



Managing and Developing Water Supplies in Central and Eastern Washington

G. Thomas Tebb, LHG, LEG

Director, Office of Columbia River

1st Annual Water Law Conference in Eastern Washington

May 15 and 16th, 2024

Spokane, Washington

Drought Declared Statewide in Washington, April 16, 2024

Washington Drought Declaration



Low snowpack and dry forecasts have prompted the Department of Ecology to issue an emergency drought declaration for most of Washington with exceptions for service areas in Seattle, Tacoma and Everett.

Our changing snowpack in Washington State



News / Northwest

Washington state drinking water, hydropower at risk as Pacific Northwest snowpack shrinks

By Conrad Swanson, The Seattle Times

Published: February 12, 2024, 6:00am

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Aquifer Declines

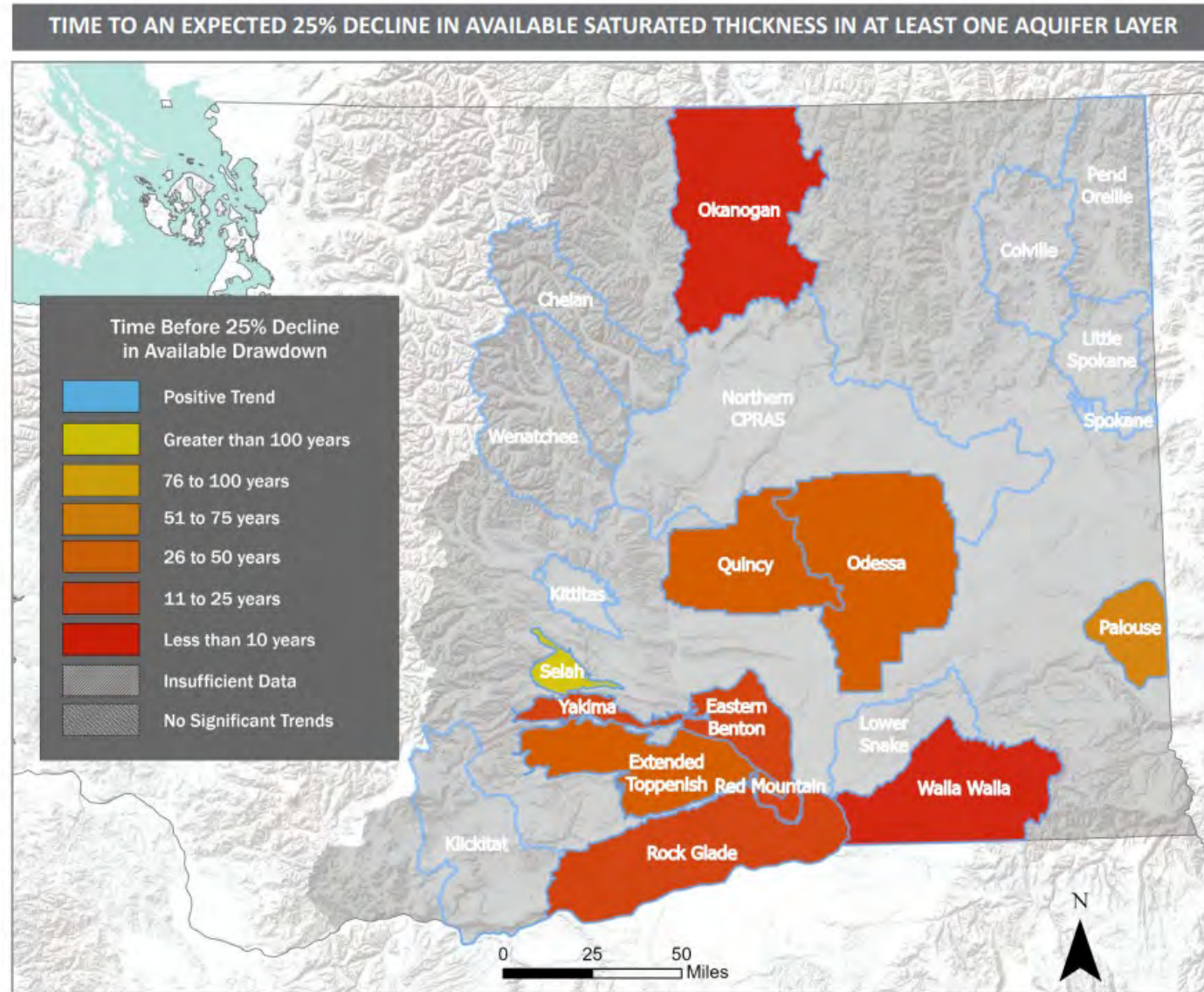



Figure ES-2. Time (in years) until the average available saturated thickness has declined by 25% in at least one aquifer layer in each groundwater subarea. These times are based on declines in available saturated thickness in different aquifer layers, as we show the most vulnerable aquifer layer for each subarea; that is, the time until 25% decline in available saturated thickness may reflect the vulnerability related to declines in the Grande Ronde layer for some subareas, for the Wanapum layer for other subareas, and the Overburden layer for other subareas (for more details see the Forecast Results for Aquifer Layers section).

Water in the west is more valuable than oil




The Colorado River near Cibola, Arizona, where Greenstone bought hundreds of acres. Photograph: Caitlin O'Hara/The Guardian

'Water is more valuable than oil': the corporation cashing in on America's drought

In an unprecedented deal, a private company purchased land in a tiny Arizona town - and sold its water rights to a suburb 200 miles away. Local residents fear the agreement has 'opened Pandora's box'

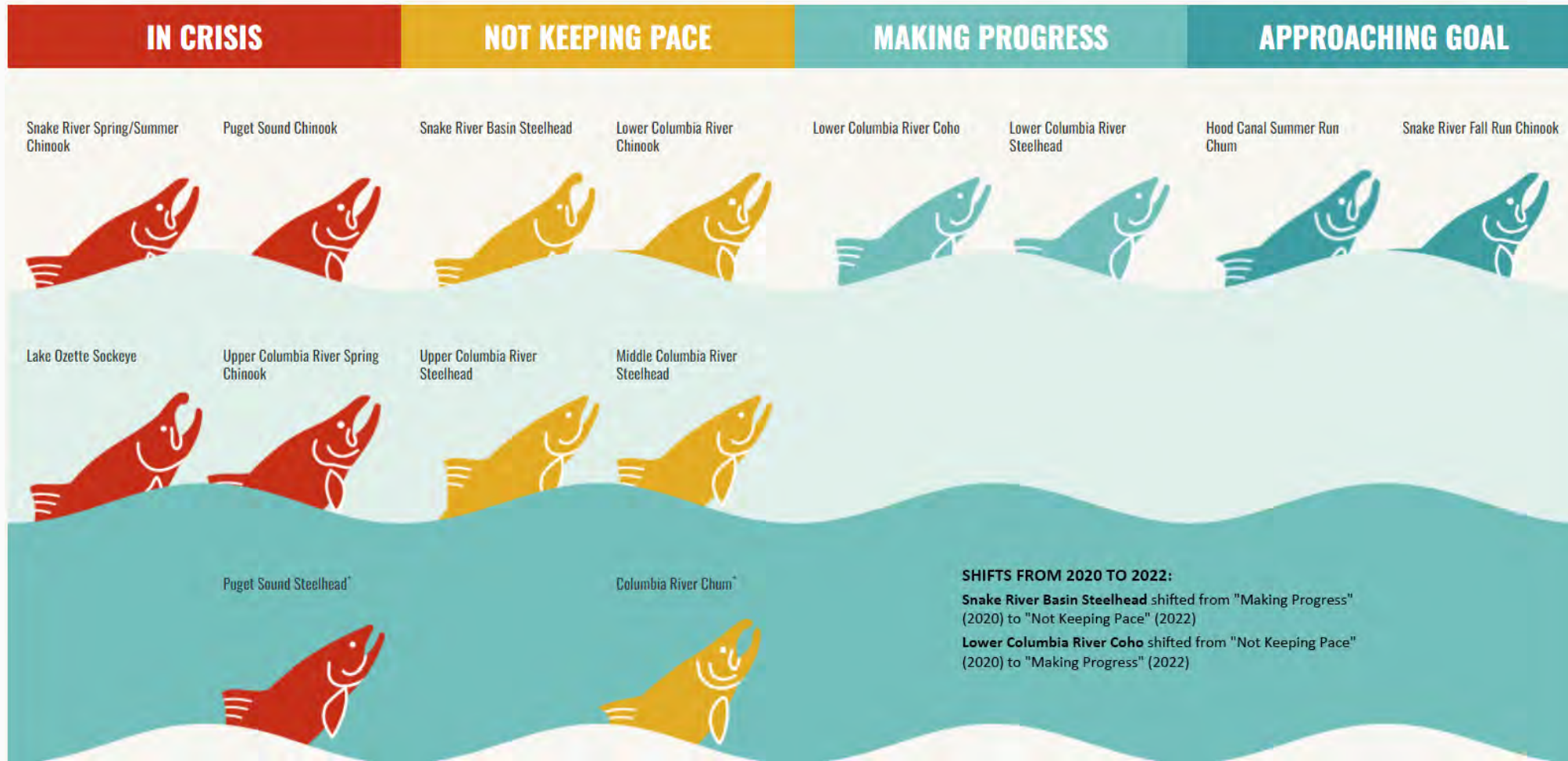
by [Maanvi Singh](#) in Cibola and Queen Creek, Arizona



Photograph credit: USGS Water science Photo Gallery

How about salmon recovery?

