

PFAS Treatment Evaluation Update

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June 10, 2026

Agenda

- **PFAS & Groundwater Review**
- **Project Overview**
- **Implementation Plan Outcomes**
- **Next Steps**



PFAS Consist of 1000s of Human-made Chemicals

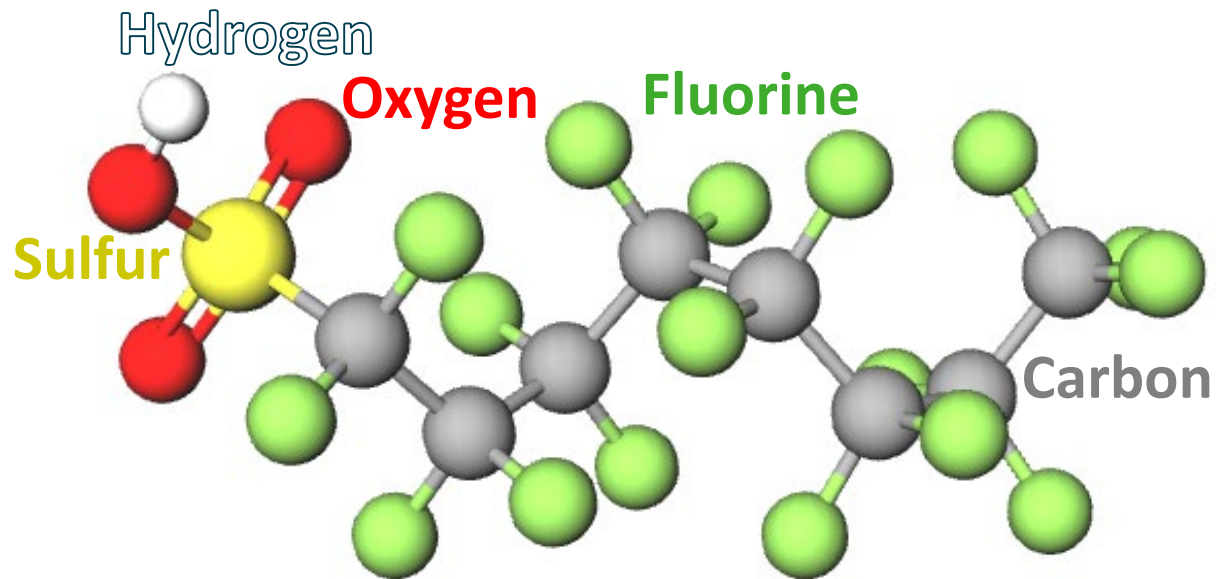


Image from Seattle Times

PFOS is the primary PFAS chemical in Aqueous Film-Forming Foam (AFFF)

South Tacoma Wells



PFAS Regulations



- **Current EPA PFAS Rule sets limits for 6 compounds by 4/2029**
 - 5/2026: EPA proposing to only regulate 2 compounds and allow some water systems 2-year extension
 - This change is not finalized and may be modified by ongoing legal actions
- **WA State aligned new state limits with current EPA limits, effective 1/2026**
 - Regardless of any future EPA revisions, Tacoma Water must meet State standards
- **Allowable levels based on running annual average at entry point to distribution system**

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32532

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 141 and 142

[EPA-HQ-OW-2022-0114; FRL 8543-0W]

RIN 2040-AG18

PFAS National Primary Drinking Water Regulation

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: In March 2022, the Environmental Protection Agency proposed and requested comment on the National Primary Drinking Water Regulation (NPDWR) for six polyfluoroalkyl substances (PFAS) for six Maximum Contaminant Levels (MCLs) for six polyfluoroalkyl substances: perfluorooctane sulfonate (PFOS), perfluorooctane sulfonamide (PFOSA), perfluorohexane sulfonate (PFHxS), perfluorohexane sulfonamide (PFHxSA), perfluorobutane sulfonate (PFBS), and perfluorobutane sulfonamide (PFBSA).

TABLE 9
STATE ACTION LEVELS

Contaminant or Group of Contaminants	SAL	SAL Exceedance Based On:
Per- and polyfluoroalkyl substances (PFAS)		
PFOA	4.0 ng/L	Running annual average
PFOS	4.0 ng/L	Running annual average
PFHxS	10 ng/L	Running annual average
PFNA	10 ng/L	Running annual average
HFPO-DA	10 ng/L	Running annual average
Hazard Index PFAS (HFPO-DA, PFBS, PFHxS, and PFNA) ¹	1 (unitless) ¹	Running annual average

¹ The PFAS Mixture Hazard Index (HI) is the sum of component hazard quotients (HQs), which are calculated by dividing the measured component PFAS concentration in water by the relevant health-based water concentration when expressed in the same units (shown in ng/l for simplification). The HBWC for PFHxS is 10 ng/l; the HBWC for HFPO-DA is 10 ng/l; the HBWC for PFNA is 10 ng/l; and the HBWC for PFBS is 2000 ng/l.

