City of Spokane Water Supply

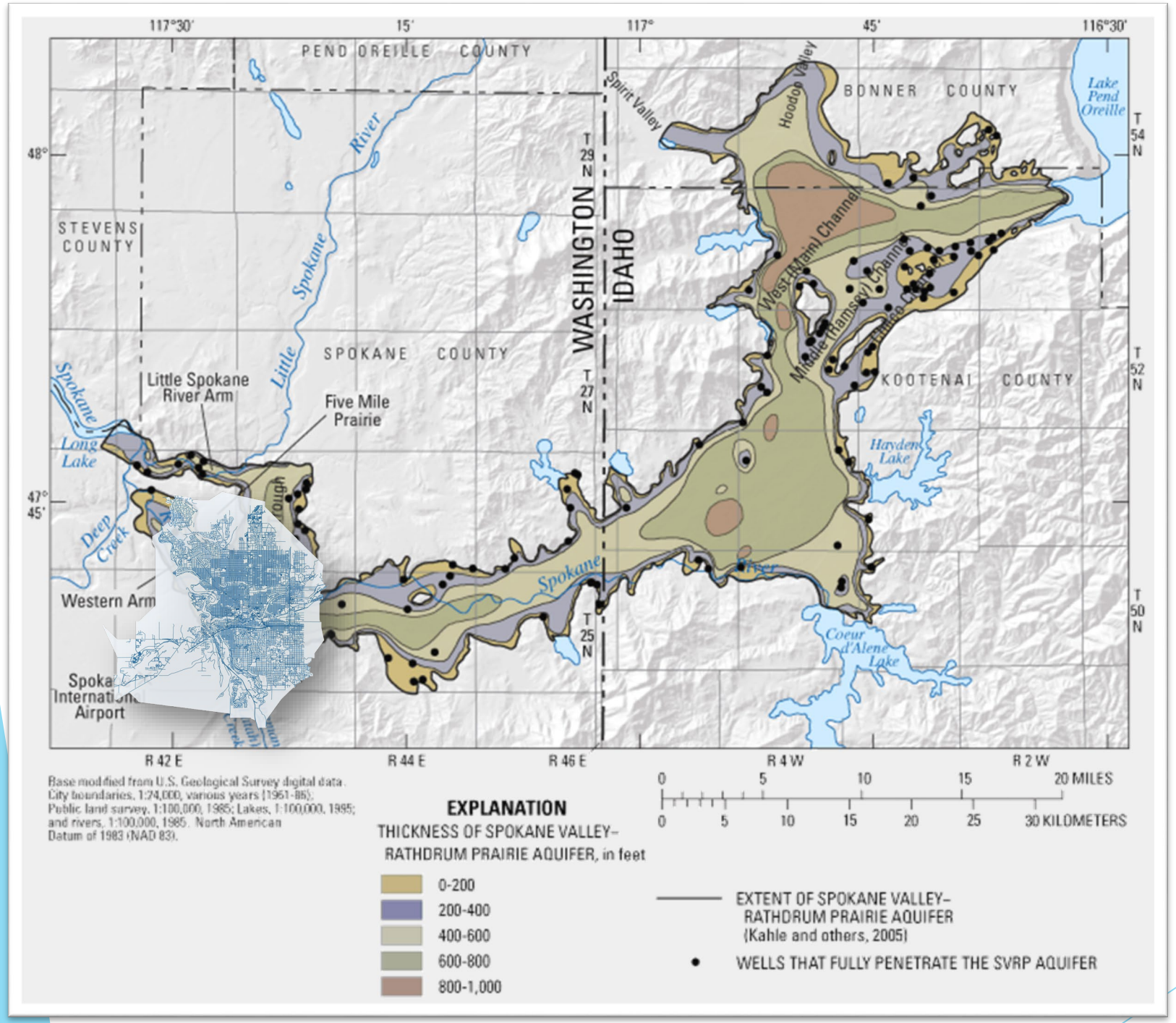
Prepared by: Beryl Fredrickson, PE (City of Spokane)

Date: Thursday May 28, 2026

Prepared for: Eastern Washington Water Law Conference
Spokane, Washington

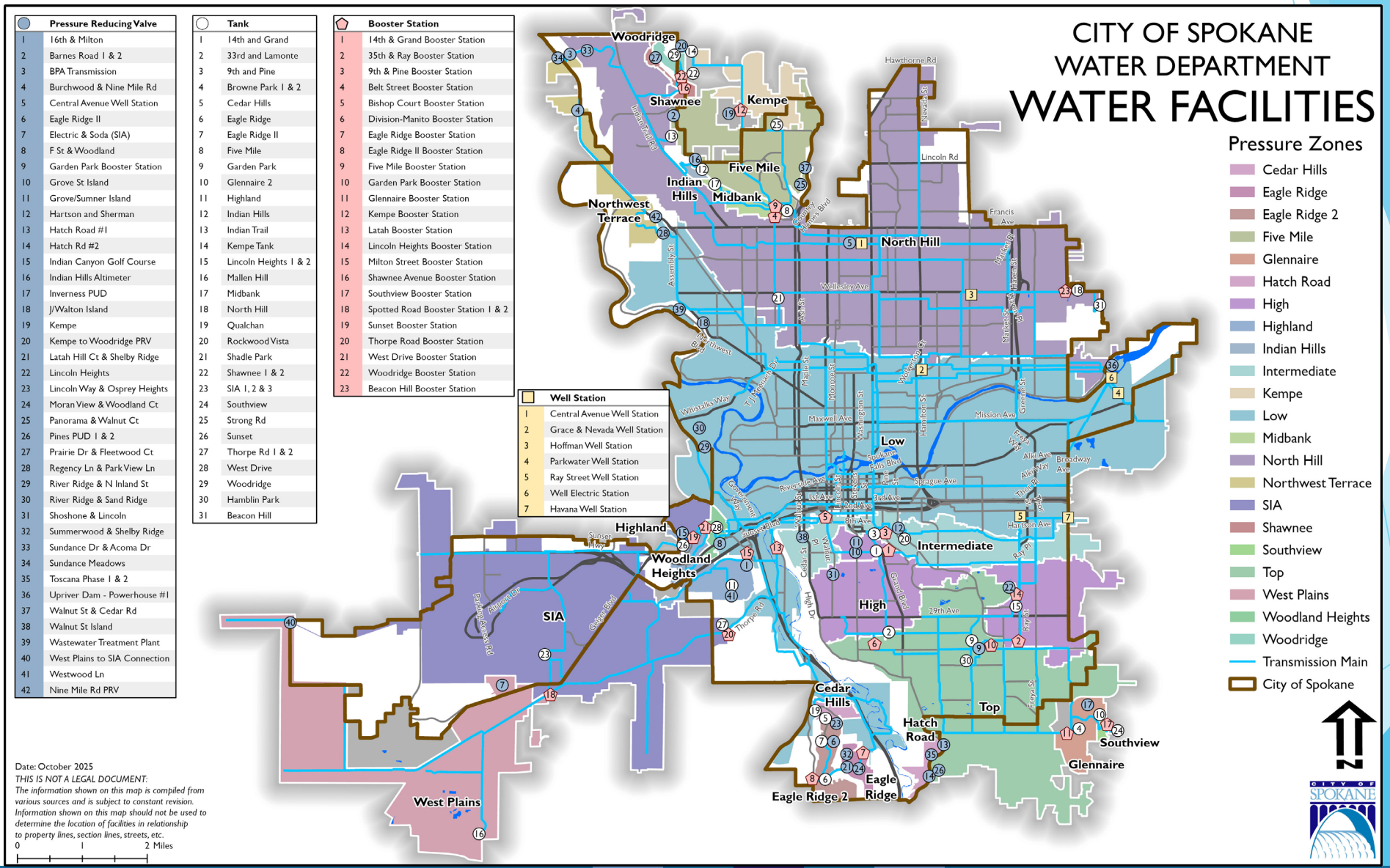
Spokane's Water Supply Overview

- Water System and Supply
- Regional Purveyor
- Water Use Efficiency/Conservation
- Emerging Issues
- Climate Change Impacts on Spokane's River and Declining Aquifer Levels
- Capital Costs