Salmon Abundance | 2022



* Lacks complete data
Data and analysis by Washington Dept. of Fish and Wildlife

A New Federal Agreement in December 2023

ENVIRONMENT · WHITE HOUSE

The White House is trying to correct a ‘historic wrong,’ spending \$200 million to restore salmon to ancestral fishing grounds in the Northwest

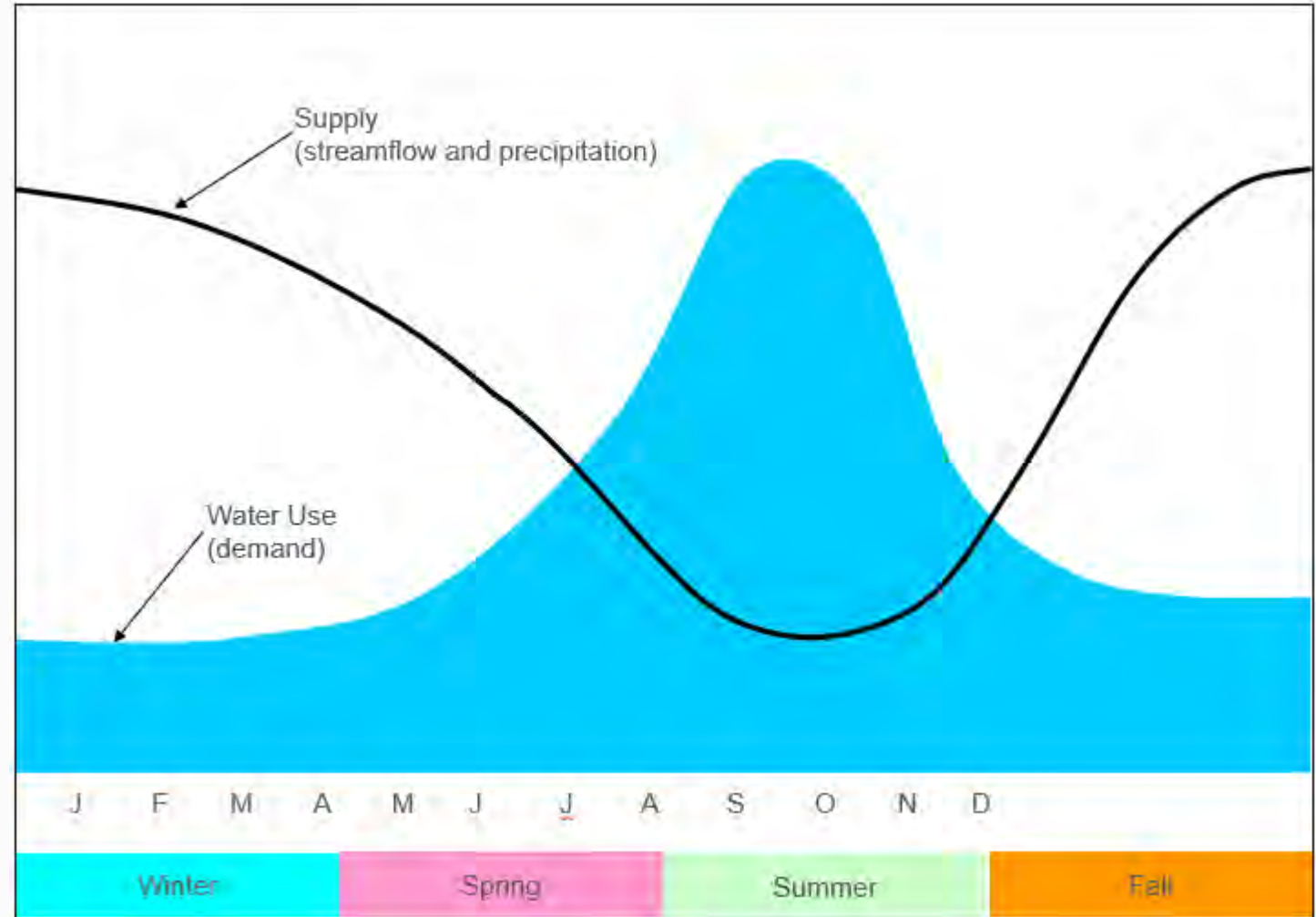
BY **THE ASSOCIATED PRESS**
September 26, 2023 at 6:19 AM PDT



So, what does this mean for water management and water supplies?