Hazard Index:
$$= \left(\frac{\text{HFPO-DA}_{\text{water}} \text{ ng/l}}{10 \text{ ng/l}} \right) + \left(\frac{\text{PFBS}_{\text{water}} \text{ ng/l}}{2000 \text{ ng/l}} \right) + \left(\frac{\text{PFNA}_{\text{water}} \text{ ng/l}}{10 \text{ ng/l}} \right) + \left(\frac{\text{PFHxS}_{\text{water}} \text{ ng/l}}{10 \text{ ng/l}} \right)$$

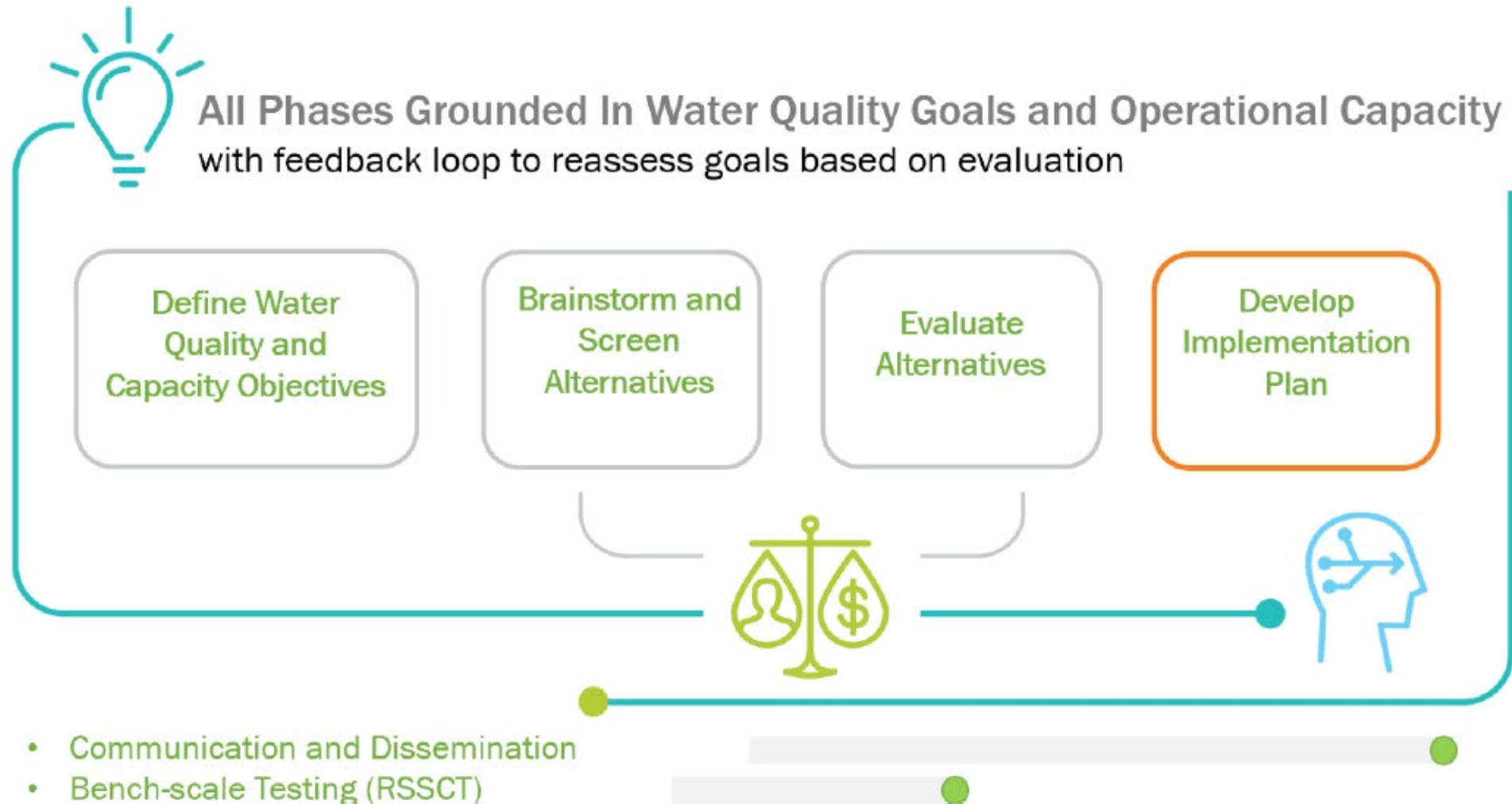
HBWC = health-based water concentration
 HQ = hazard quotient
 ng/L = nanograms per liter
 PFAS_{water} = the concentration of a specific PFAS in water

PFAS Sampling Summary

- **Green River and North Fork wells (in watershed) continue to have no detections for regulated PFAS**
- **South Tacoma and other in-town wells have varying PFAS concentrations**
 - Deep Aquifer wells have no detections
 - 2 wells removed from service
 - ~1/2 remaining wells below EPA and WA limits
 - ~1/2 remaining wells just above EPA and WA limits



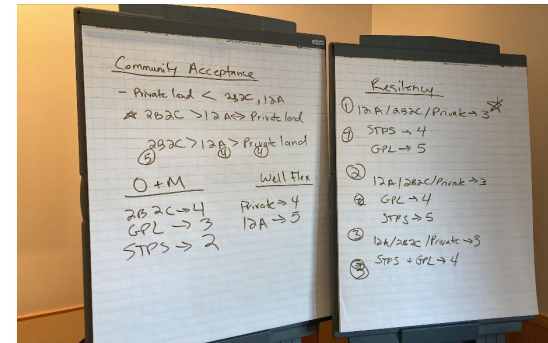
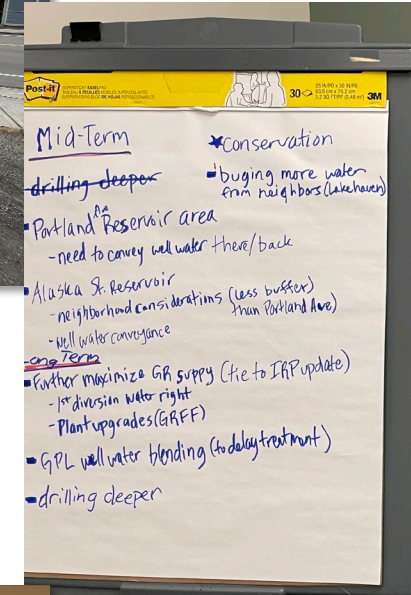
Project Overview