Spokane Valley - Rathdrum Prairie Aquifer

Spokane's Public Water System



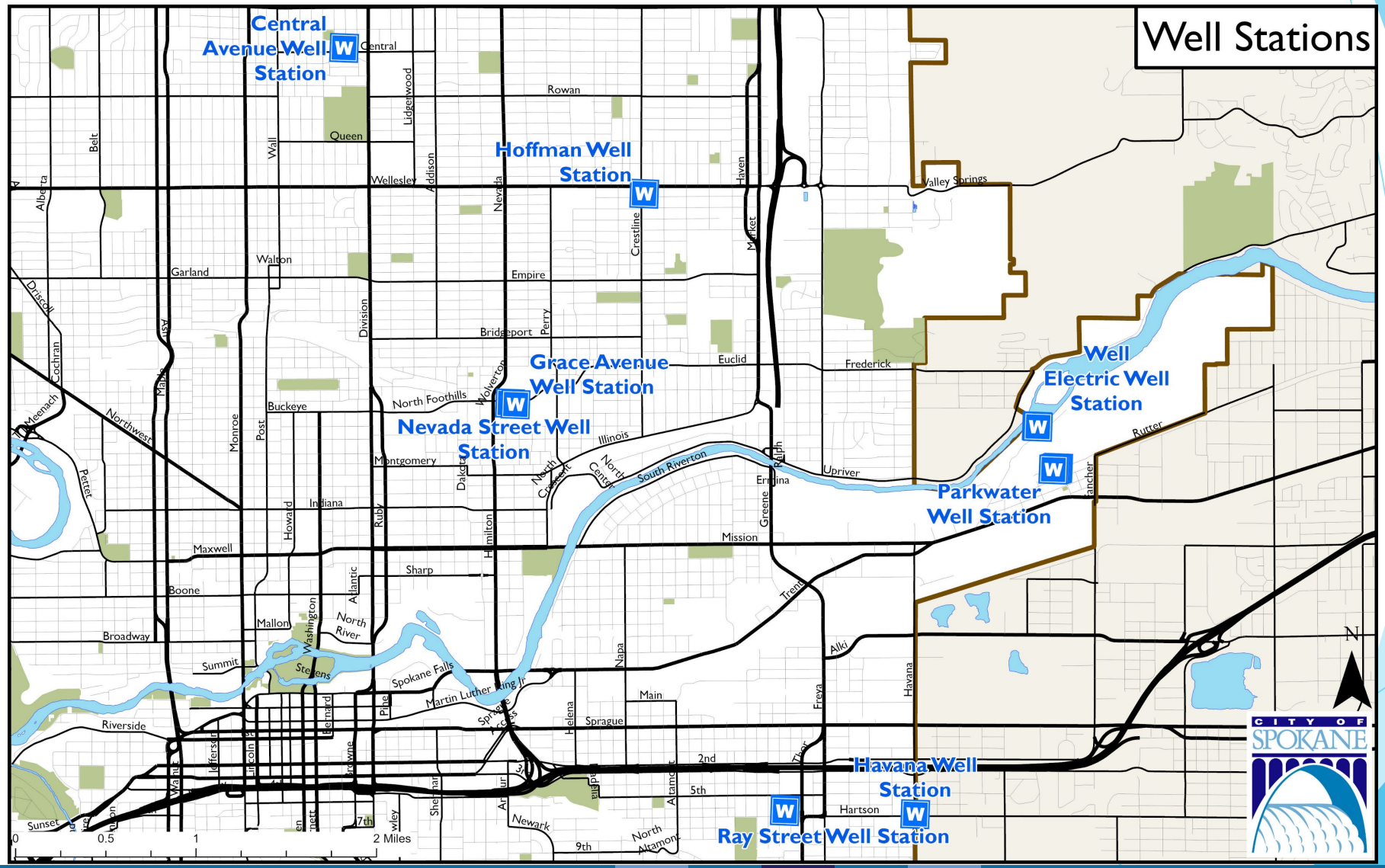
	Pressure Reducing Valve
1	16th & Milton
2	Barnes Road 1 & 2
3	BPA Transmission
4	Burchwood & Nine Mile Rd
5	Central Avenue Well Station
6	Eagle Ridge II
7	Electric & Soda (SIA)
8	F St & Woodland
9	Garden Park Booster Station
10	Grove St Island
11	Grove/Sumner Island
12	Hartson and Sherman
13	Hatch Road #1
14	Hatch Rd #2
15	Indian Canyon Golf Course
16	Indian Hills Altimeter
17	Inverness PUD
18	J/Walton Island
19	Kempe
20	Kempe to Woodridge PRV
21	Latah Hill Ct & Shelby Ridge
22	Lincoln Heights
23	Lincoln Way & Osprey Heights
24	Moran View & Woodland Ct
25	Panorama & Walnut Ct
26	Pines PUD 1 & 2
27	Prairie Dr & Fleetwood Ct
28	Regency Ln & Park View Ln
29	River Ridge & N Inland St
30	River Ridge & Sand Ridge
31	Shoshone & Lincoln
32	Summerwood & Shelby Ridge
33	Sundance Dr & Acoma Dr
34	Sundance Meadows
35	Toscana Phase 1 & 2
36	Upriver Dam - Powerhouse #1
37	Walnut St & Cedar Rd
38	Walnut St Island
39	Wastewater Treatment Plant
40	West Plains to SIA Connection
41	Westwood Ln
42	Nine Mile Rd PRV

	Tank
1	14th and Grand
2	33rd and Lamonte
3	9th and Pine
4	Browne Park 1 & 2
5	Cedar Hills
6	Eagle Ridge
7	Eagle Ridge II
8	Five Mile
9	Garden Park
10	Glennaire 2
11	Highland
12	Indian Hills
13	Indian Trail
14	Kempe Tank
15	Lincoln Heights 1 & 2
16	Mallen Hill
17	Midbank
18	North Hill
19	Qualchan
20	Rockwood Vista
21	Shadle Park
22	Shawnee 1 & 2
23	SIA 1, 2 & 3
24	Southview
25	Strong Rd
26	Sunset
27	Thorpe Rd 1 & 2
28	West Drive
29	Woodridge
30	Hamblin Park
31	Beacon Hill

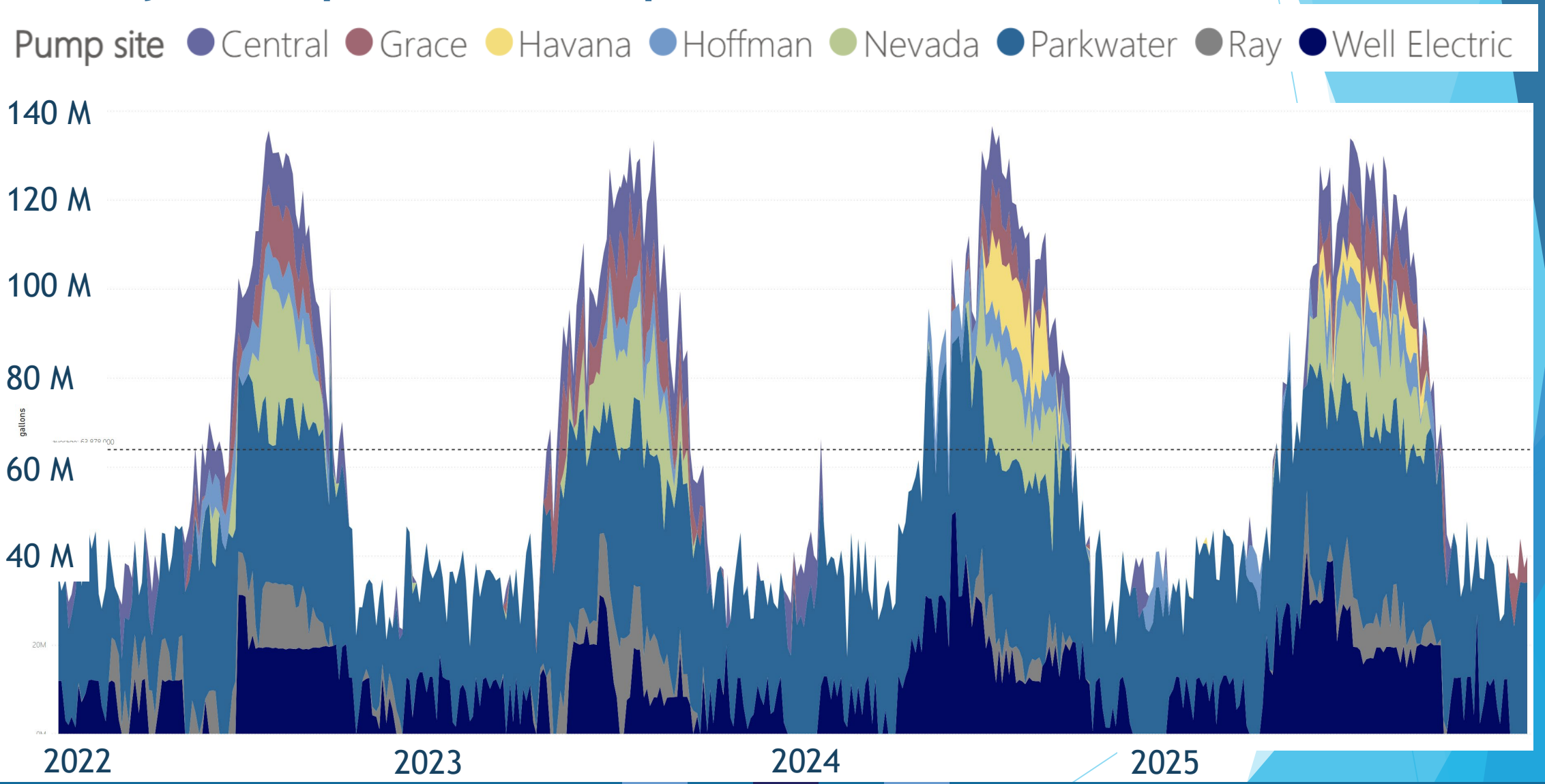
	Booster Station
1	14th & Grand Booster Station
2	35th & Ray Booster Station
3	9th & Pine Booster Station
4	Belt Street Booster Station
5	Bishop Court Booster Station
6	Division-Manito Booster Station
7	Eagle Ridge Booster Station
8	Eagle Ridge II Booster Station
9	Five Mile Booster Station
10	Garden Park Booster Station
11	Glennaire Booster Station
12	Kempe Booster Station
13	Latah Booster Station
14	Lincoln Heights Booster Station
15	Milton Street Booster Station
16	Shawnee Avenue Booster Station
17	Southview Booster Station
18	Spotted Road Booster Station 1 & 2
19	Sunset Booster Station
20	Thorpe Road Booster Station
21	West Drive Booster Station
22	Woodridge Booster Station
23	Beacon Hill Booster Station

	Well Station
1	Central Avenue Well Station
2	Grace & Nevada Well Station
3	Hoffman Well Station
4	Parkwater Well Station
5	Ray Street Well Station
6	Well Electric Station
7	Havana Well Station

