BACWA Pretreatment Committee Meeting

State Water Board Pretreatment Program Updates

CALIFORNIA
Water Boards

Pretreatment and Constituents of Emerging Concern (CEC) Unit | March 22, 2023

Pretreatment Program Updates

Implementation of U.S. EPA PFAS Guidelines

Direct Potable Reuse (DPR) and Enhanced Source Control

Evolution of California's Pretreatment Program Experience

1989-2009

Regional Boards managed local pretreatment program requirements

2010-2021

Pretreatment compliance inspections and audits contracted out

2019-2021

State Board develops program management plan with limited resources

2022

End U.S. EPA contractor support; Develop plan for Enhanced Pretreatment Program

2023

Direct Potable Reuse (DPR) regulations to be adopted; initiate Enhanced Pretreatment Program

Challenges and Bottlenecks

Insufficient Resources

- Few designated Pretreatment staff; current staff have other primary job duties (e.g., NPDES enforcement)

Inadequate Training

- Need for subject matter experts and pretreatment oversight experience
- Need for staff support to lead inspections and audits

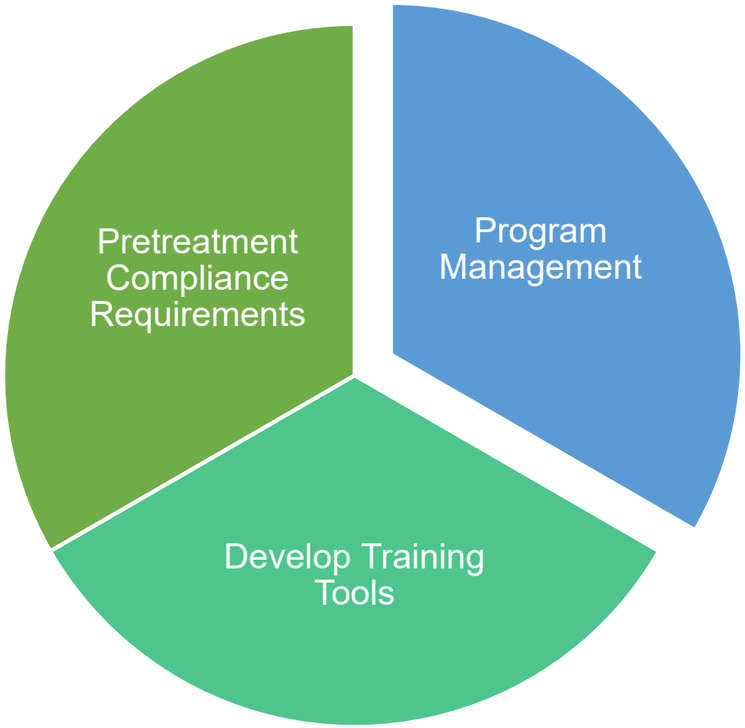
PCIs and PCAs time commitment

- Compliance inspections and audits take one to two months to complete

2019 State Review Framework Pretreatment Program Findings

☒ Inspections	**Area for State Improvement**
☒ Audits	**Area for State Improvement**
☒ Significant Industrial Users (SIU) discharging to non-authorized POTWs	**Area for State Improvement – No Program Established**

Pretreatment Program Workload



- Program Management
  - Develop the foundation to build a successful pretreatment program long-term
  - Focus on working to develop more efficient tools to track pretreatment programs (improve existing CIWQS database)
- Develop Training Tools for current & future Pretreatment Program Staff
  - Address request by regional board staff for pretreatment training and develop program for new pretreatment staff
- Support Pretreatment Compliance Efforts
  - Continue with compliance inspections and audits, review of local limits, and Annual Pretreatment Reports

Additional Pretreatment Responsibilities

1. Direct Potable Reuse Requirements for California
2. PFAS (and other CECs) developments
3. Oversight of SIUs discharging to non-approved program
4. New CROMERR Compliance
5. Marijuana industry and potential impacts to pretreatment
6. Clean Water Act Methods Update Rule effective 2021
7. Effluent Limitation Guidance Planning

Implementation of U.S. EPA PFAS Guidelines

U.S. EPA Dec. 5, 2022 Memo

- *Addressing PFAS discharges in NPDES Permits* and Through the Pretreatment Program and Monitoring Programs*