Project Look-back

• Key Workshops

- Kick-off: 4/17/2024
- Staff Interviews: 4/24 – 5/13/2024
- Workshop 1 Water Quality Goals: 5/14/2024
- Workshop 2 Operational Capacity Goals: 7/15/2024
- Alternatives Identification Workshop: 8/26/2024
- Alternatives Screening Workshop: 10/7/2024
- Alternatives Evaluation Workshop: 3/7/2025
- Scenario Planning Workshop: 6/30/2025
- Implementation Plan Workshop: 10/30/2025



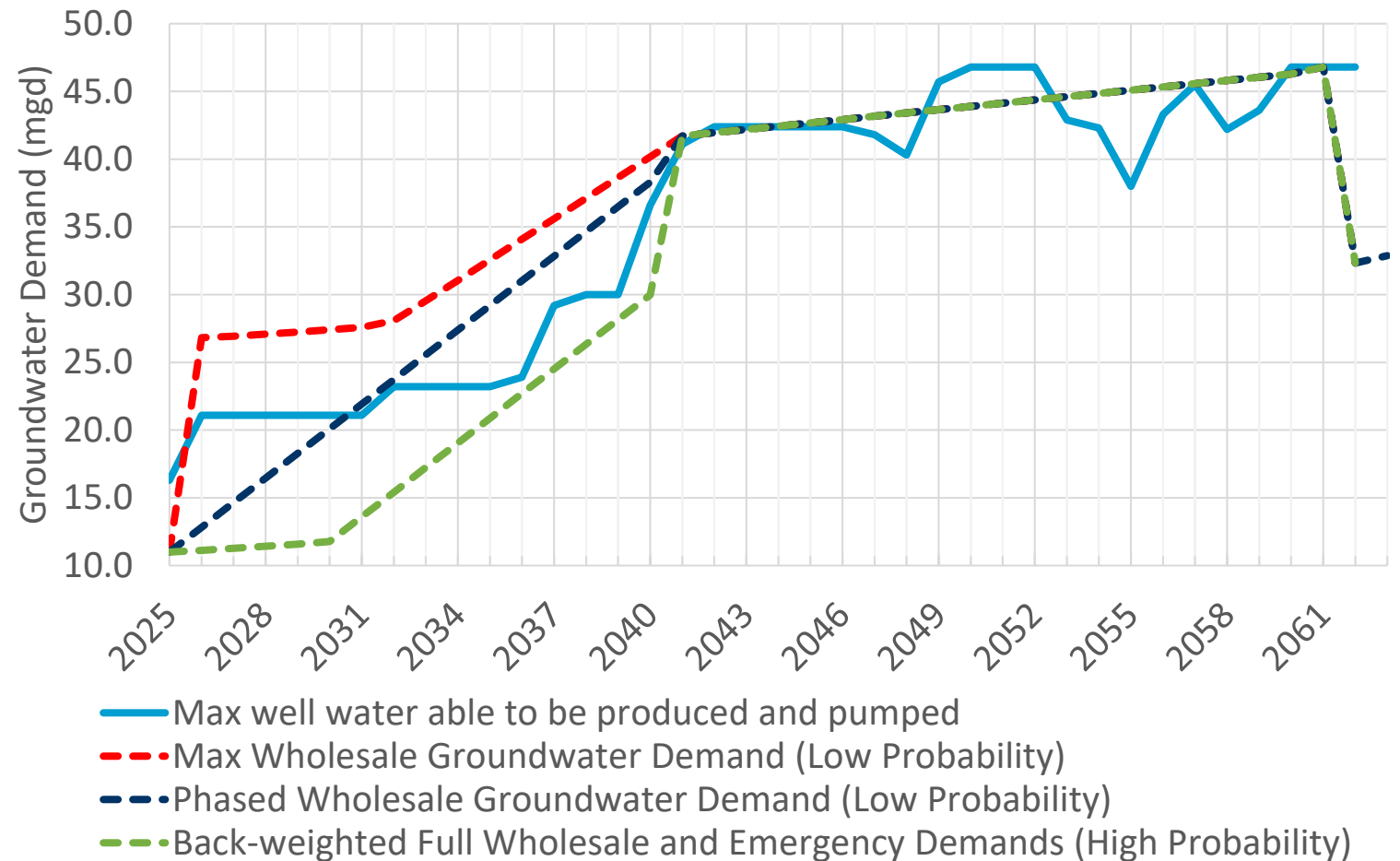
Water Quality Objectives

- **Meet the EPA/State regulatory requirements on a running annual average (RAA) basis**
 - Blend water from individual wells and minimize use of wells with higher PFAS levels to maintain lower PFAS levels entering system when wells operate
 - Leverage running annual average calculation to average in Green River samples at groundwater entry points when wells are not operating