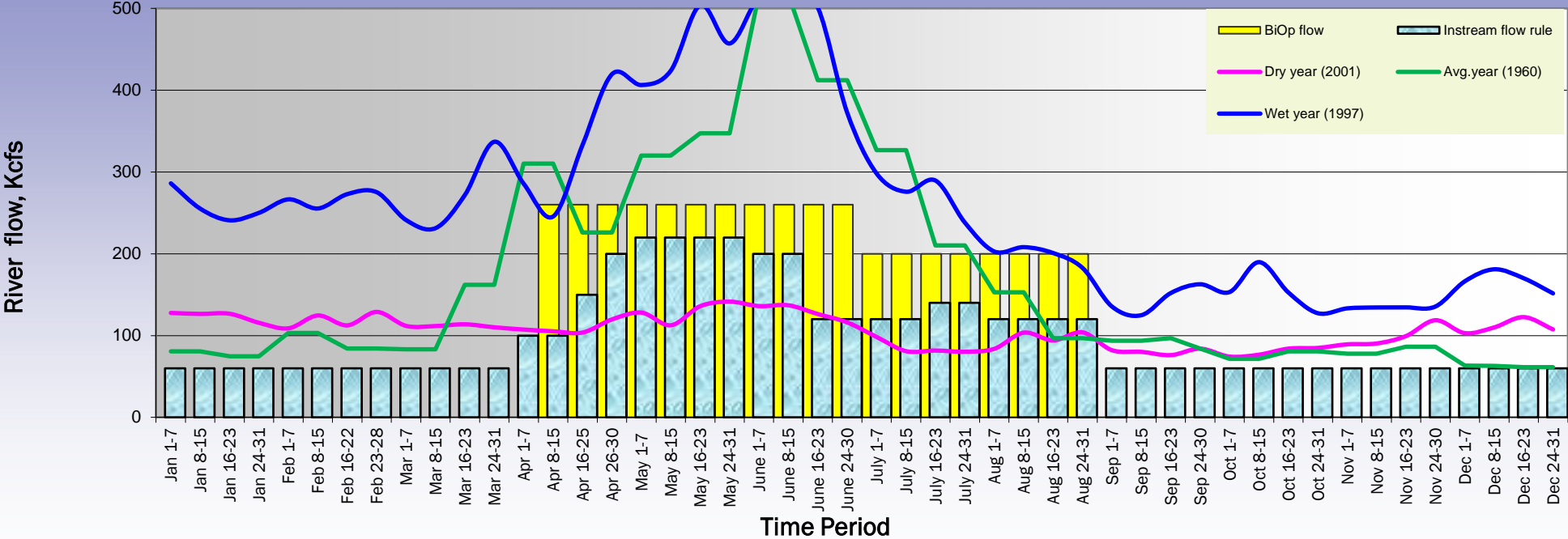


The General Eastern Washington Water Supply Situation

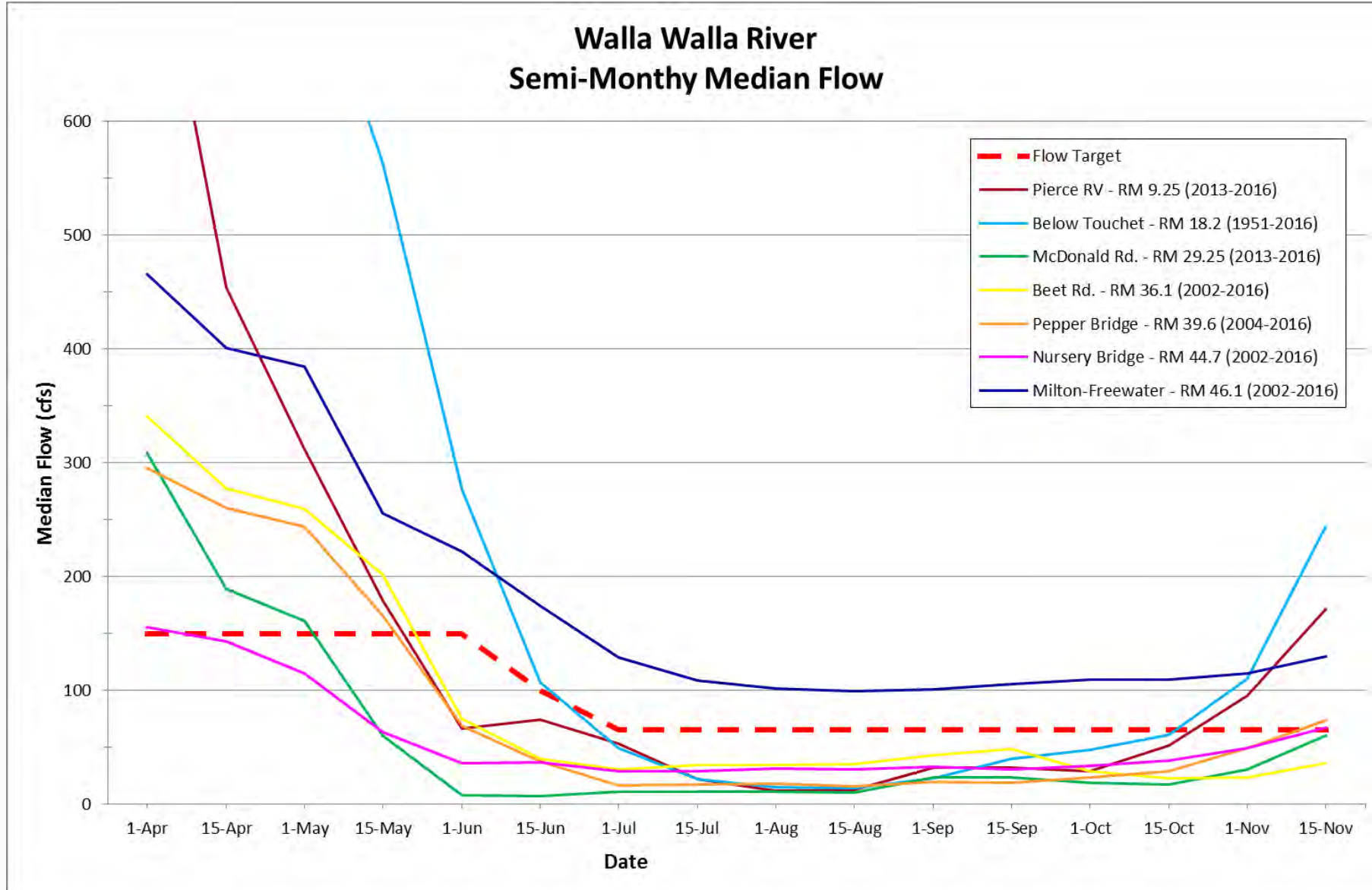


Columbia River Instream Flows

Comparison of Dry, Average, Wet Year Flows to Instream Flow Rule
(Columbia River at McNary Dam)



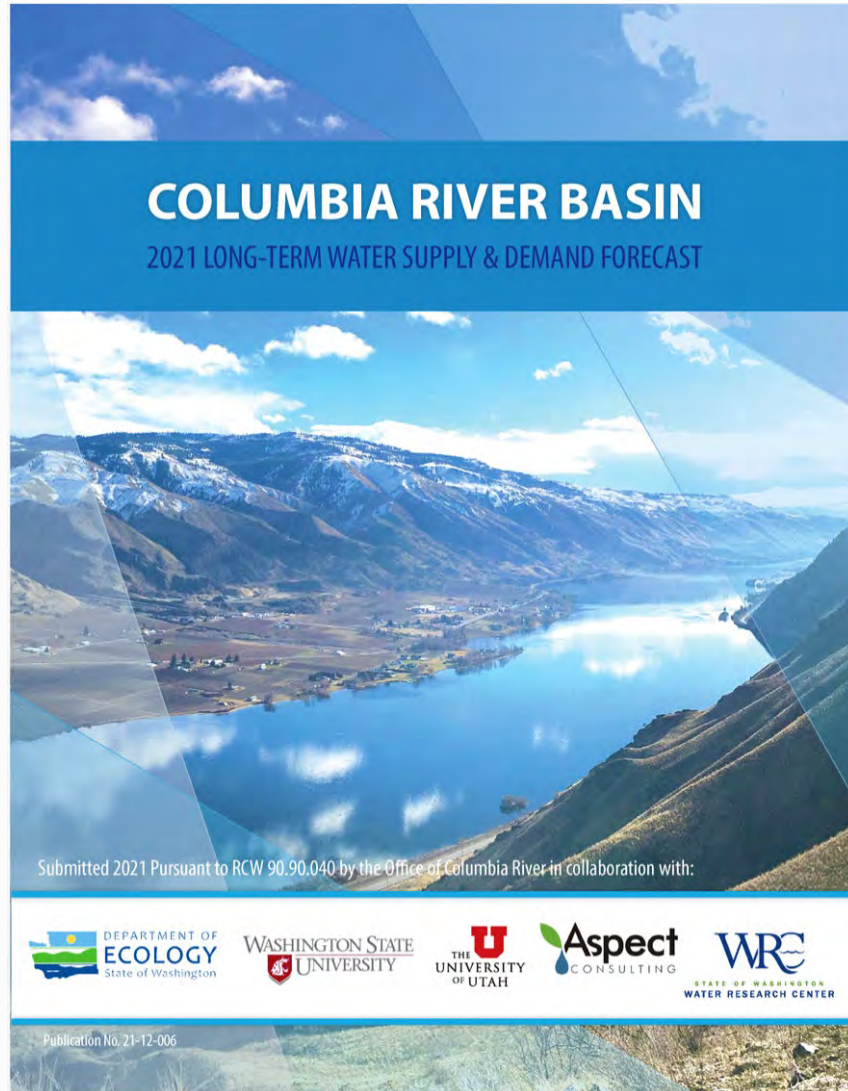
Walla Walla Instream Flow



State of our Water Infrastructure



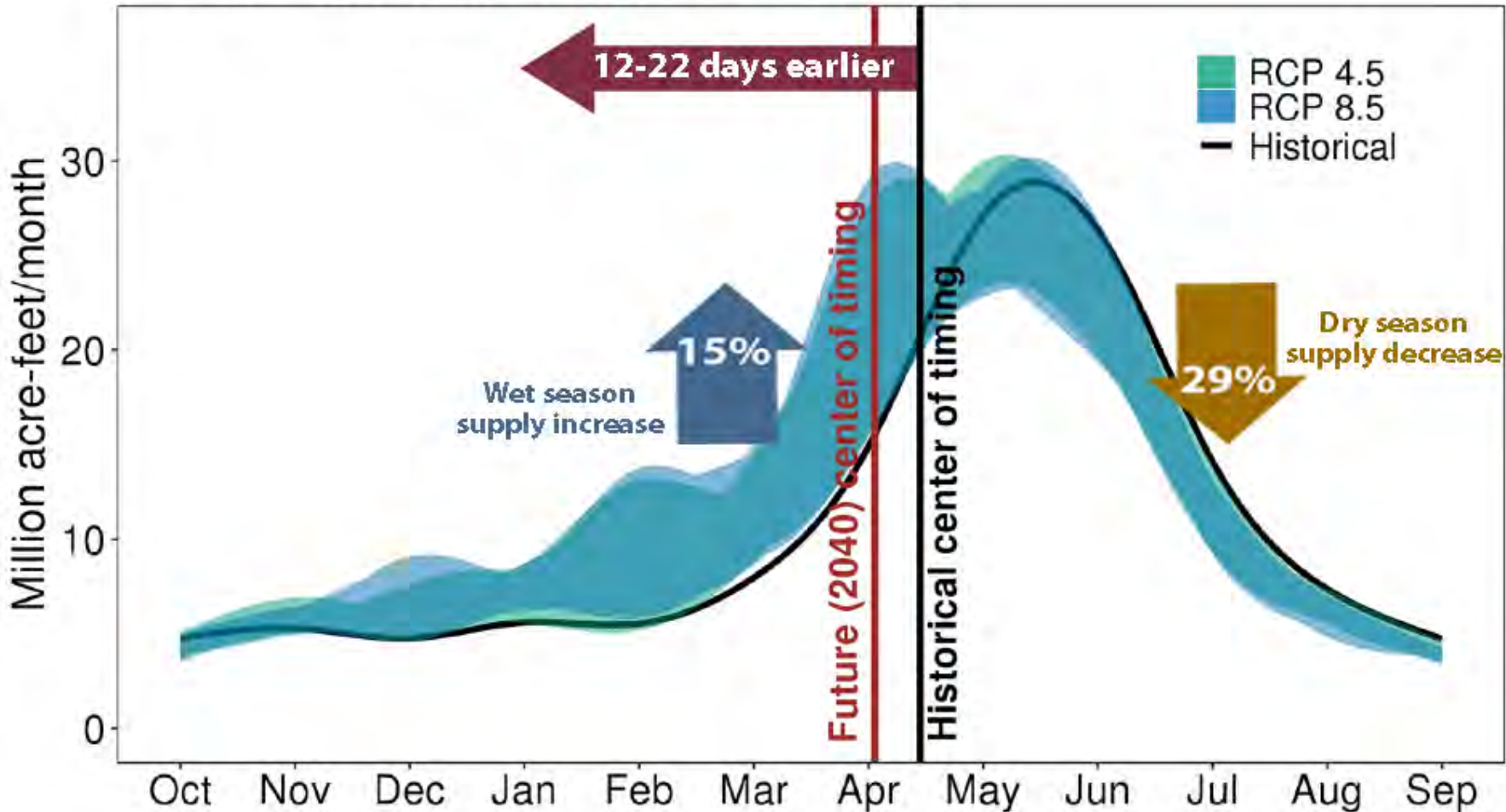
2021 Long Term Water Supply and Demand Forecast



- The Forecast suggests that eastern Washington is vulnerable to:
 - Water supplies increasing earlier in the spring, and decreasing late in summer;
 - More extremes in water supply from year to year;
 - Declining low flows, affecting important fish species;
 - Some watersheds with increases in out-of-stream demands.
- This combination of lower supplies at critical times and locally increasing demands leads to increasing frequency of instream flow deficits and resulting curtailments.

Key Finding: Timing of Water Supplies is shifting

Median Flow Year - Future GCMs (2040)



Eastern Washington Annual Water Supply

Historical
(1986-2015)

2040s
(2026-2055)



Expected Changes by 2040



Trends from the Forecast

Climate Change

By the 2040s, Washington can expect:

- Higher temperatures
- Wetter, warmer winters
- More rain and less snow
- Reduced snowpack, especially at low and mid elevations
- Earlier snowmelt
- Warmer, drier summers, deeper droughts
- Greater heat stress
- More frequent extreme weather events

Population Growth

By the 2040s, Washington can expect:

- 17% higher population across the state
- Stable fertility rates and increasing mortality rates (as baby boomers age)
- Over two thirds of the state's population increase are due to net migration into the state
- 13% higher population across eastern Washington

Trends in Agriculture

By the 2040s, Washington can expect:

- Longer growing season
- Greater rate of accumulation of growing degree days
- Increased photosynthesis in many crops
- Earlier planting dates
- Earlier flowering in tree fruit and specialty crops
- More frequent heat stress events in summer



So how can we
prepare for the
future?



