/WTEQ/ID/Sunset.html?showYears=2026>

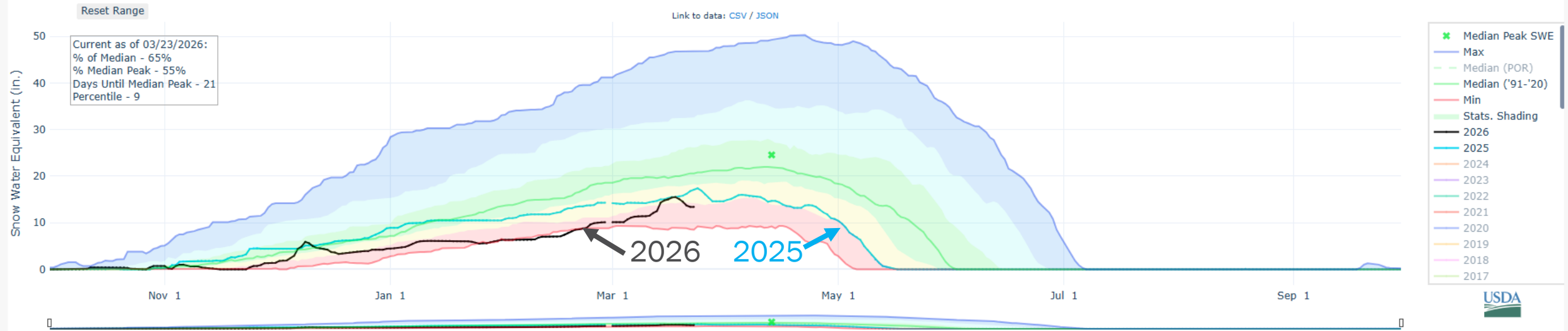
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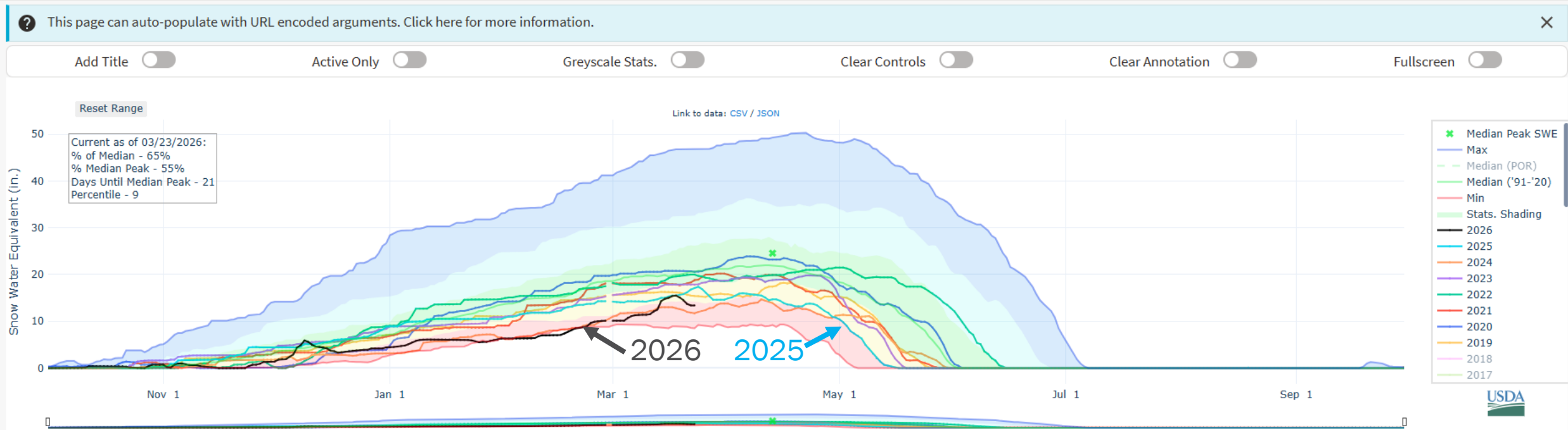
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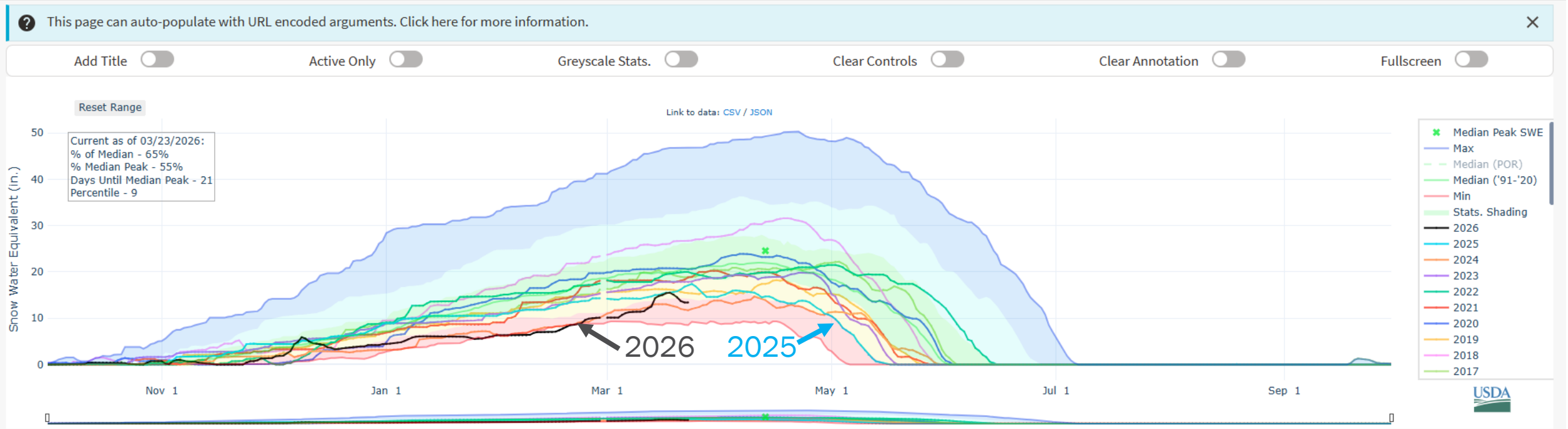
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Questions?

John J. Porcello

Licensed Hydrogeologist (LHG), WA
Registered Geologist (RG), OR
Principal Groundwater Hydrologist and
Water Resources Consultant
GSI Water Solutions, Inc.
971.200.8523
jporcello@gsiws.com

Photo by John Porcello
Sept. 11, 2025