Capacity Projections

- Integrated Resource Plan analysis as basis for long-term water demands
- Focus on “High Probability”
- Cascade agreement active by 2041



mgd = million gallons per day

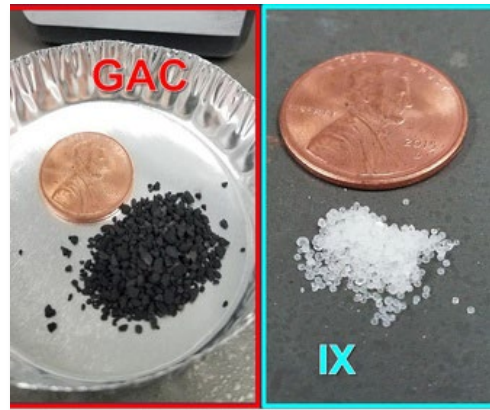
DOH Compliance Overview



- **WA Department of Health has been engaged throughout the development of the PFAS Implementation Plan**
- **2026 Updates:**
 - Groundwater sampling requirements will be met by continuing to sample from the entry point to distribution (EPTDS)
 - EPTDS samples represent actual water served to customers on a running annual average (RAA) basis
 - Blending of a known contaminant requires a blending and monitoring strategy to ensure compliance goals are met
 - DOH will outline seasonal sampling requirements after Tacoma's Implementation Plan is submitted

PFAS Treatment

- Tacoma Water's current treatment processes are not capable of removing PFAS
- Two primary treatment methods likely to be used for PFAS removal
 - Granular activated carbon
 - Ion exchange