OCR's Mission....

Aggressively pursue water supply development for both instream and out-of-stream uses.



Photo courtesy of Washington State Wine Commission

Where we work

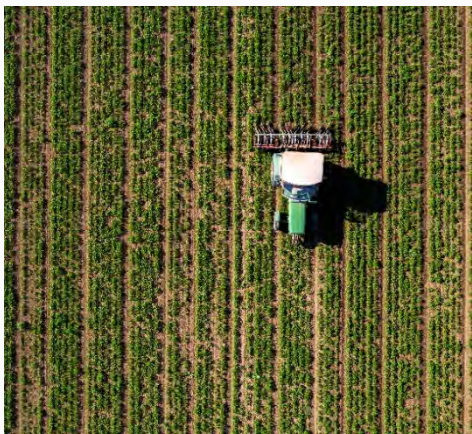


Legislative Mandates

RCW 90.90.040

Develop water supplies for:

- Alternatives to groundwater for the Odessa Subarea
- Pending water right applications
- Future water supplies for interruptible water right holders
- Future water supplies for municipal, domestic, industrial, and irrigation
- Instream Benefits
- Implement the Walla Walla 2050 Strategic Plan



Today's Challenges – Water for Economic Growth

- Water provides “fuel” to our state’s economy.
- Increase demand for water to support economic activity, yet in many areas of the state supplies are limited.
- Efficient and effective water management is critical to supporting economic growth while protecting senior water rights and the environment.



Water Supply Development Tools

- Surface Storage
- Structural & Operational Changes
- Pump Exchanges
- Aquifer Storage and Recovery
- Shallow Aquifer Recharge (aka Passive Rehydration)
- Water Right Acquisition & Leases
- Conservation/Piping/Lining
- Water Banking



OCR's Water Supply Buckets



Lake Roosevelt Incremental Storage and Releases Program

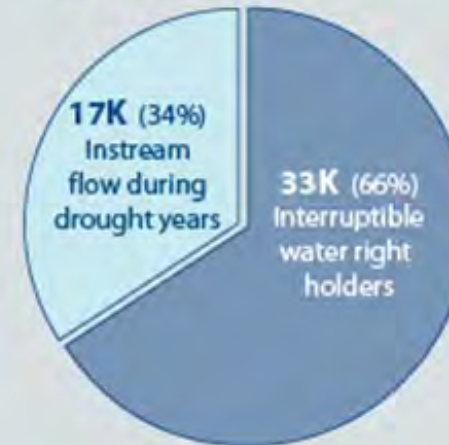
Lake Roosevelt Incremental Storage Releases

Operational change of 1 foot annually and 1.8 feet during drought

The Lake Roosevelt storage release would divert up to 82.5K ac-ft of water for:

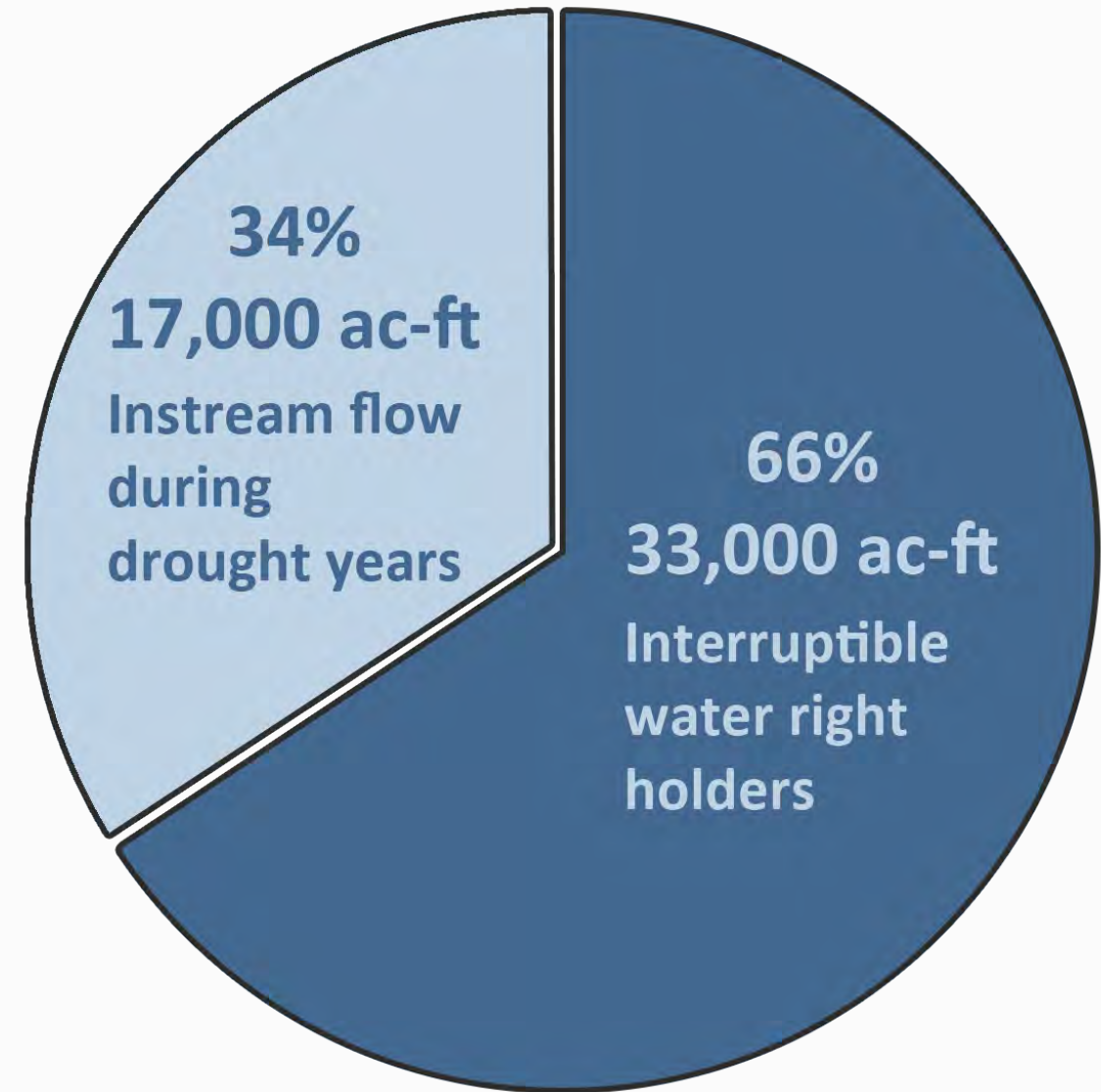


In a drought year an additional 50K ac-ft of water for:



Lake Roosevelt Releases in Drought Years

- If the April – September forecast drops to or below 60 MAF the 33,000 acre-feet from the LRISRP will become available to assist interruptible water users
- The LRISRP Final Supplemental EIS discussed six alternatives for distributing water to the interruptible users with three preferred alternatives.
- Even Distribution Allocation
- Market-Based Allocation
- Voluntary Enrollment
- The preferred method would provide Ecology with the maximum flexibility in meeting the goal of the program



Additional 50,000 from Lake Roosevelt released during drought years

Lake Roosevelt Releases in Drought Years

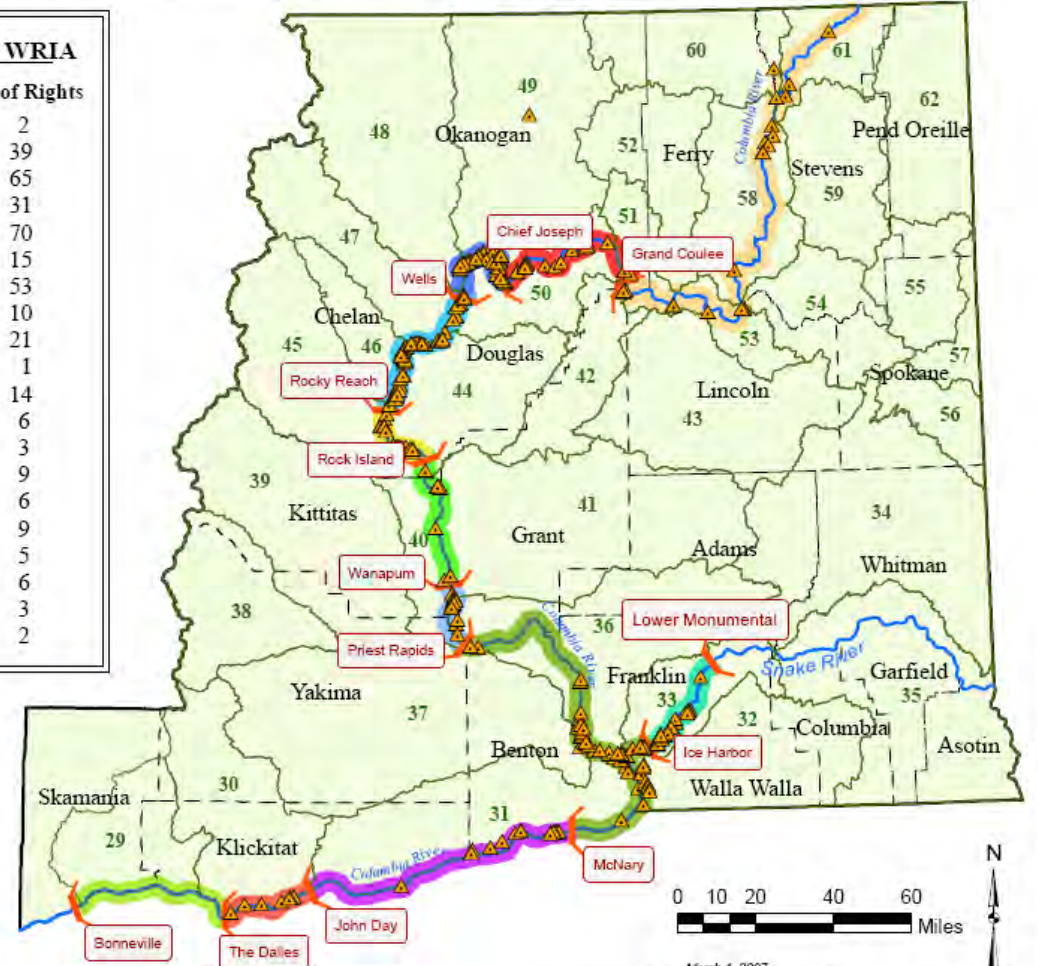
- 379 Interruptible Water Rights on the Columbia River
- 309,159 acre-feet
- Ecology is beginning efforts to put the LRISRP water into play when needed
- Clean up the water right ownership information