Spokane's Well Stations



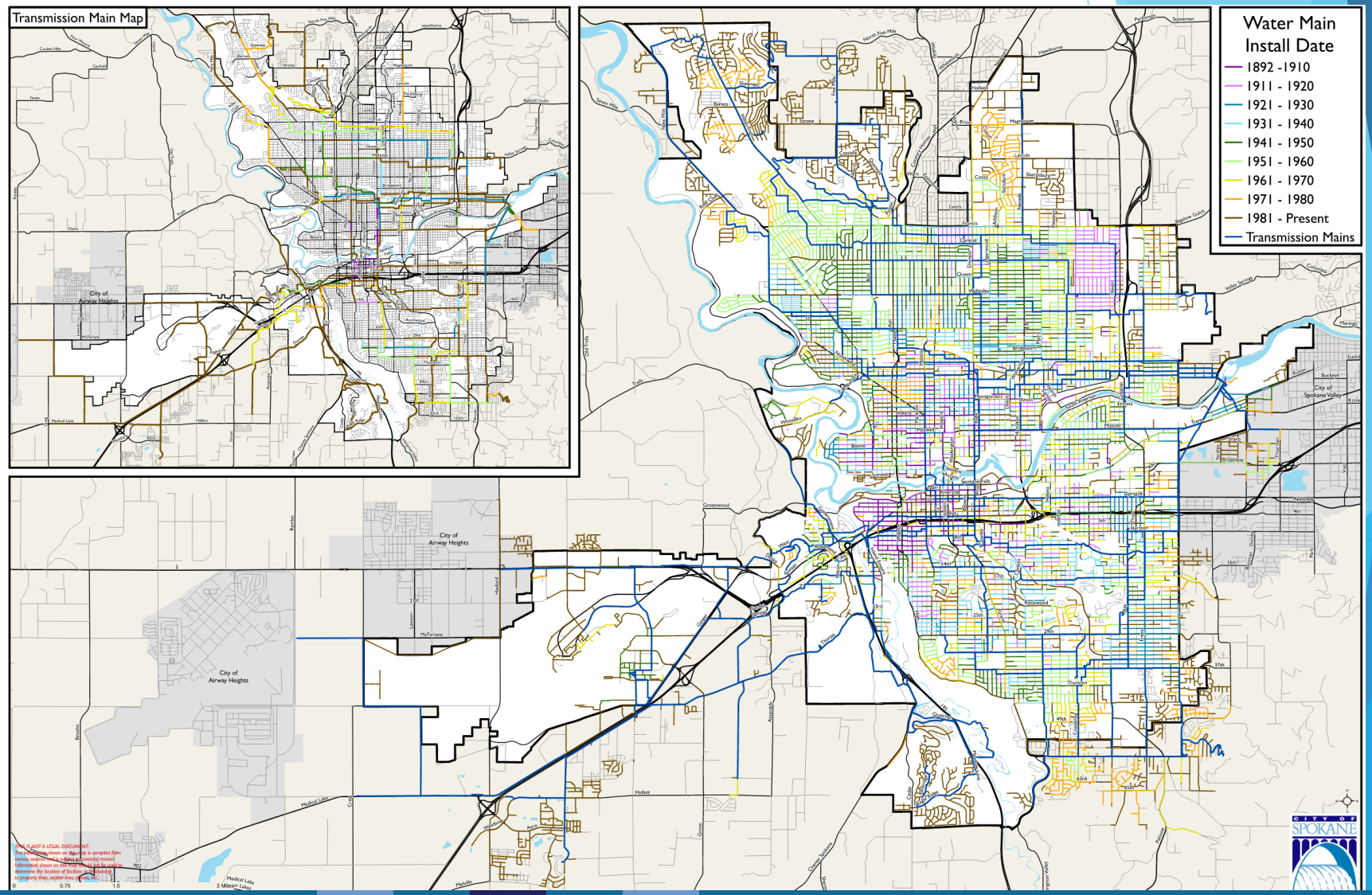
Daily Pumped Water per Well Station



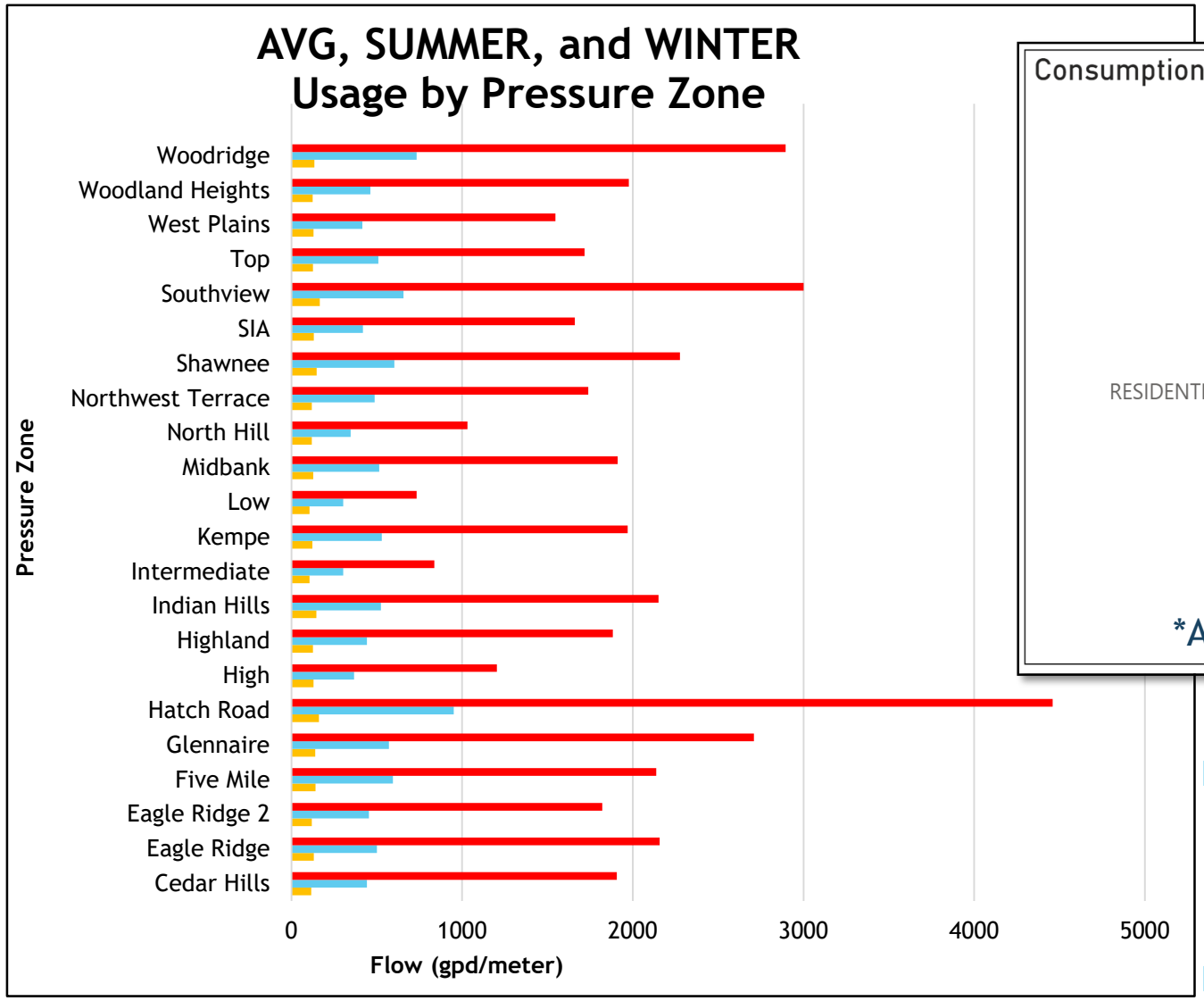
Distribution of Water

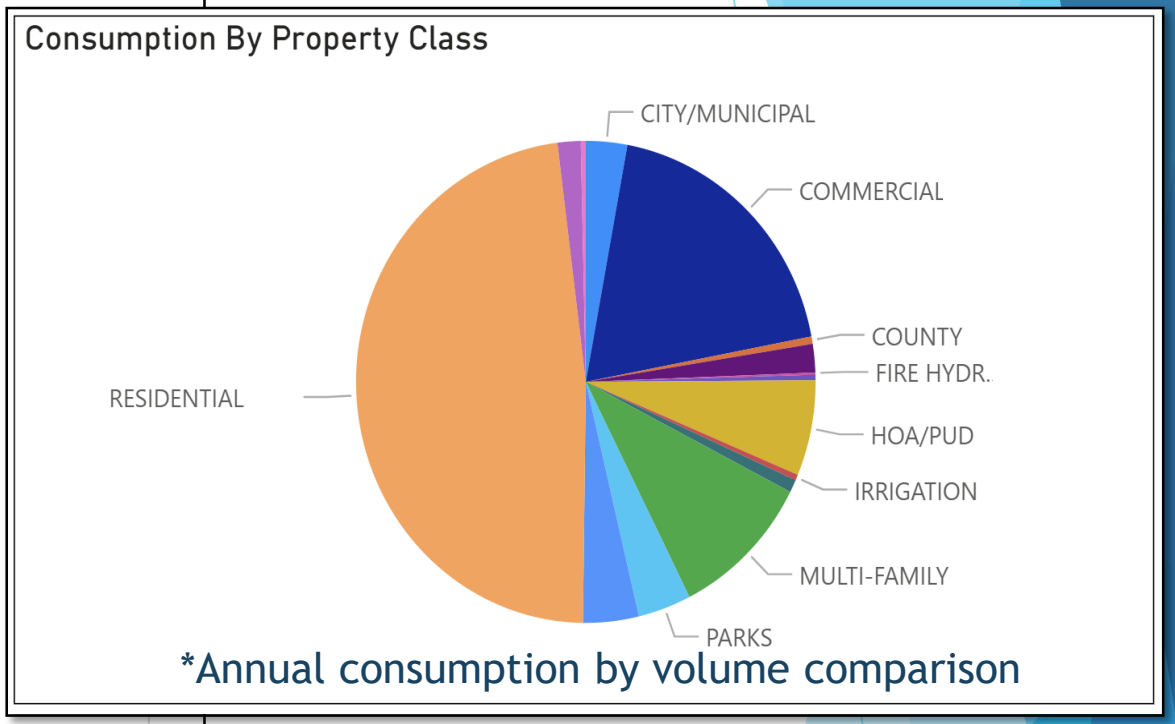
Transmission Mains	
Construction Year	Miles
1892-1910	2
1911-1920	2
1921-1930	13
1930-1940	2
1941-1950	9
1951-1960	12
1961-1970	19
1971-1980	11
1981-2000	55
2001+	65
Total	191