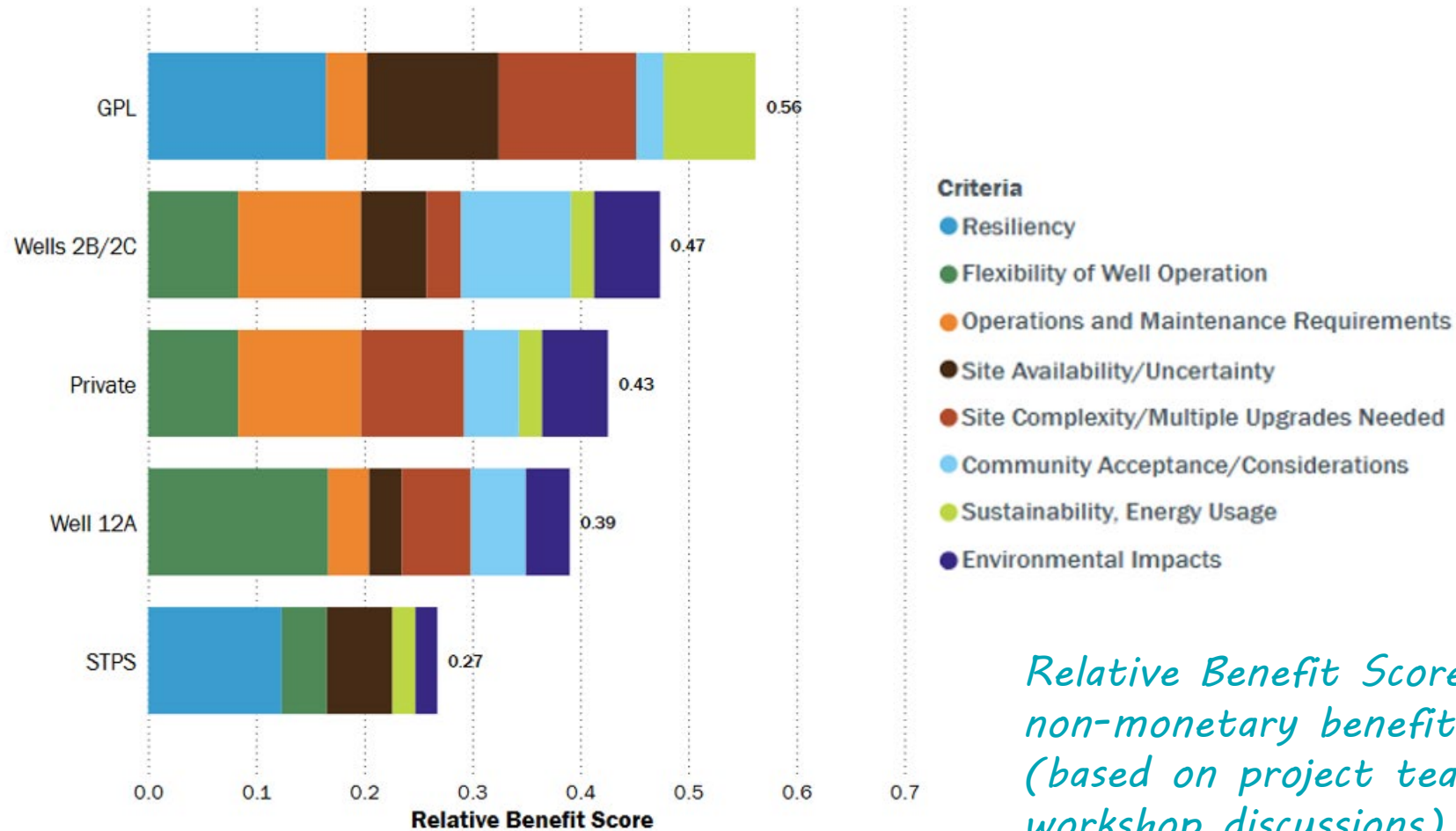


<https://awwa.onlinelibrary.wiley.com/doi/full/10.1002/awwa.1975>



Alternatives Evaluation

• Multi-criteria Decision Analysis

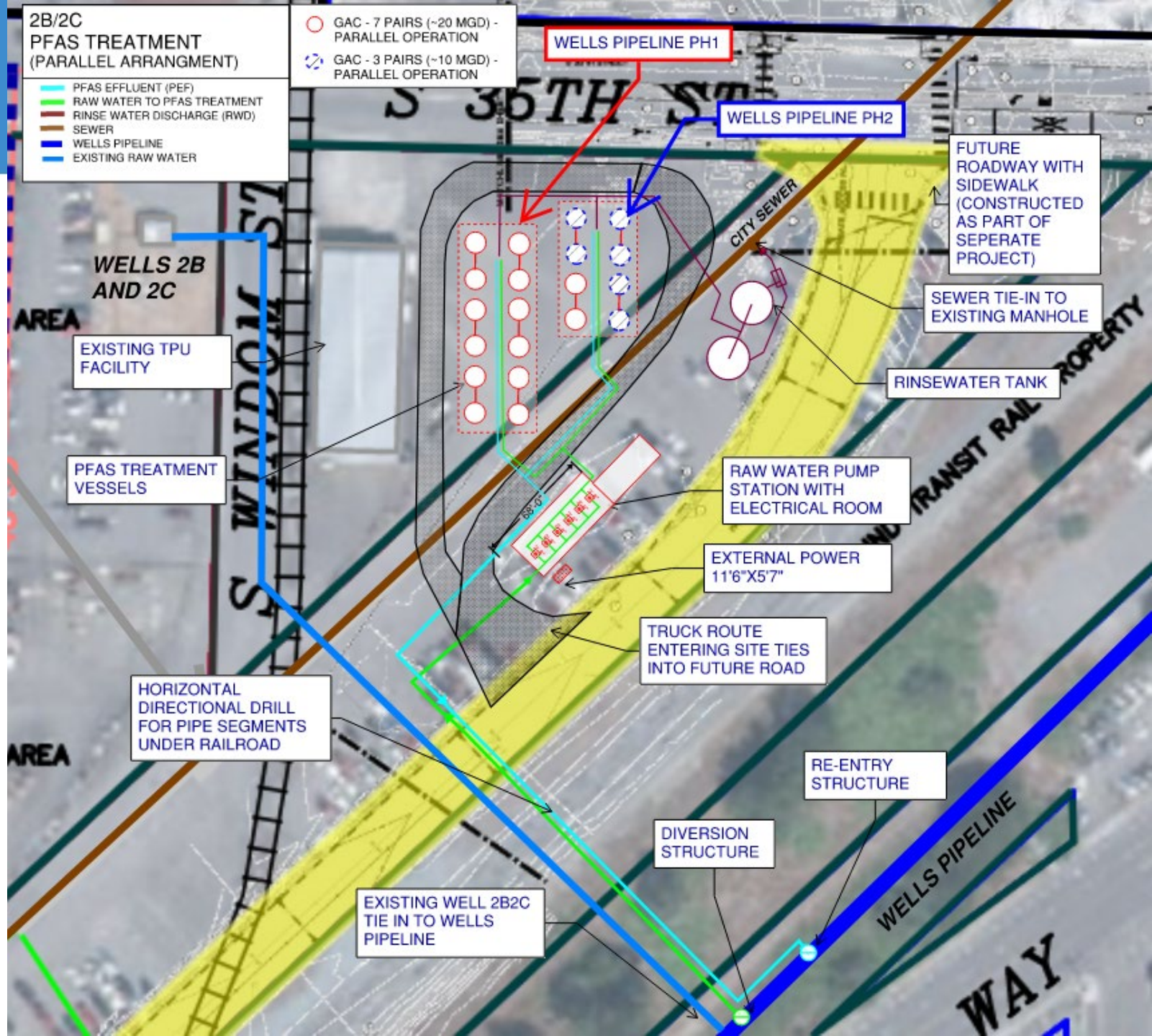


Relative Benefit Scores represent non-monetary benefits of alternatives (based on project team surveys and workshop discussions)