Interruptible Water Rights within the Columbia River Water Management Program

Draft

Interruptible Qa by WRIA

WRIA	Qa (afy)	No. of Rights
42	214,000	2
33	106,043	39
31	53,062	65
40	26,764	31
50	24,745	70
36	14,703	15
44	12,949	53
32	10,823	10
49	5,756	21
37	4,960	1
47	2,697	14
53	1,573	6
45	1,502	3
30	824	9
48	677	6
58	466	9
41	413	5
46	146	6
61	34	3
60	7	2



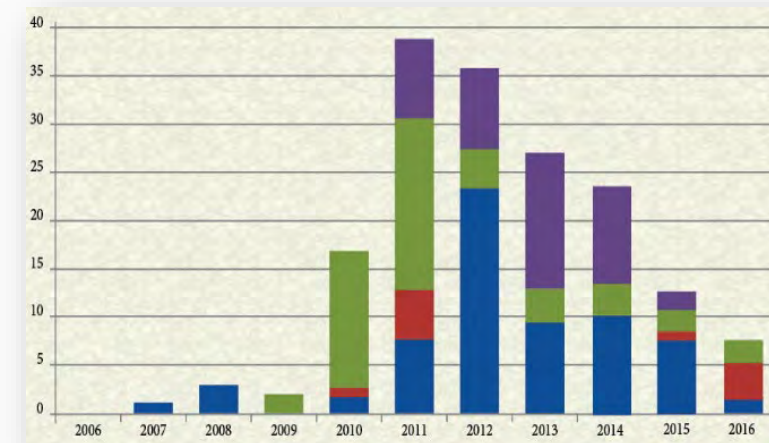


Water Banking Options

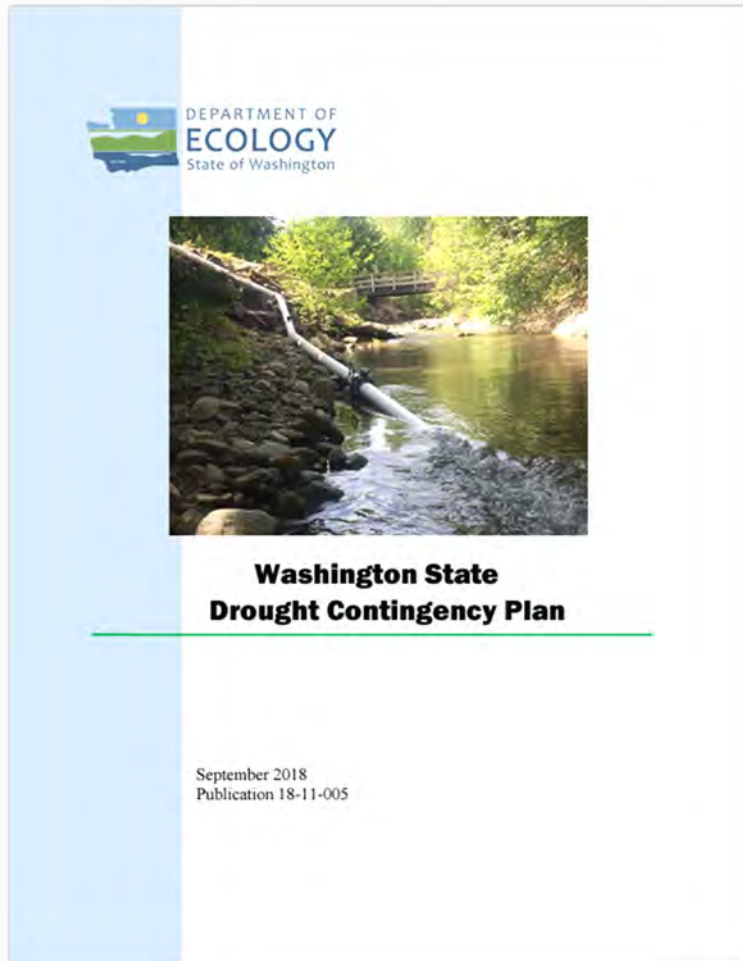
- OCR is working with several large agricultural entities to establish water banks
- Banks can be established through multiple methods such as:
 - Shade cloth deployment
 - Current on farm efficiencies
- If the March 1st forecast drops to 60 MAF or lower, in a given year, water held in these banks can be made available to OCR for the use of assisting interruptible water users

LRISRP – M & I

- Ecology has issued 55 permits totaling approx. 21,000 ac-ft of water
- Ecology has requested release of:
 - 23,000 ac-ft of M&I water
 - 11,500 ac-ft of Instream flow water
- Future Permitting
 - The last few thousand acre-feet will be permitted within the next few years



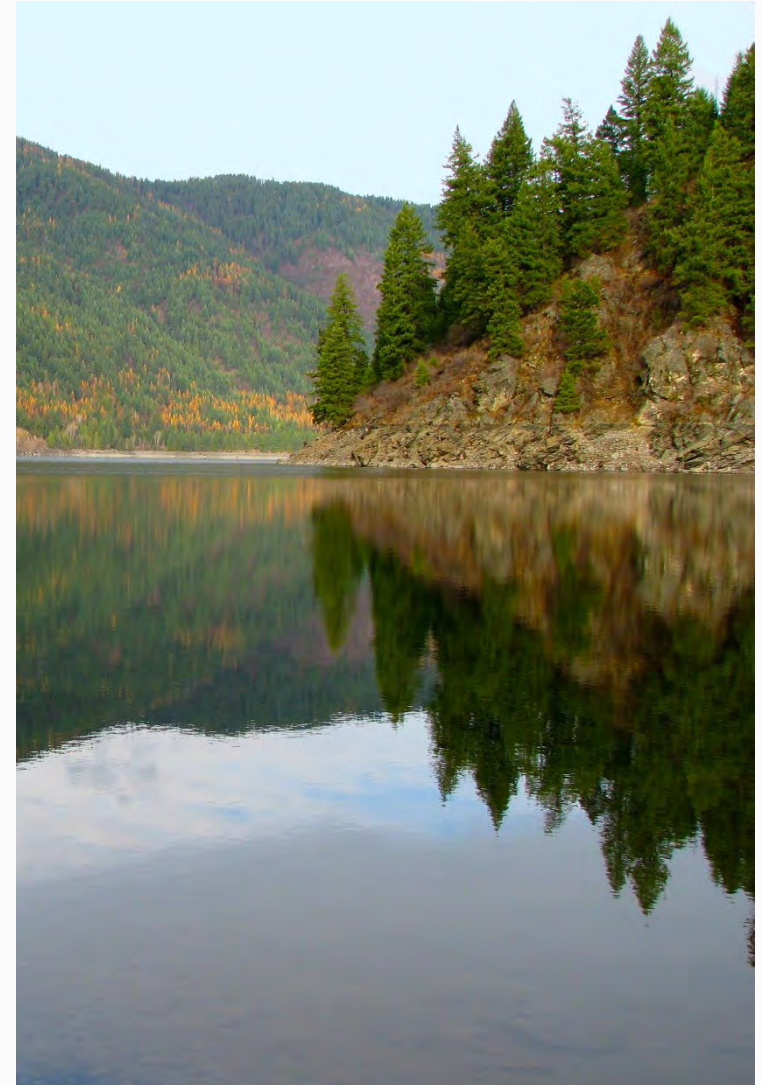
LRISRP – Drought Relief



- Ecology received USBR drought contingency funds in FY15 to complete a Statewide Drought Plan.
- State Drought Plan filed with Congress in 2020.