Distribution Mains	
Construction Year	Miles
1892-1910	29
1911-1920	47
1921-1930	45
1931-1940	52
1941-1950	104
1951-1960	123
1961-1970	99
1971-1980	86
1981-2000	133
2001+	164
Total	882



Water Demands





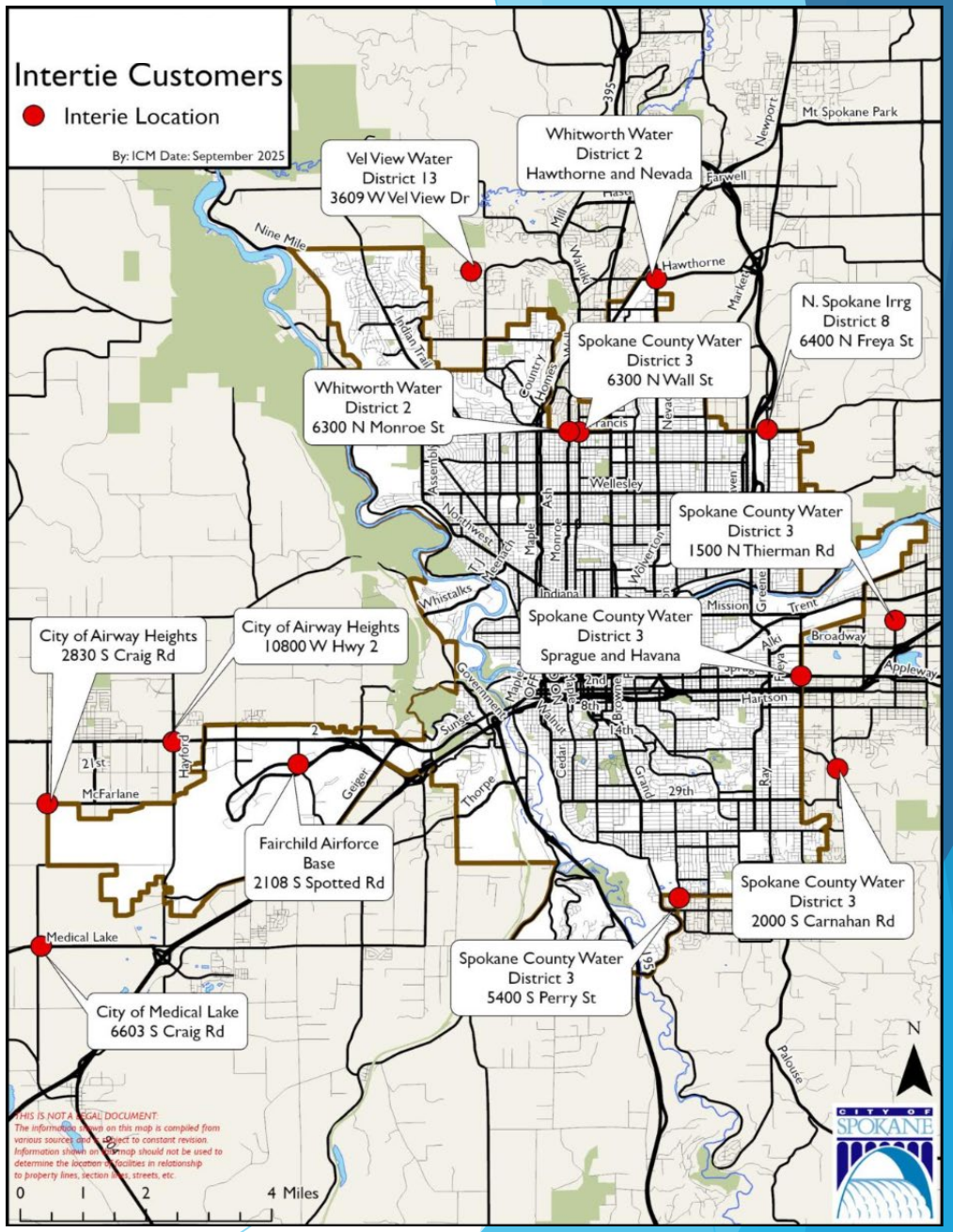
*Annual consumption by volume comparison

- Equivalent Residential Unit is defined as a system-specific unit of measure used to express the amount of water consumed by a typical full-time single-family residence
- Link:(WAC 246-290-010)

Regional Water Purveyor

Adjacent Water System	Type of Service
City of Airway Heights	Wholesale supply
City of Medical Lake	Supplemental supply
Fairchild Air Force Base	Emergency
North Spokane District No. 8	Emergency
Spokane County Water 3	Supplemental supply and emergency
Vel View Water District #13	Supplemental supply
Whitworth Water Irrigation District 2	Emergency

- The definition of a Regional Water Purveyor is found in the Public Water System Coordination Act of 1977
  Link:(RCW 70A.100).
- Defined as the physical interconnection or coordinated management of multiple independent community water systems to serve a large geographic area, population, or multiple municipalities.



Water Use Efficiency

Washington State Department of HEALTH

Date Submitted: 6/30/2025

Water Use Efficiency
Annual Performance Report - 2024

WS Name: SPOKANE CITY OF
Water System ID# : 83100 WS County: SPOKANE

Report submitted by: *Doug Greenlund*

Meter Installation Information:

Estimate the percentage of metered connections: *100%*

If not 100% metered – Did you submit a meter installation plan to DOH? No

Within your meter installation plan, what date did you commit to completing meter installation?

Current status of meter installation:

Production, Authorized Consumption, and Distribution System Leakage Information:

12-Month WUE Reporting Period *01/01/2024* To *12/31/2024*

Incomplete or missing data for the year? *No*

If yes, explain:

Total Water Produced & Purchased (TP) – Annual volume gallons	*22,789,386,000* gallons	
Authorized Consumption (AC) – Annual Volume in gallons	*19,914,210,000* gallons	
Distribution System Leakage – Annual Volume TP – AC	*2,875,176,000* gallons	
Distribution System Leakage – DSL = [(TP – AC) / TP] x 100 %	*12.6 %*	
3-year annual average - %	*12.6 %*	*2021, 2022, 2024*

Goal-Setting Information:

Enter the date of most recent public forum to establish WUE goal: *07/20/2020*

Has goal been changed since last performance report? *No*

Note: Customer goal must be re-established every 6 years through a public process.

Customer WUE Goal (Demand Side):

12.6 %

12.6 % *2021, 2022, 2024*

Conservation Successes – Spokane Codes

- WAC 246-290-Part 8 Water Use Efficiency
- RCW 90.54.180 Water use efficiency and conservation programs and practices.
- 2022 Ordinance C36209 passed by Council
- Spokane Municipal Code Link: Section 13.04.1925
  - Water Conservation Measures
    - Between June and Oct that prohibit watering during the heat of the day, no more than 4 days a week, only water for 2 hrs, and don't water impervious area
  - More stringent requirements are implemented if the Spokane River levels fall below 1,000 cfs
  - Effective 2023

Conservation Successes- Residential & Educational

- Educational Outreach
  - 26 Events or Classes in 2026 with a total of 2,350 participants
  - 7 upcoming education events between now and September
- Residential Appointments (Indoor & Outdoor)
  - In 2025 - 181 & In 2026 – 45
- Rebates Program
- SpokaneScape Rebate Program
  Link: SpokaneScape - City of Spokane, Washington
  - 2018 to now- 509 projects and 611,000 sqft of lawn replaced
- Added one more tiered consumption rate charge in 2021 (Tier 5) and increase the usage fees, especially for the higher usage rates

Rebates Issued in 2025

Rebate Group	Rebate Count	Unique Customers	Total Amount
Commercial	**1**	**1**	**$675**
Cooling Tower Controller Rebate	1	1	$675
Indoor Fixtures	**4**	**4**	**$700**
Toilet Rebate	4	4	$700
Irrigation	**128**	**123**	**$14,023**
Efficient Nozzle Rebate	8	8	$580
IRR Controller Rebate	103	101	$10,143
Spray to Drip Rebate	17	17	$3,300
Other	**106**	**102**	**$41,483**
Spokanescape	87	84	$38,633
Water Wise Challenge	19	19	$2,850
Total	**239**	**211**	**$56,881**