REVISE Effluent Limitation Guidelines (ELGs) to support technology-based and water quality-based effluent limits

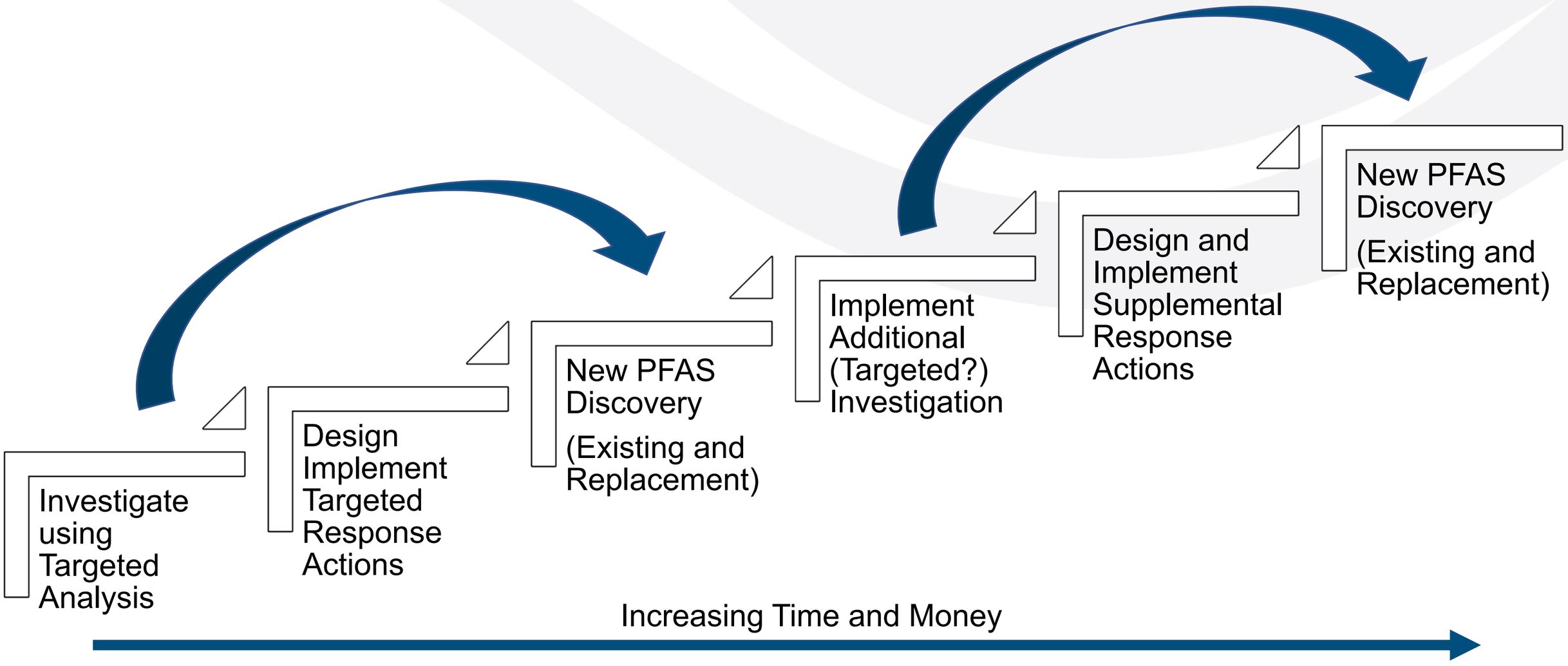
PERMITS Provide detailed steps permit writers can implement under existing authorities to reduce the discharge of PFAS

GUIDANCE To address sewage sludge PFAS contamination by monitoring based on permit renewals; pretreatment

* Applicable to WDR permits

Reference: NPDES_PFAS_State Memo_December_2022.pdf (epa.gov)