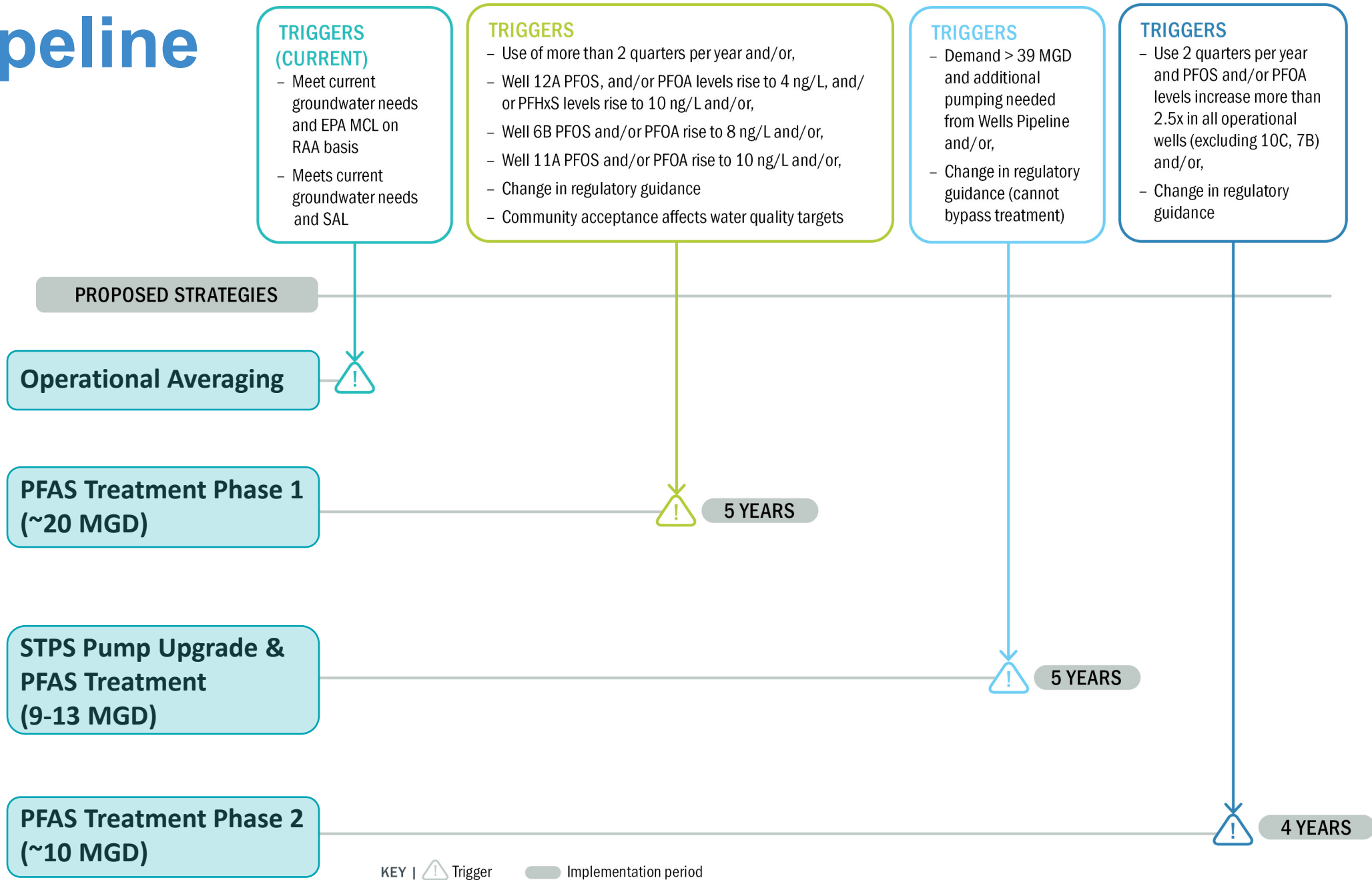
Wells Pipeline Treatment

- Example layout for one alternative
- Assumes parallel operation of vessels
- Phased implementation for total of 30 mgd capacity
 - Phase 1: ~20 mgd
 - Phase 2: ~10 mgd

mgd = million gallons per day



Wells Pipeline Triggers

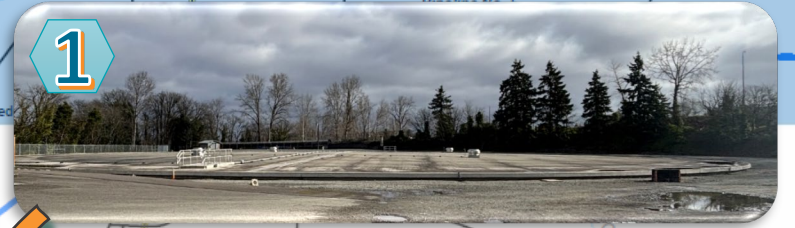


KEY | Trigger Implementation period

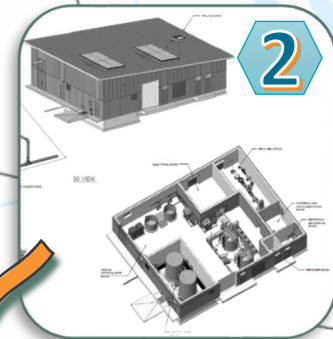
Likely Sequencing of Strategies



Wells Pipeline Treatment (Location TBD)