Sullivan Lake Reoperation

- Ecology received USBR drought contingency funds in FY15 to complete a Statewide Drought Plan. OCR agreement with Pend Oreille County PUD to convert former hydropower facility to water supply operation.
- Creates 14,000 acre-feet of additional supply in six (6) NE counties.
 - 9,333 acre-feet for out-of-stream uses
 - 50% Agriculture/Irrigation
 - 50% M&I
 - 4,667 acre-feet for instream uses
- Cost of water = \$60/ac-ft for 25 years



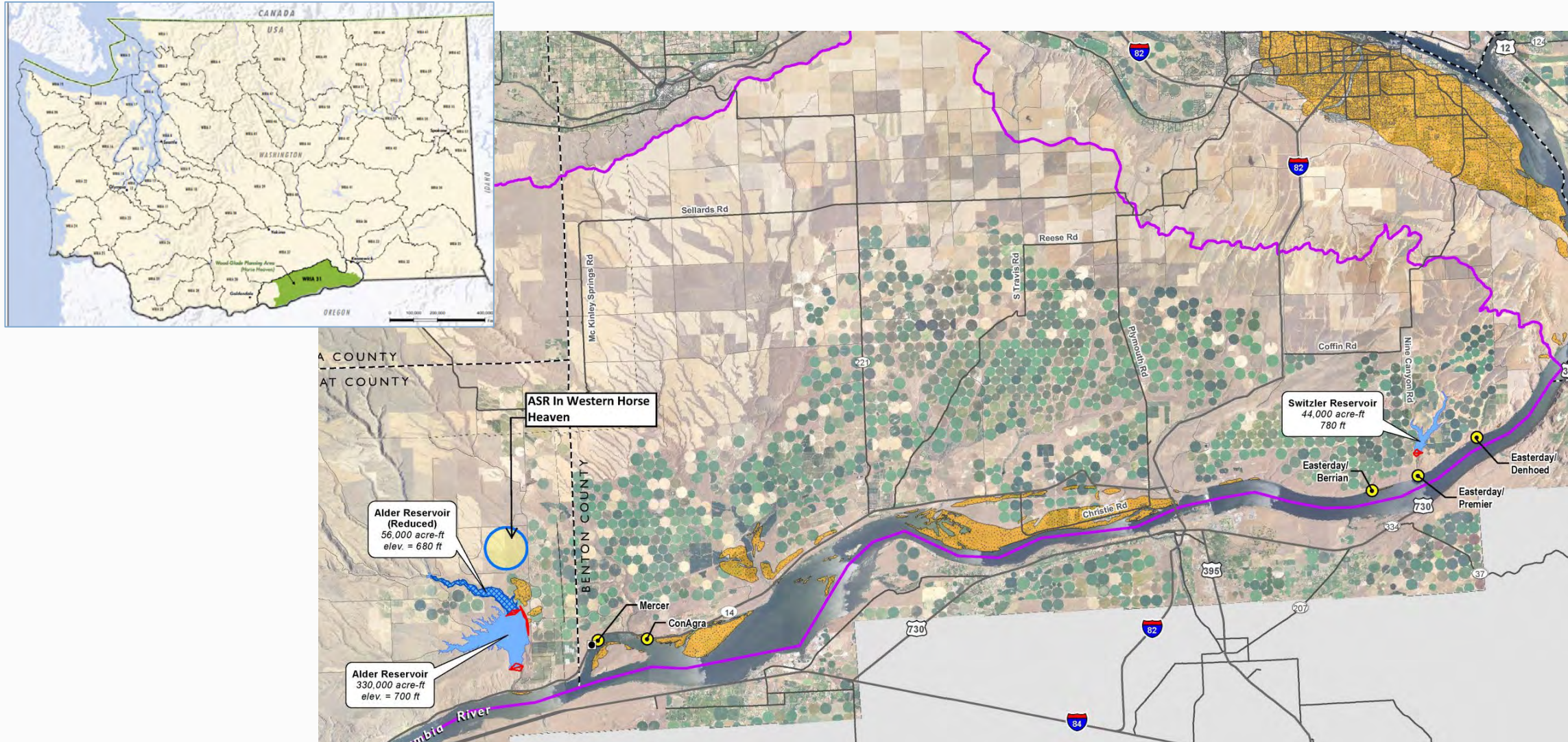
Switzler Reservoir EIS

\$300 million to dam up a dry canyon? It could make sense for the Mid-Columbia

Mon., Aug. 27, 2018



Switzler Reservoir - Preferred Storage Alternative from pre-Feasibility study



Switzler Project Vicinity

Constructed Elements

Embankment Dam

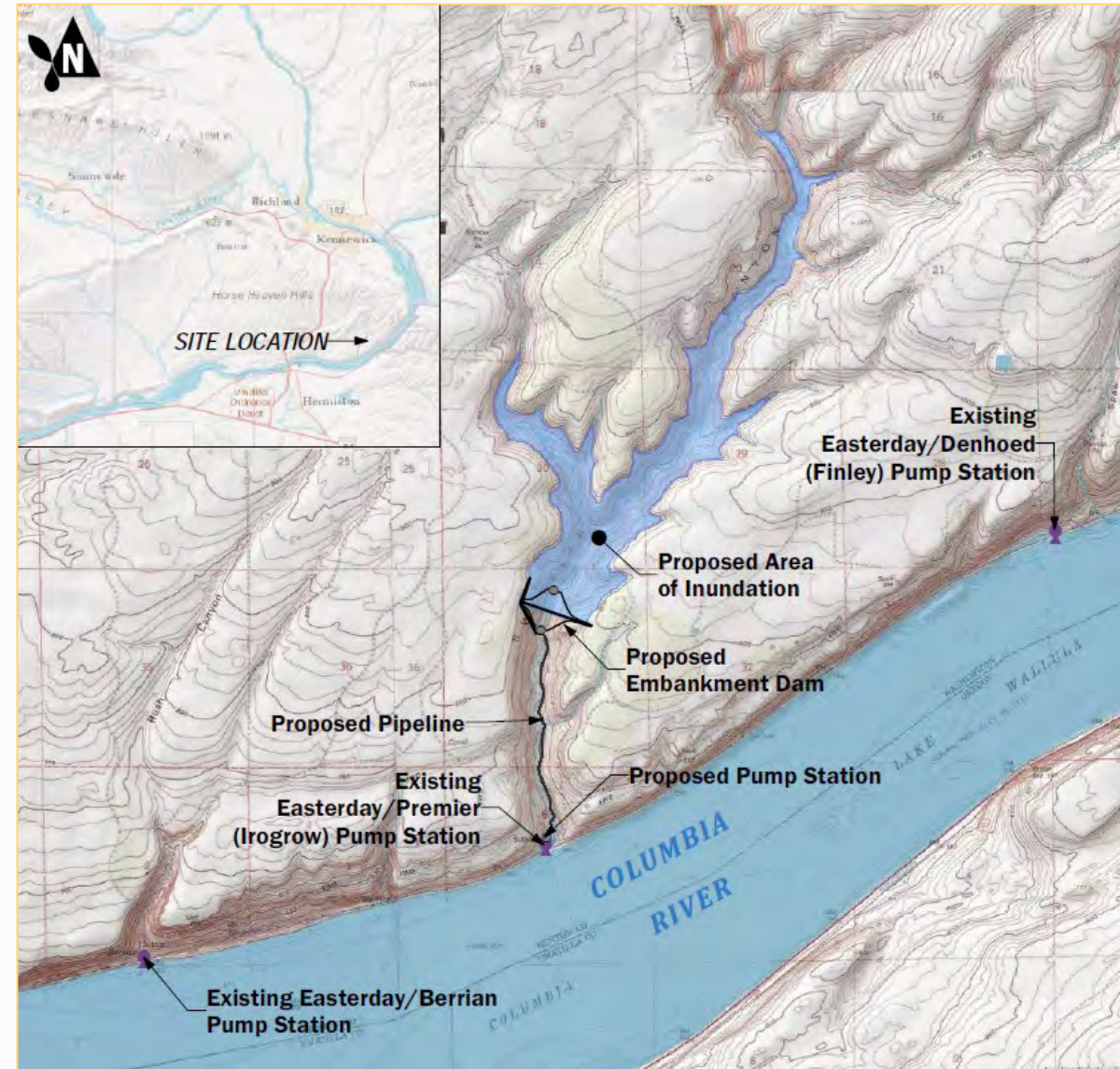
Pipeline Conveyance

Pump Station

Environmental Mitigation

Operational Elements

Peak Storage Volume (acre-feet)	44,000
Maximum Instantaneous Filling Capacity (cfs)	200
Diversion Period	When Columbia River Water is Available
Maximum Instantaneous Draining Capacity (cfs)	280
Release/Supply Period	April 1 – October 30
Surface Water Source	Columbia River



Icicle Peshastin Irrigation District

Eightmile Dam rebuild & restoration



Emergency temporary construction at Eightmile Dam

In 2018, the 90-year-old Eightmile Lake Dam in the Icicle Creek watershed was designated a high hazard and a threat to downstream residents and properties. A state of emergency was declared in the watershed, after flood damage and erosion at the dam caused by impacts of the Jack Creek Fire in 2017. Emergency repairs made in the summer of 2018 stabilized the dam, but these repairs do not meet current dam safety standards.