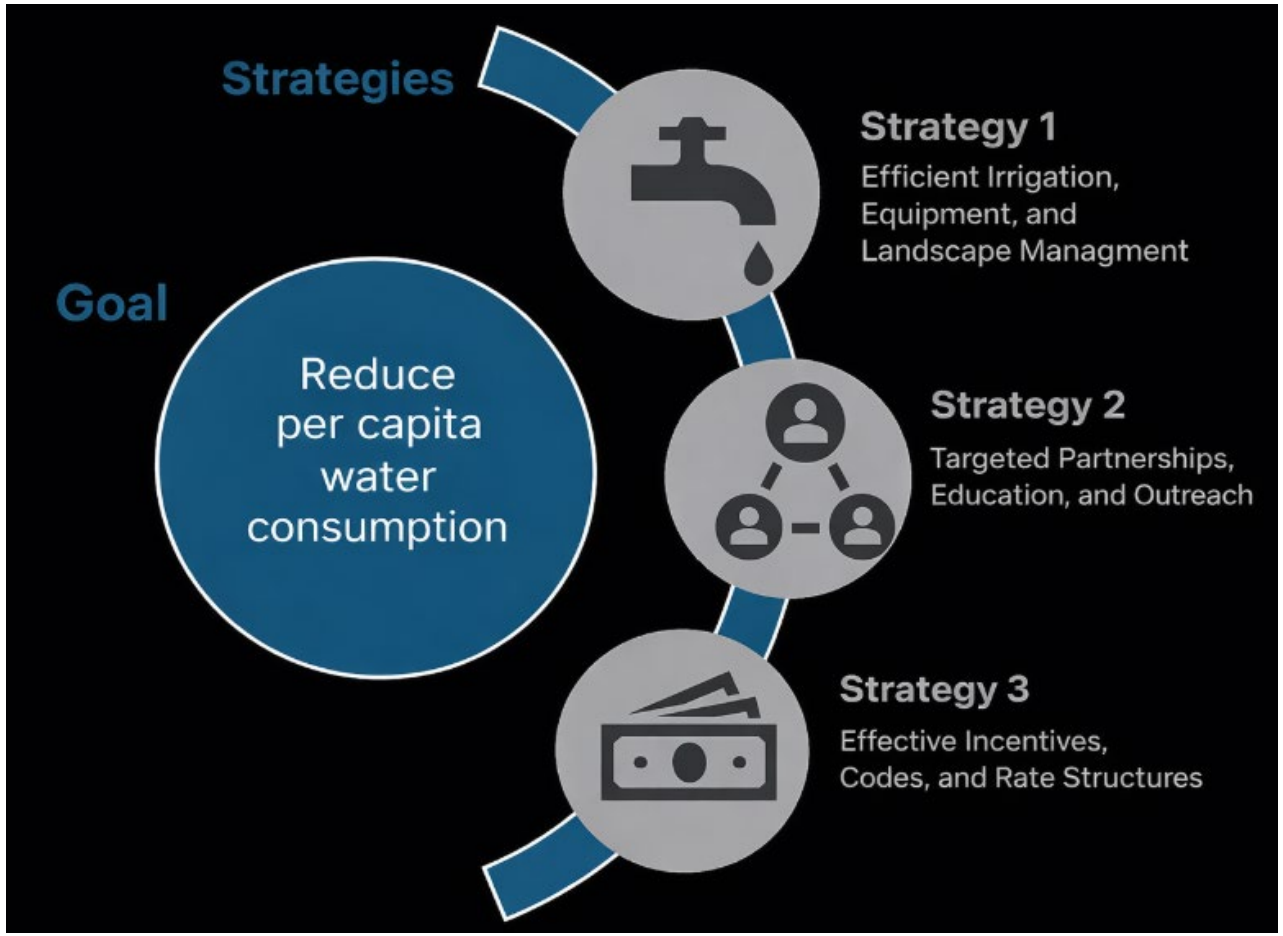
*IRR – Rain Dial Controller for Irrigation

Conservation Successes – Commercial

- Water Wise Spokane Commercial Program
  - Holy Family Hospital Story – 2025 Video Link: https://vimeo.com/1129707907/dde781b82d
    - Repaired broken lines - landscaped and watered appropriately with smarter technology
    - Saved 7.2 million gallons annually
    - $12,000 saved annually
  - Annual Water Demand Reduction: 47+ Million Gallons
    - Verified through: Utility billing analysis, advanced metering infrastructure data, submetering, before-and-after demand comparisons

Major Project Highlights Project	Confirmed Annual Reduction
Glen. HOA Mainline Leak	~12.9 million gallons
Spokane Public Utilities Irrigation Portfolio	~12.1 million gallons
WA Trust Bank Cooling Optimization	~6 million gallons
Great Western Building Cooling Valve Leak	~5.4 million gallons
St. Luke's Irrigation Controller Correction	~4.5 million gallons
Kiemle Hagood Trap Primer Failure	~4 million gallons
Multicare Deaconess Hospital Optimization	~2.5 million gallons

Draft Water Use Efficiency/Conservation Plan



In the 5 Year Review Process

DRAFT Water Use Efficiency/Conservation Plan

- Examples Actions (A):
  - Evaluate high water users
  - Expand water conservation tools
  - Promote efficiency with a focus on irrigation system
  - Conduct check-ups and recommendations
  - Improve data use with Advanced Metering Infrastructure integration

Key Performance Indicators (KPIs)

Action → KPI Alignment

	KPI 1	KPI 2	KPI 3	KPI 4	KPI 5
A1	●	●	●	●	
A2	●	●	●		●
A3	●	●	●	●	
A4	●	●		●	●
A5		●	●		
A6	●				
A7		●	●		
A8	●			●	
A9	●	●	●		
A10	●		●		

Emerging Issues

PFAS/PFOA Forever Chemicals - Spokane

Well Station	Number of Primary PZ Supplied	Annual Supply in 2025 (MG)
Havana Street	2	584
Central	1	1,426
Hoffman	1	1,006
Nevada	1	1,978
Grace	1	1,021
Well Electric	3	5,396
Ray Street	1	867
Parkwater	2	12,429
Total Pumping	3 Primary	24,707

The current Running Annual Average at Ray Well Street is 3.63.

Compound	4/22/2025	7/29/2025	10/28/2025	1/27/2026
PFOS RAA	2.86	2.86	3.97	3.63

The current Running Annual Average at Havana Well Street is 2.26.

Compound	4/22/2025	7/29/2025	10/28/2025	1/27/2026
PFOS RAA	0.00	1.08	2.26	2.26

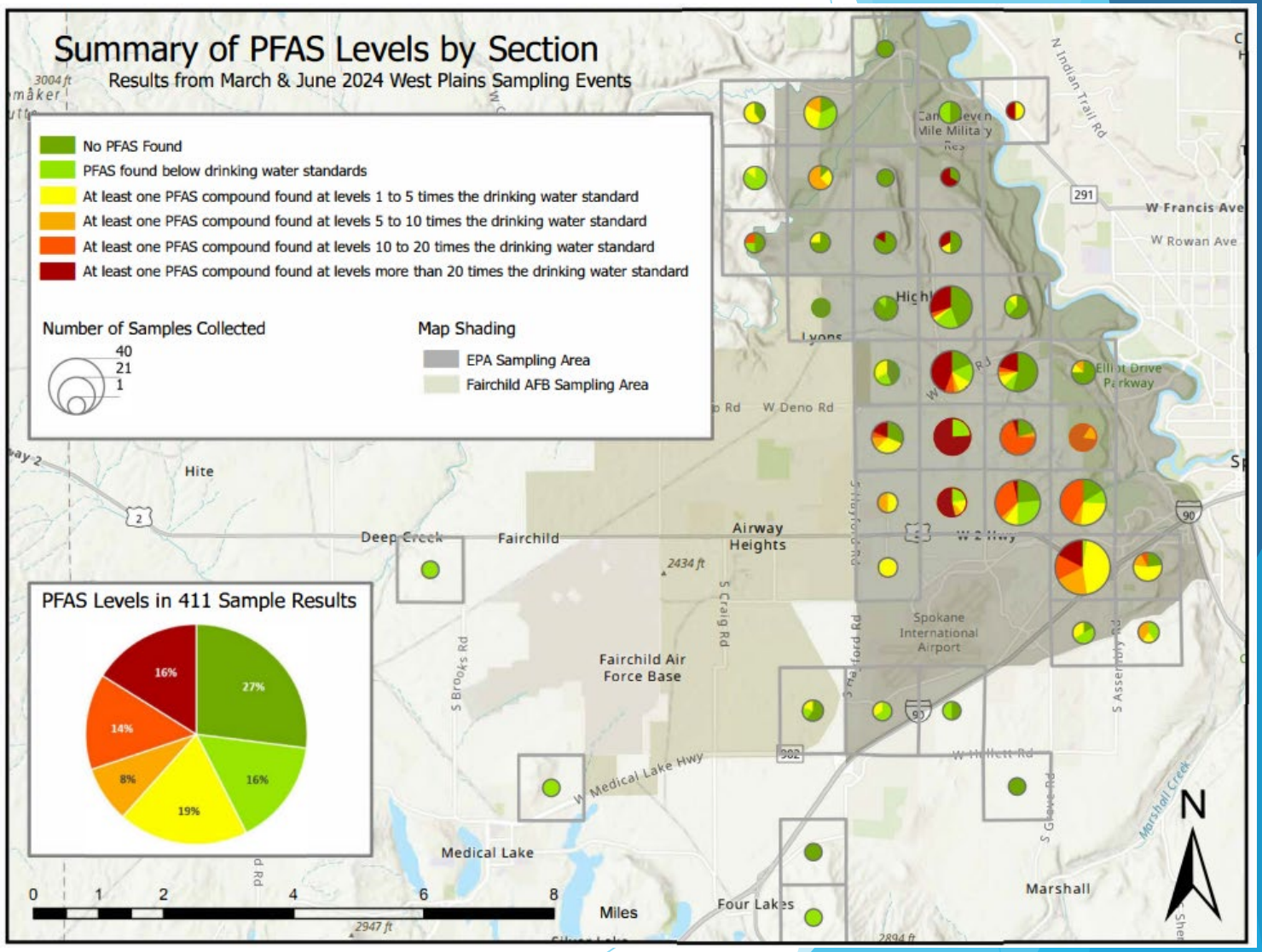
*Running Annual Average Maximum Contaminate Level is 4 parts per trillion for PFOS