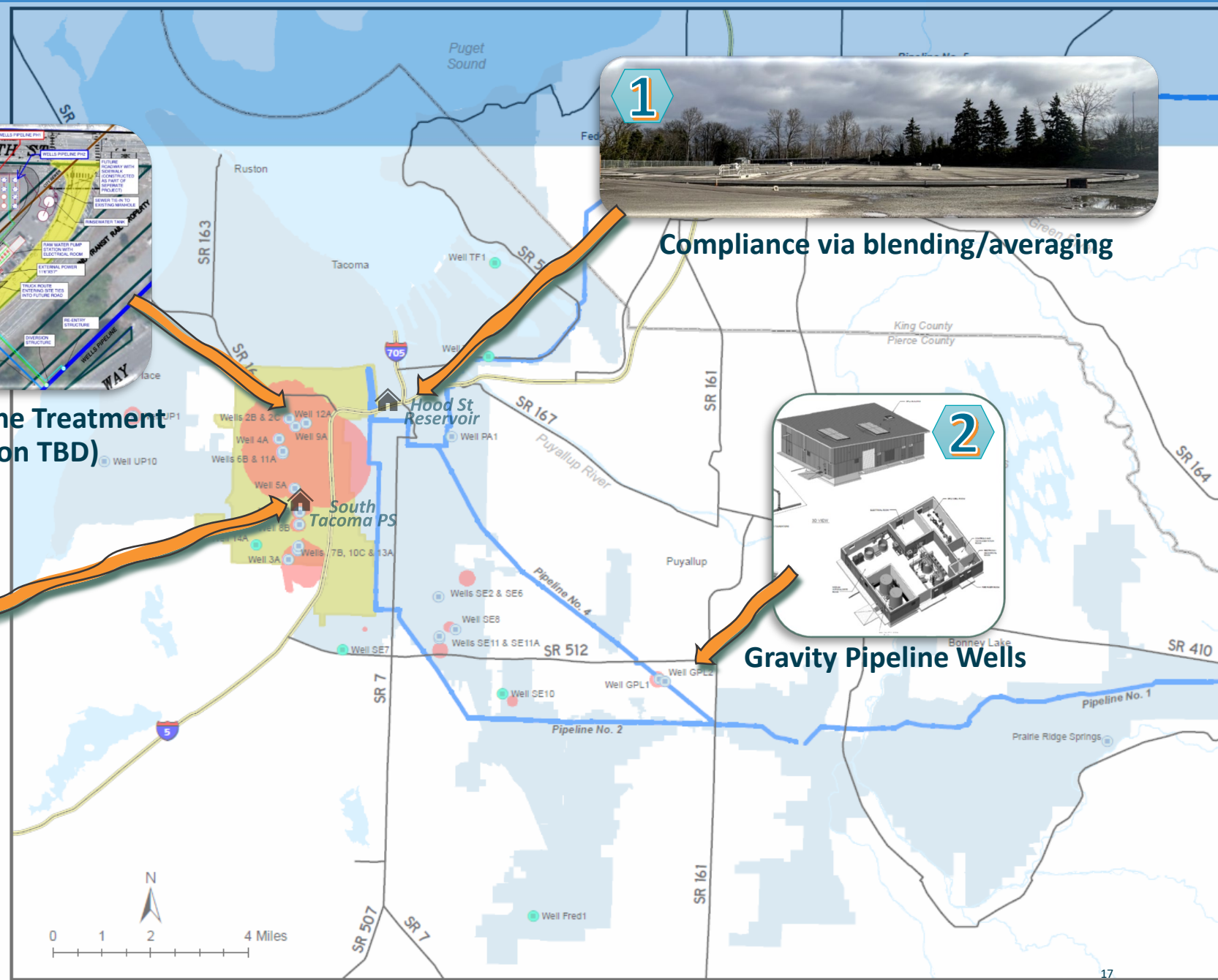
Compliance via blending/averaging



Gravity Pipeline Wells








South Tacoma Pump Station Treatment

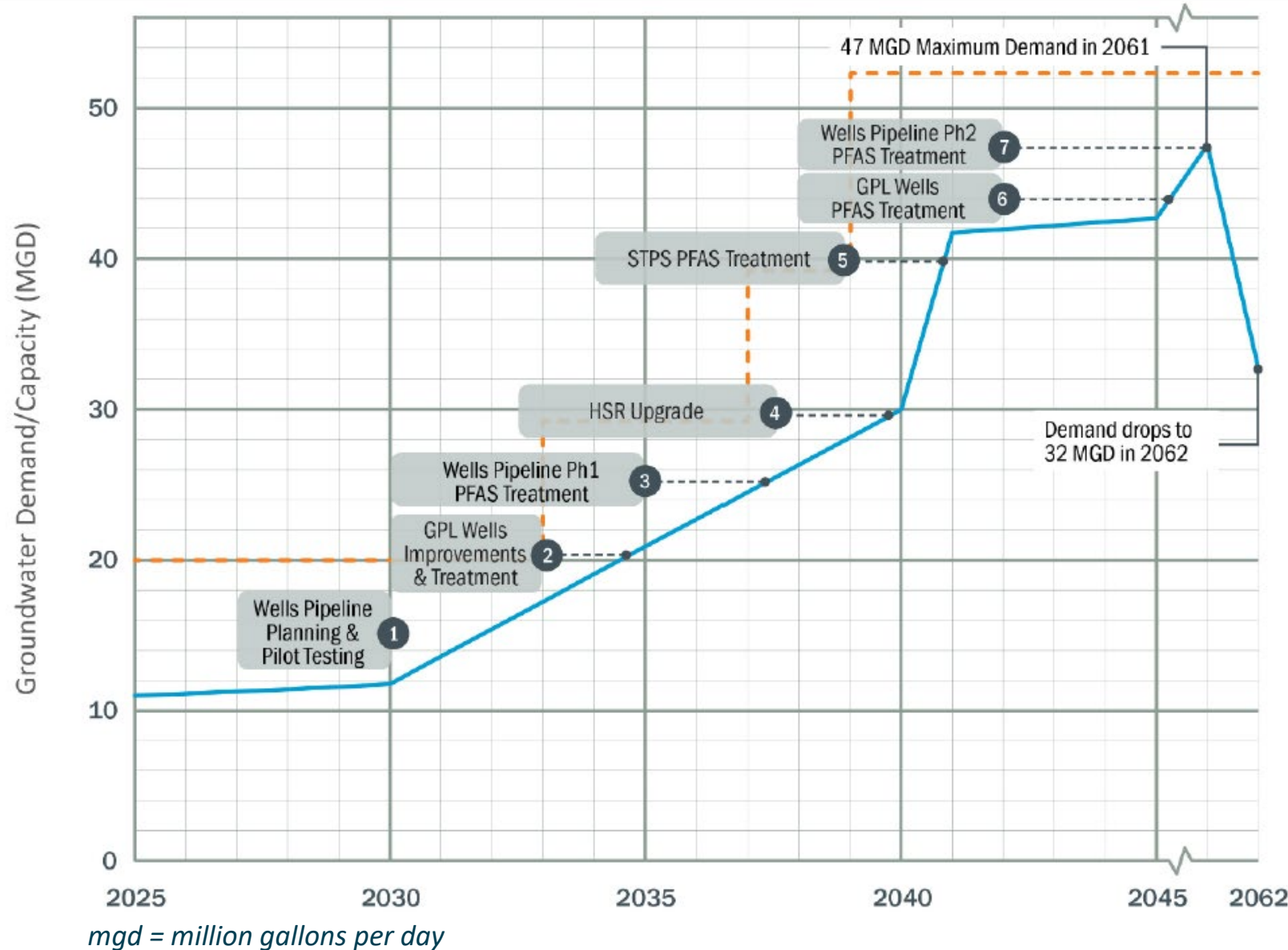


Implementation Plan Timeline



Legend

-  Groundwater Demand Projection (Most Probable)
-  Pumping/Production Capacity Available
-  Project Implementation Period
-  Project Float Till Demand Is Reached
-  Project Online/Completed