OCR's Integrated Water Resource Strategies

- Yakima Basin Integrated Plan -2013
 - YBIP - Yakima Basin Integrated Plan
- Icicle Creek Water Resource Management strategy – 2019
 - The Icicle Strategy Mission | Icicle Strategy
- Walla Walla River Basin - 2023
 - Integrated Solutions – Walla Walla Water 2050 Plan

Yakima Basin Integrated Plan – 7 Elements



Yakima Basin Integrated Plan Accomplishments 2013-2023

Fish Passage

- Completed: Sunnyside interim, Nelson
- In construction: Cle Elum, Roza, Clear Creek (2024)
- In design: Tieton, Bateman Island, Wapato, Prosser, Wannawish

Water Supply Reliability

- 65,000 acre-feet conserved/in progress
- Cle Elum Pool Raise
- Kachess Drought Relief Pumping Plant in review
- Groundwater - ASR, 2 pilots
- Springwood Site acquisition

Habitat

- 40+ restoration projects
- 80,000 acres acquired

Yakama Nation

- Wapato Irrigation Project Modernization Plan
\$750M in federal and state funding





Icicle Creek Water Resource Management Strategy



Icicle Creek Strategy

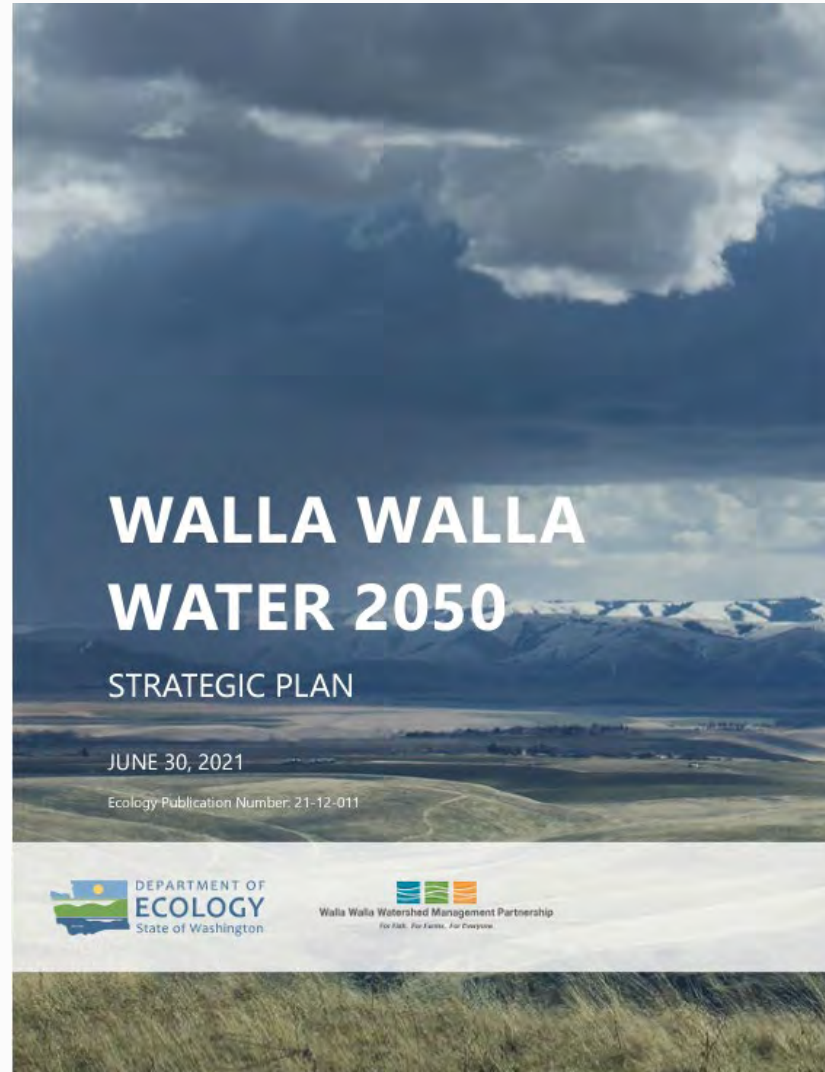
Overview of Potential Projects

Projects	Proposed Alternatives					
	No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Conservation						
IPID Irrigation Efficiencies	○	●	●	●	●	
COIC Irrigation Efficiencies (Piping)	●	●	●	●	●	●
Domestic Conservation Efficiencies	○	●	●	●	●	●
LNPH Conservation and Water Quality Improvements	●	●	●	●	●	●
Pump Exchange						
IPID Dryden Pump Exchange	○	○	●	●		
Full IPID Pump Station						●
COIC Irrigation Efficiencies (Pump Exchange)	●	●	●	●	●	●
Modification/Restoration of Existing Storage						
Alpine Lakes Reservoir Optimization, Modernization and Automation	○	●			●	●
Eightmile Lake Storage Restoration	○	●	●	○	●	●
New Storage						
Eightmile Lake Storage Enhancement					●	
Upper Klonauqua Lake Storage Enhancement					●	
Upper and Lower Snow Lakes Storage Enhancement					●	
Habitat/Fisheries Improvements						
Tribal Fishery Protection	○	●	●	●	●	●
Habitat Protection and Enhancement	○	●	●	●	●	●
Fish Passage	●	●	●	●	●	●
Fish Screening	●	●	●	●	●	●
Legislative/Administrative Tools						
Water Markets		●	●	●	●	●
Instream Flow Rule Amendment	○	●	●	●	●	●
OCPI legislative fix from instream flow impacts				●		

○ Represents projects that might proceed if funding becomes available. However, under the No-action Alternative, project beneficiaries may be different and project timelines are unknown.

● Represents projects that are likely to occur as described, but could be replaced by another project that fulfills the same guiding principles if a design, funding, or permitting fatal flaw is identified.

Walla Walla Basin 2050 Strategic Plan



FOCUS CATEGORIES



WATER QUALITY

- Increase infiltration of stormwater
- Upgrade Dayton wastewater treatment plant
- Implement conservation tillage and soil erosion Best Management Practices



STREAMFLOW, GROUNDWATER, AND WATER SUPPLY

- Ongoing analyses of the Bi-State Flow Study toward a preferred alternative
- Substitute for basalt wells during low flow periods
- Water rights acquisitions to restore streamflows
- Improve and expand managed aquifer recharge
- Expand and support aquifer storage and recovery



WATER POLICY

- Improve drought management
- Increase coordination of regulation and management
- Additional Bi-State coordination on water management



FLOODPLAINS AND HABITAT

- Reconnect floodplain and restore channel complexity
- Improve fish passage in Mill Creek
- Protect and improve fish passage at Nursery Bridge on the WW river
- Improve flow and timing of fish passage through Hofer Dam on the Touchet



MONITORING AND METERING

- Develop an overarching monitoring strategy and adaptive management plan
- Expand and fund streamflow gages
- Improve water use metering and reporting

Aquifer Storage and Recovery

Cities of

- White Salmon
- Kennewick
- Yakima
- Othello
- West Richland
- Quincy
- Moses Lake



- Source Water Supply
- Appropriate Geology to Hold Water
- Water Quality
- Economical Infrastructure
- Enabling Permitting Environment

Summary of challenges

- A bigger vision is needed, and more funding
- Suitable location, and land availability
- Tribal Treaty Rights
- Environmental concerns
- High costs, and construction issues
- Regulatory hurdles
- Displaced constituents
- Political will and support over time

Projects

OCR Water Projects 2023

- Completed, Developed
- Active, Under Development

Yakima Basin Integrated Plan Initial Development Projects

Multiple Site Projects

Habitat Enhancement & Restoration

33 Projects

Enhanced Water Conservation

10,000 ac-ft

Kittitas Distributed Off-Channel Small Storage

ac-ft TBD

Other Yakima Basin Integrated Plan Projects

150,400 ac-ft Instream & Out-of-Stream

Kachass Drought Relief Pumping Plant
200,000 ac-ft Out-of-Stream

Cle Elum Pool Raise
14,600 ac-ft In-stream

Cle Elum Fish Passage
Reservoir Fish Passage

Teanaway Acquisition
50,272 acres of Watershed Protected

Manastash Conservation & Tributary Enhancement
1,300 ac-ft Instream

Managed Aquifer Recharge
600 ac-ft Out-of-Stream

Yakima City ASR
10,000 ac-ft Out-of-Stream
Instream ac-ft TBD

Methow Trust Water Acquisition
79 ac-ft Out-of-Stream

Peshastin Pump Exchange
ac-ft TBD

Peshastin ID Piping
360 ac-ft Instream

Lower Wenatchee In-stream Flows
7,823 ac-ft Instream

Methow Projects
2854 ac-ft Out-of-Stream

Goose Lake & Nine Mile Flat Storage
ac-ft TBD

Pine Creek Acquisition
900 ac-ft Out-of-Stream

Mill Creek Storage
11,000 ac-ft Out-of-Stream

Sullivan Lake Water Supply
9,400 ac-ft Out-of-Stream
4,600 ac-ft Instream

Lake Roosevelt Incremental Storage Releases
All Years:
55,000 ac-ft Out-of-Stream
25,000 ac-ft Instream
Drought Years:
88,000 ac-ft Out-of-Stream
44,000 ac-ft Instream