Spokane's Supplemental Water Supply to Airway Heights – PFAS Contamination

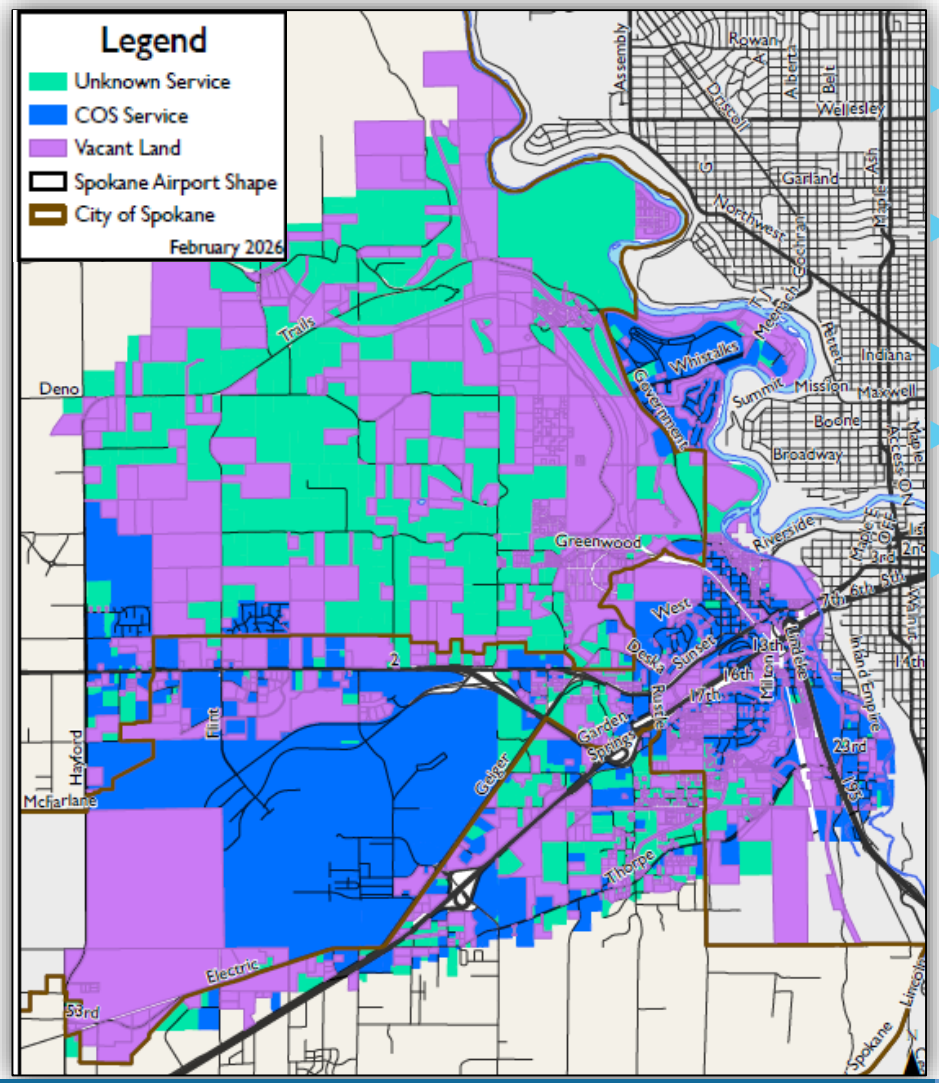
- Airway Heights drinking water was tested and found PFAS in 2017
  - Spokane r**esponded within days** to provide additional temporary water intertie
  - Constructed a new intertie location at Craig Road and McFarlane Road in 2018
- Continued investments in Spokane's water system infrastructure
- Continued to update the intertie agreements between Spokane and Airway Heights
- Spokane is now serving an additional 11,000 people outside of Spokane's ultimate service area through these two connections
- Currently working on the design of a larger capacity intertie vault to meet Airway Heights future demand needs

Private Wells Contaminated with PFAS

- 2024 EPA's testing results of 411 private wells identified 236 wells had PFAS levels above drinking water standards



The Role of the City and County



- Ecology named the City & County Potentially Liable Parties (PLP) because of their ownership of the Spokane International Airport
- The airport required by Federal Aviation Administration to use AFFF* firefighting foam, which contains PFAS
- The City and County signed an agreed order with Ecology
- Ecology has defined an area where they are requiring the City, County and Airport to provide access to clean water
- Geographic area includes about:
  - 2,000 parcels already connected to City of Spokane municipal water
  - 2,000 vacant parcels
  - 900 properties with buildings and possibly private wells

*AFFF: Aqueous Film-Forming Foam

What is happening now?

- Under an Ecology-approved short-term plan:
  - Filter pitchers and countertop units are available
  - Residents also can access the City's Garden Spring Fill Station
  - Testing throughout the area will begin soon.
- Spokane County received $7.5 million grant from County & Spokane Regional Health Dist. for point of entry treatment (POET) filter distribution systems.
- City and County are pursuing funding for other projects – to install more POET systems and look at possibilities for extending municipal water

Drought Conditions Across Washington State

Prior to the current legislative framework:

1977 – Statewide (Governor convened "Ad Hoc Executive Water Emergency Committee" Feb. 16, 1977 -- pre current drought framework)

1988 – Statewide (Very dry 1987 resulted in legislation enacting current drought framework- RCW 43.83B)

Following years were based on current drought framework from 1989 (RCW 43.83B.405 and WAC 173-166-050):

1992 – Yakima Basin

1994 – Yakima Basin

2001 – Statewide

2005 – Statewide

2006 – Lyre-Hoko

2015 – Statewide

2019 – 27 Watersheds, including the Yakima, but excluding SE Washington and Puget Sound region

2021 – Statewide, except for central Puget Sound (Green, Cedar, Snohomish WRIAs)

2022 – Partial extension of 2021 declaration for a few watersheds in eastern WA, with the remainder of eastern Washington being put in Drought Advisory status. (Ecology pulled back the declaration in July after extending it in late May).

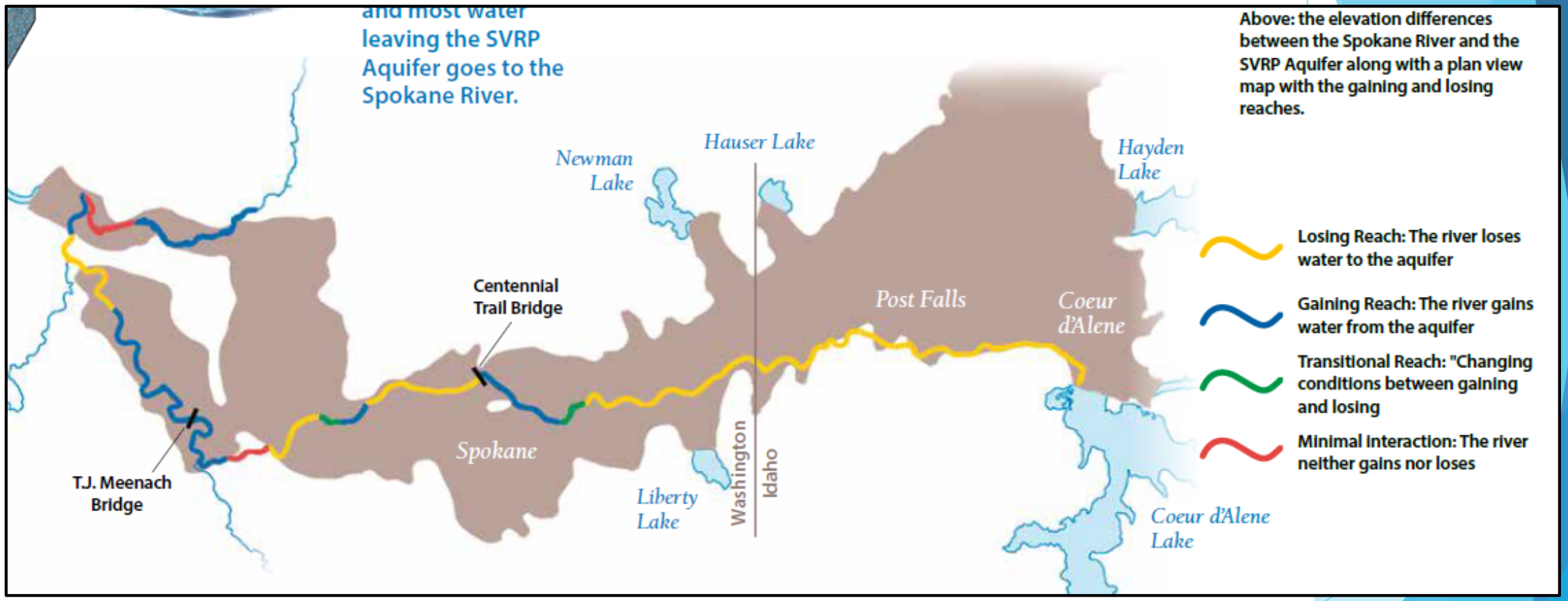
2023 – 12 watersheds/12 counties in the emergency drought declaration with a statewide advisory.

2024 – Statewide declaration, except for the areas served by the utilities of Everett, Seattle, and Tacoma.

2025 – 22 watersheds, except for the areas served by the utilities of Everett, Seattle, and Tacoma.