Anticipated Capital Costs

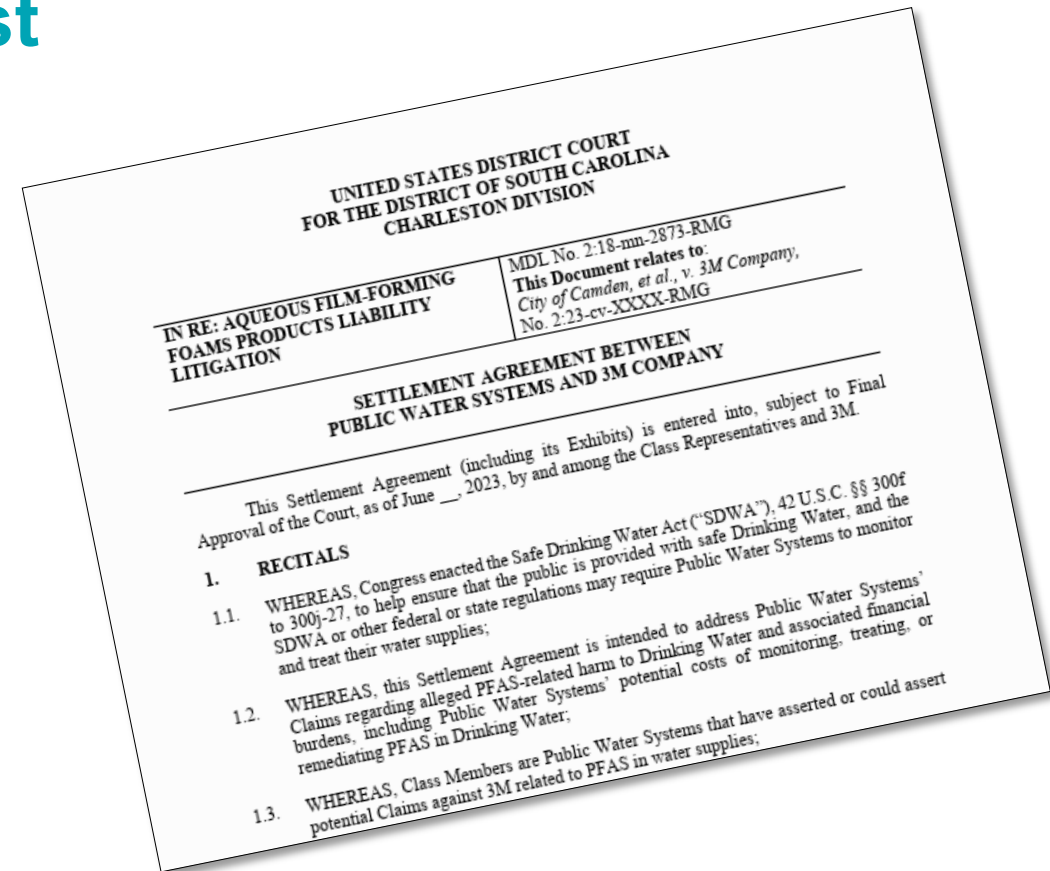


Project Strategy	Treatment Capacity Installed (mgd)	Project Timeline	Land Acquisition/ Other Cost, \$M (+50%/-30%)	Total Capital Cost \$M (+50%/-30%)
Wells Pipeline Planning - Pilot Testing	---	2027 - 2029	---	\$1.0
Wells Pipeline Planning - Condition and Hydraulic Assessment	---	2029 - 2030	---	\$1.0
GPL Wells Improvements and Treatment	9.2	2030 - 2032	----	\$30.5
Wells Pipeline Ph1 PFAS Treatment (Initial Buildout)	20	2030 - 2034	\$2.2	\$71.8
HSR Upgrade	30	2032 - 2037	----	\$35.2
STPS Upgrade + PFAS Treatment	13.1	2034 - 2038	\$18.2	\$75.6
GPL Wells PFAS Treatment	9.2	2038 - 2041	----	\$15.6
Wells Pipeline Ph2 PFAS Treatment	10	2038 - 2041	---	\$13.1
Total				\$243.8 (\$170.7 - \$365.7)

Based on parallel operation of vessels

PFAS MDL Settlement

- Participating in multi-district litigation with other utilities against aqueous film-forming foam (AFFF) manufacturers
 - \$7.68M received to date
 - ~\$11M total anticipated by 2033



Next Steps

- **2026**
 - Finalize PFAS Implementation Plan
 - Prepare summary document for DOH
 - Continue quarterly PFAS sampling (DOH requirement)
 - Plan for pilot study
- **2027/2028**
 - South Tacoma well pilot study
 - Consider land acquisition
 - Continue required PFAS sampling