Columbia Basin ID Piping
35,955 ac-ft Out-of-Stream

Spokane-Rathdrum ASR
105,000 ac-ft Out-of-Stream

Lincoln CD Passive Rehydration
ac-ft TBD

Weber Siphon
Conveyance

East Low Canal Widening
Conveyance

Potholes Supplemental Feed Route
Conveyance

Pasco Municipal Supply Improvements
5,000 ac-ft Out-of-Stream

Walla Walla Water 2050 Water Supply
Strategic Planning

Walla Walla Flow Enhancement
30,000 ac-ft Instream

Kennewick ASR
>318 ac-ft Instream

Port of Walla Walla Leases
4,761 ac-ft Out-of-Stream

Sunnyside Valley ID
7,815 ac-ft Instream

KID/Red Mountain
11,005 ac-ft Instream

Horse Heaven Hills
105,000 ac-ft Out-of-Stream

Barker Ranch
6,436 ac-ft Instream

Kennewick General Hospital
4,000 ac-ft Out-of-Stream

Icicle Creek Water Management Strategy
20,000+ ac-ft Instream and Out-Of-Stream

Odessa Subarea Groundwater Replacement
164,000 ac-ft Out-of-Stream

Upper Kittitas Tributary Enhancement
Conveyance

White Salmon ASR
145 ac-ft Instream

Pasco Basin Water Supply
ac-ft TBD

Switzler Off-Channel Reservoir
44,000 ac-ft Out-of-Stream

Odessa Special Study Area
Columbia Basin

Yakima Basin

Locations are approximate

Region-Wide Projects

Conservation Commission Irrigation Efficiency
7,823 ac-ft Instream

Conservation Commission Retiming
ac-ft TBD

Regional Aquifer Storage and Recover
ac-ft TBD

Donations
4,396 ac-ft Instream

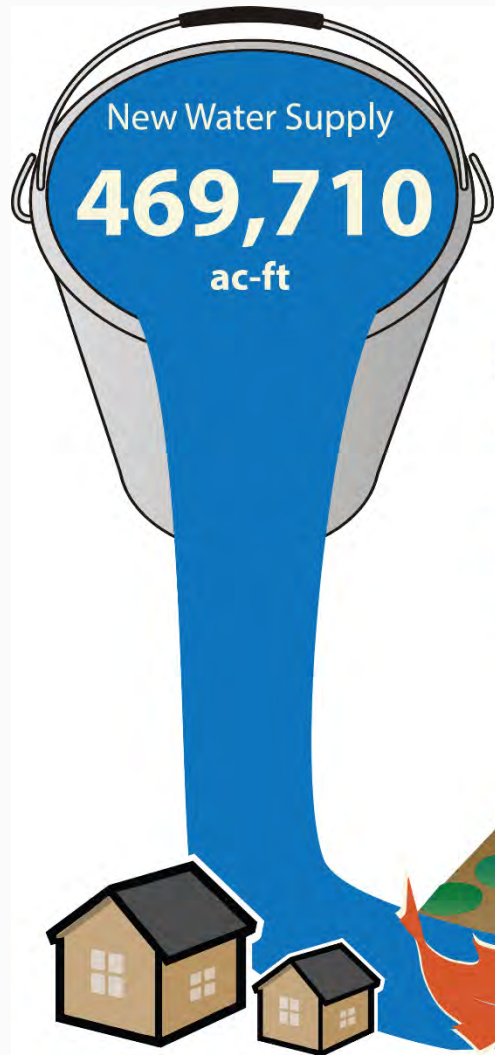
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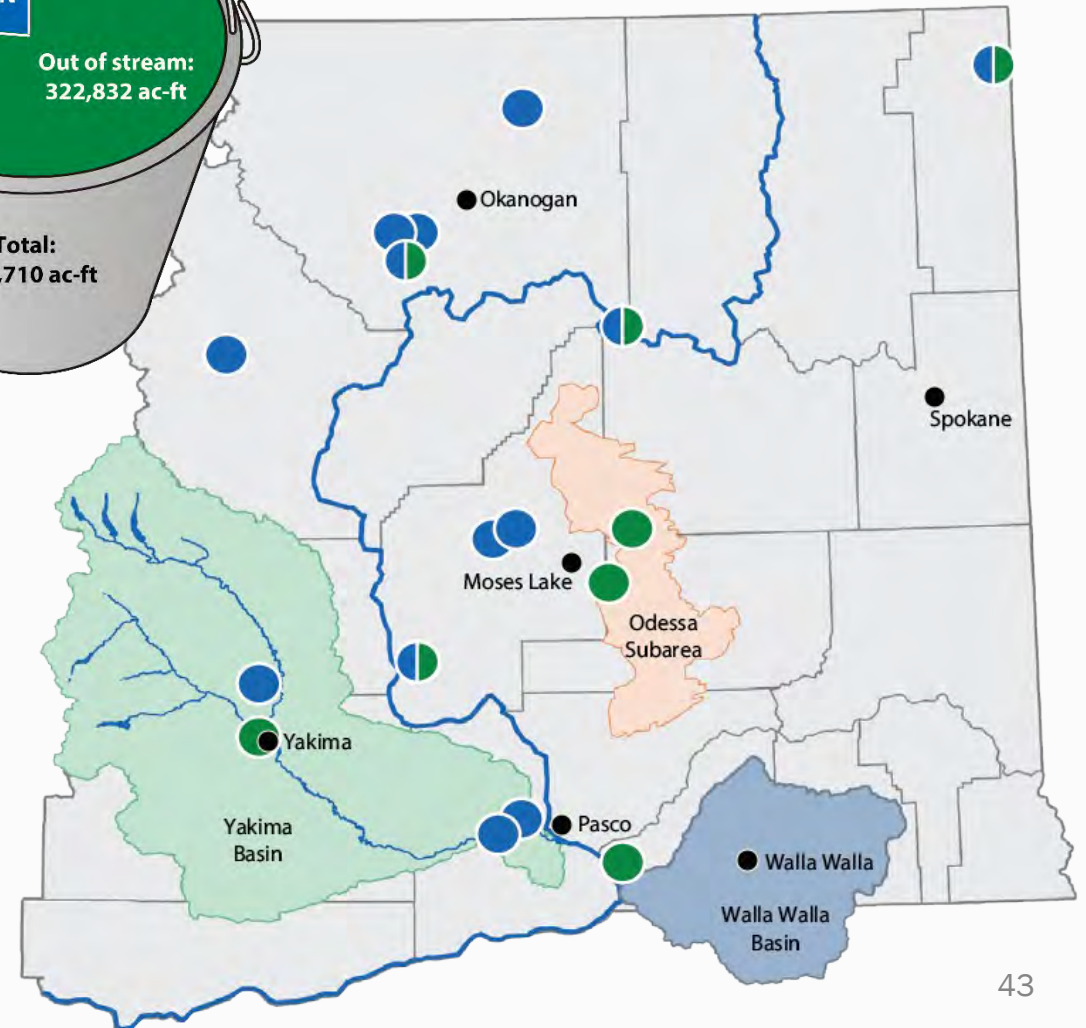
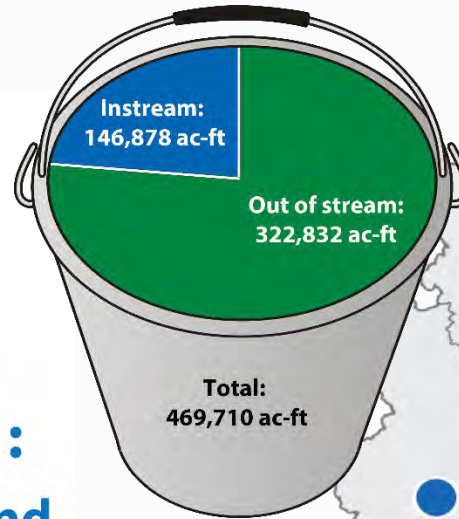


Making progress



Enough water to serve :

- 100,000 acres of farmland
- 80,000 homes
- Fish in the Columbia River and 17 tributaries



Investments to Date

BIENNIUM	OCR	YBIP
2006 – 2013	\$ 96.5 million	Funded out of OCR budget
2013 – 2015	\$ 74.5 million	\$ 143.3 million (includes TCF)
2015 – 2017	\$ 19.0 million	\$ 30.0 million
2017 – 2019	\$ 33.8 million	\$ 31.1 million
2019 - 2021	\$ 40.0 million	\$ 40.0 million
2021 - 2023	\$45.0 million	\$42.0 million
2023 -2025	\$60.7 million	\$49.0 million
TOTAL	\$ 369.5 million	\$ 335.1 million

Next Steps

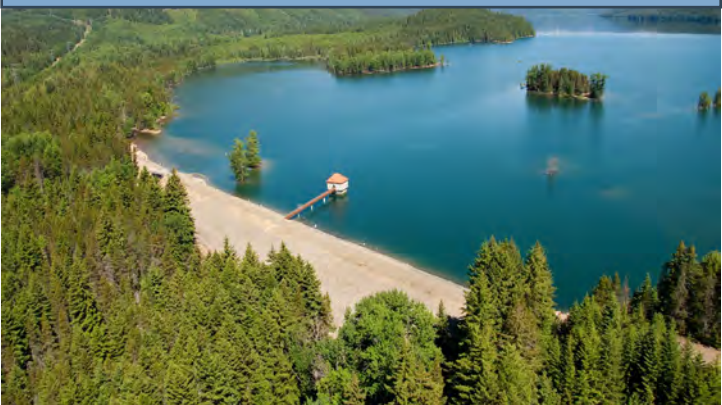
Improved Forecasting



Integrate Modeling



Retiming



Infrastructure



Building Partnerships



Multi-Use Solutions



Conclusions

- Our water resources are vital to our way of life and our environment.
- Doing nothing to protect our water resources is not an option...it is a necessity to do something.
- It will take significant funding, resolve and commitment to secure and sustain and protect our way of life...now and into the future

How you can help too

- Learn how scarce and vital our water resources are for people, farms and fish.
- Get involved, learn and inform your peers, clients, organizational leadership, and elected officials about the value and importance of our water resources.
- Encourage water conservation at home, on the farm, and within our communities.
- Be willing to adapt to new water saving technologies

A few last words about drought resiliency

“Snowpack, rainfall, and irrigation flows from major rivers provide the necessary water supply to sustain our communities and the agriculture industry,” said Washington State Department of Agriculture Director Derek Sandison.

“The anticipated drought conditions this year emphasize the importance of building drought resilience into water management strategies throughout the state.” April 16, 2024.



Derek Sandison
Director, Washington State Department of Agriculture



Thank you

Questions or Discussion?

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