2026 – 4th Statewide drought

Spokane River and Aquifer



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

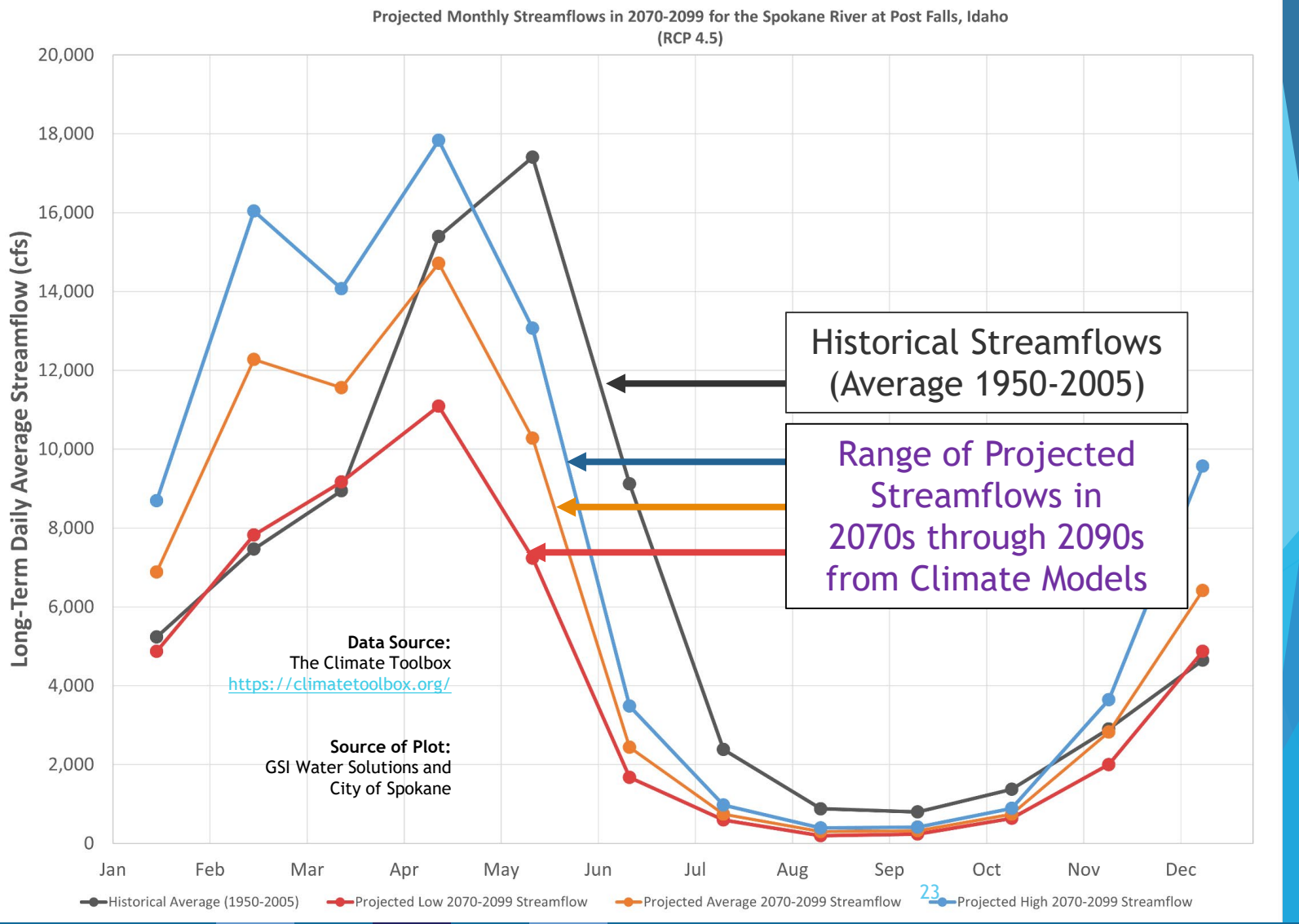
Spokane River Projections – Post Falls

The groundwater model was used to examine potential climate effects on streamflows and the aquifer in the latter 3 decades of the 21st century

Climate Influences on Recharge to the Aquifer

Spokane River Streamflows at Headwaters (Outflows from Post Falls Dam)

RCP 4.5 - Representative Concentration Pathways (RCPs) Moderate greenhouse gas emissions



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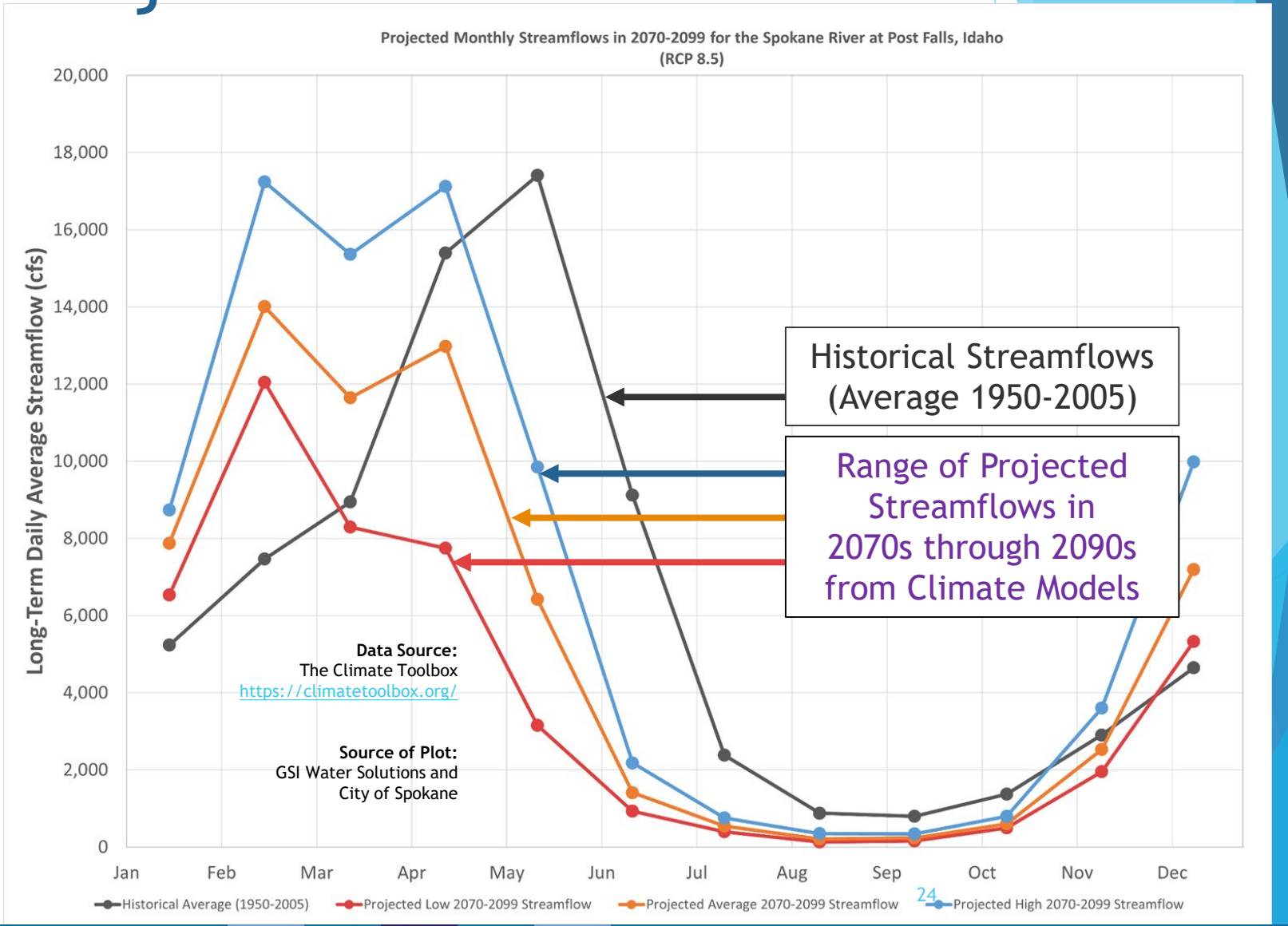
Climate Influences on Recharge to the Aquifer

Spokane River Streamflows at Headwaters (Outflows from Post Falls Dam)

RCP 8.5 - Representative Concentration Pathways (RCPs) High greenhouse gas emissions



Case Study:

Assessment of Future Water Levels at the Nevada Well Station

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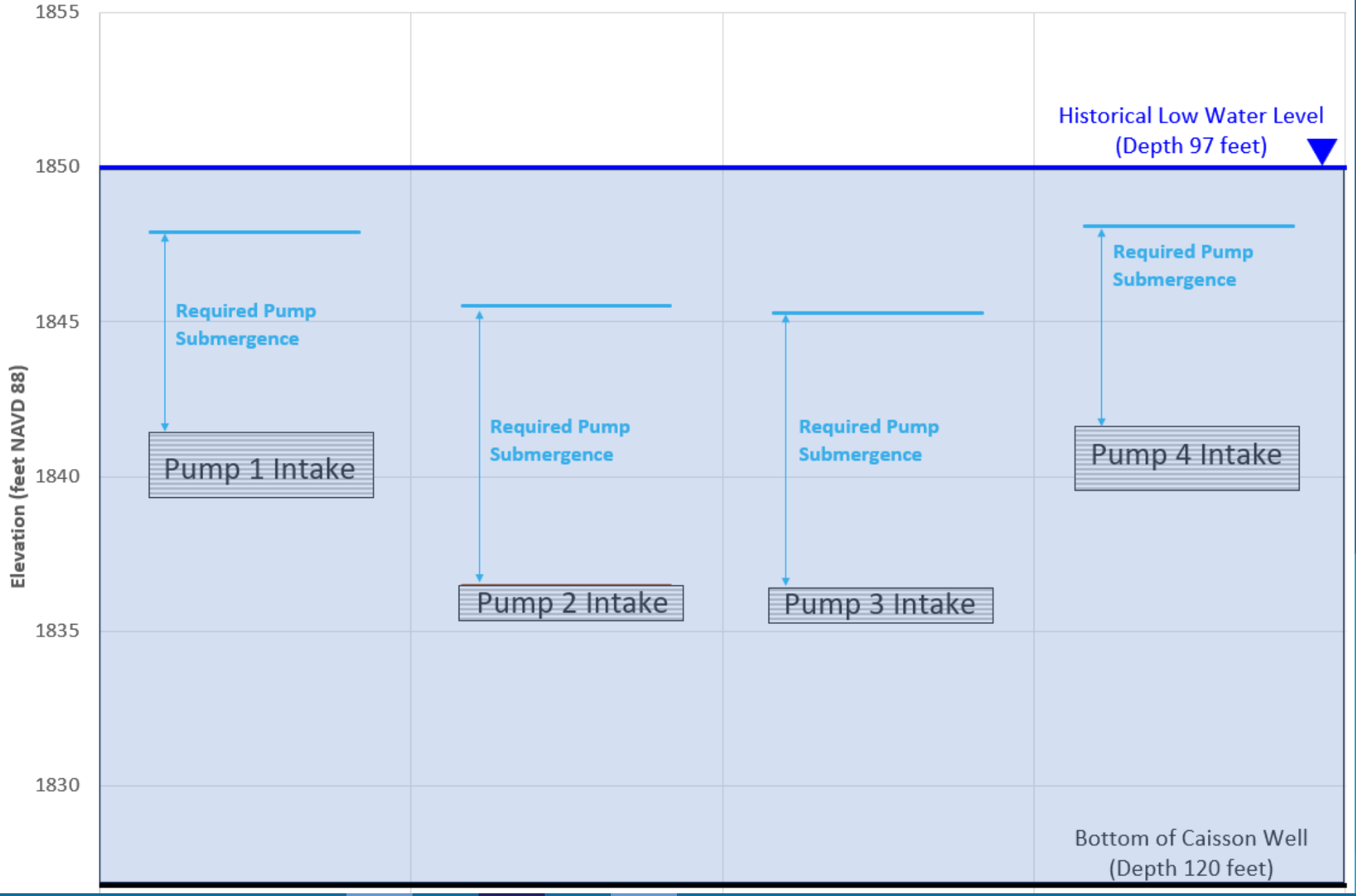

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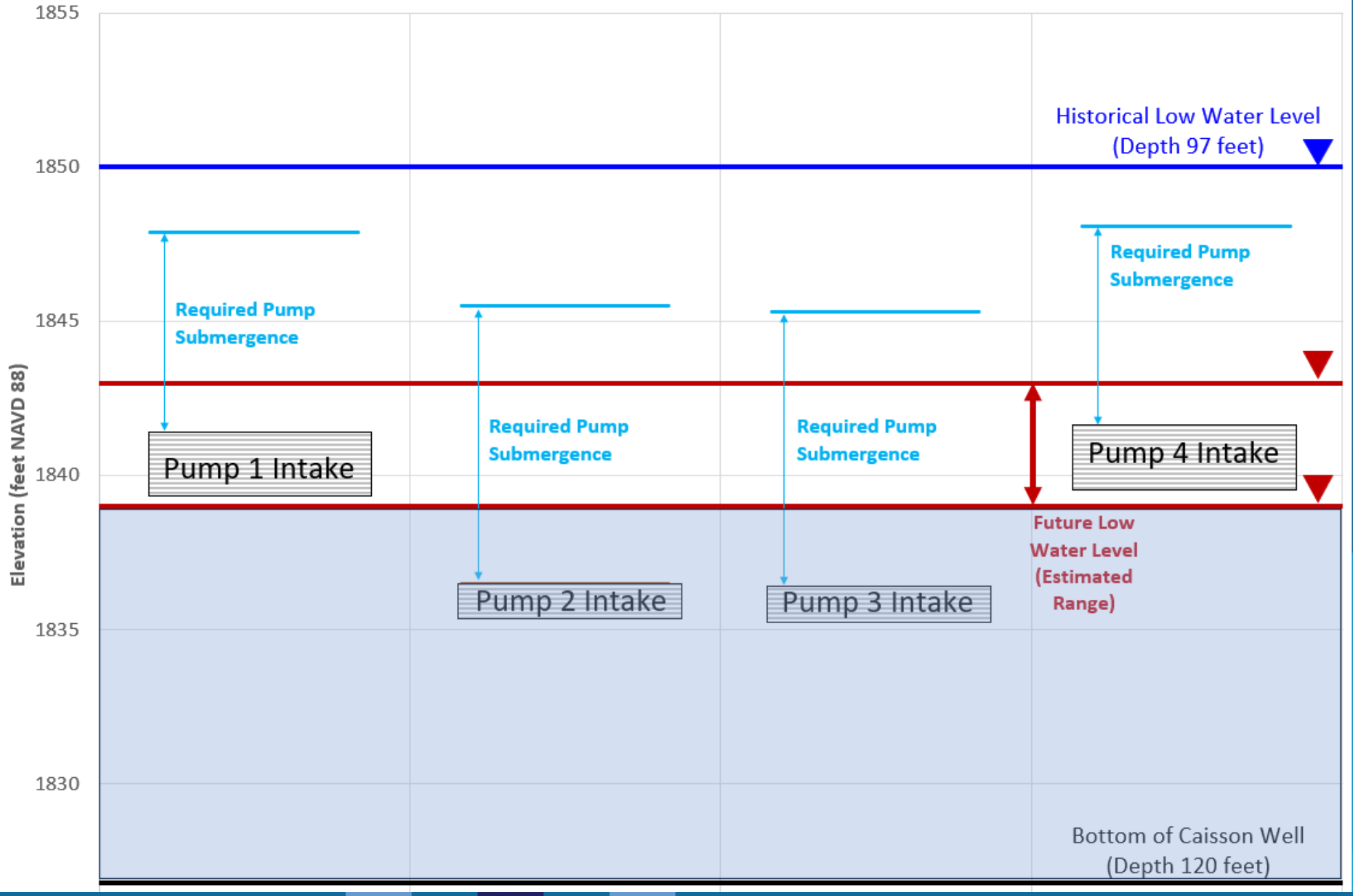
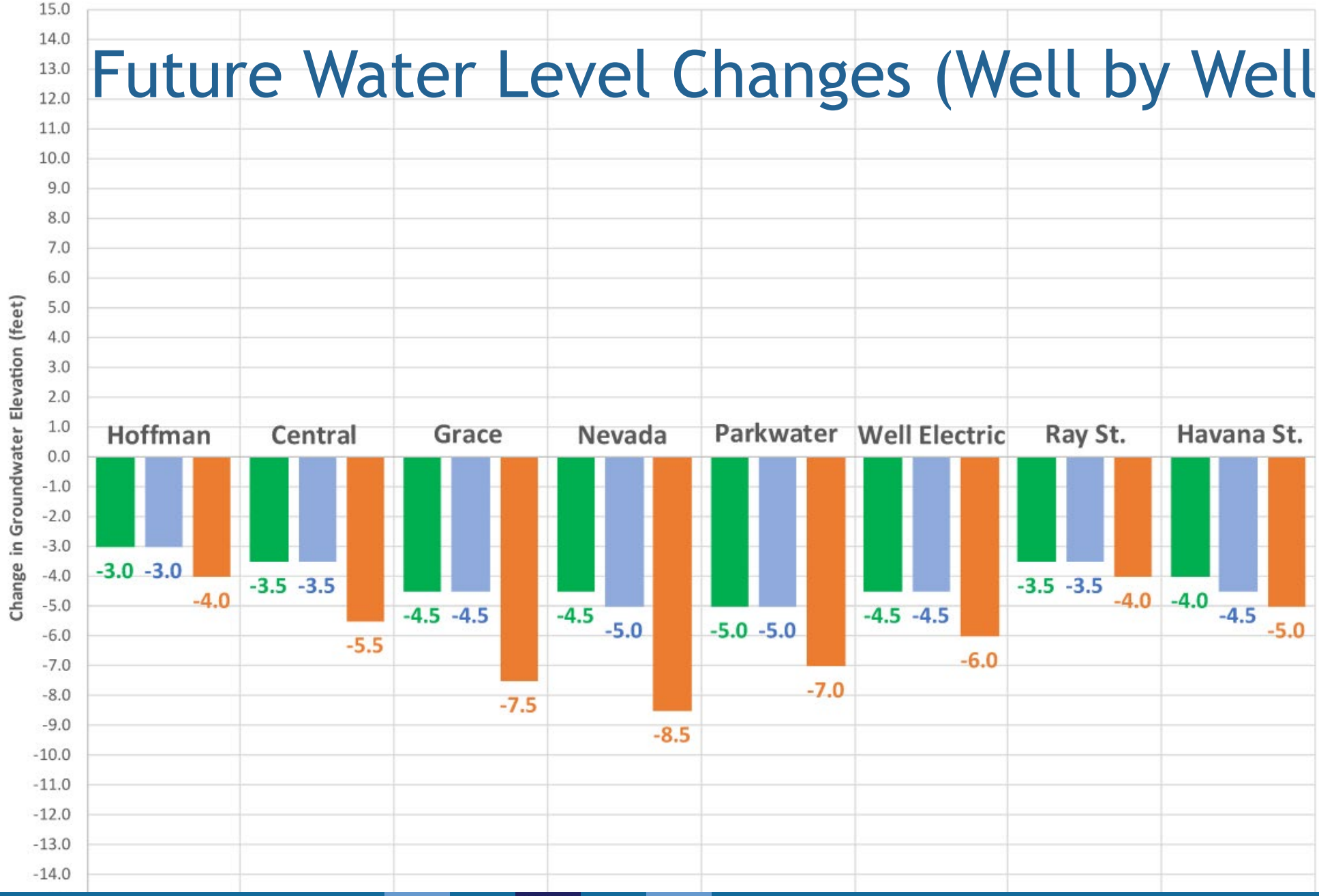


Future Water Level Changes (Well by Well)

Summary of Findings for Future Median Climate Conditions



Spokane Water Supply Costs

- 6 Year Capital Program
  - Capital Infrastructure Investments of $210 Million
  - Operational Investments = $140 Million
  - Total= $350 Million
- 20 Year Capital Facility Program
  - Total 20 Year Investments =$570 Million

Spokane Water Supply: Long-Term

- Continue to serve our constituents
- Continue to be the regional water purveyor
- Continue to be a good steward of our water source
- Continue to work towards greater water efficiency
- Continue to reevaluate, study, problem solve, and act

Thank You

Photo Credit: Craig Goodwin

Beryl Fredrickson, PE
Senior Engineer,
Past Washington Water Utility Council Chair
Integrated Capital Management Department
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