Current Investigation Approach



Alternative Approach

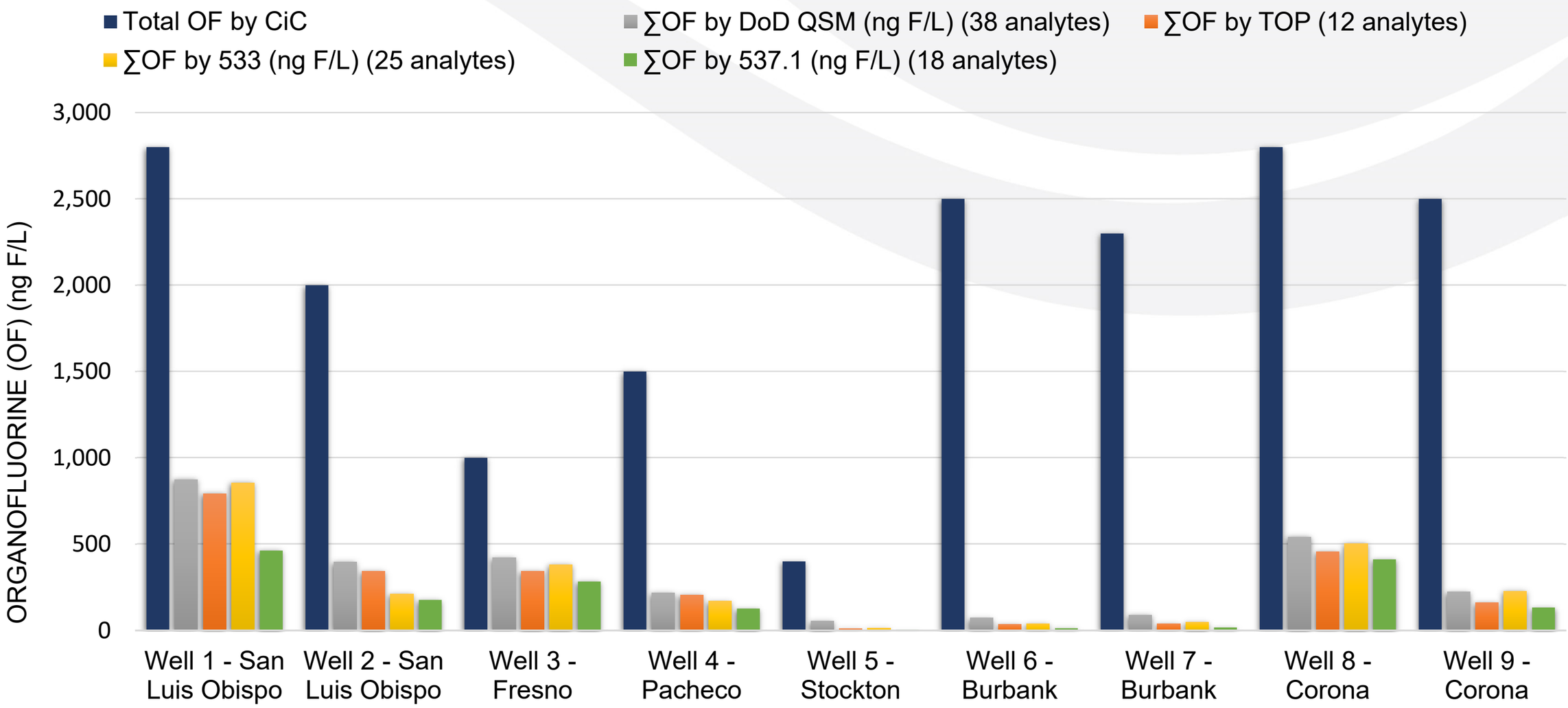
Investigate sources using targeted analysis and AOF by CIC

IF ΣPFAS = AOF, source is well characterized with existing analytical methods, proceed with response actions; double check over time

IF ΣPFAS << AOF, recognize potential risk associated with uncharacterized PFAS, proceed with response actions

AOF = Absorbable Organic Fluorine
CIC = Combustion Ion Chromatography

Estimates of “Total” Organofluorine in Drinking Water Reveals Interesting Results



AOF-CIC versus ΣPFAS

- Industrial wastewater samples were collected from a chemical company wastewater treatment plant in Europe
- TOF (AOF) results indicate between 20 and 273 times organofluorine content compared with sum PFAS as F via targeted analysis

von Abercron, E, et al. 2019. Determination of adsorbable organically bound fluorine (AOF) and adsorbable organically bound halogens as sum parameters in aqueous environmental samples using combustion ion chromatography (CIC). *Science of the total environment*, *673*, pp.384-391.

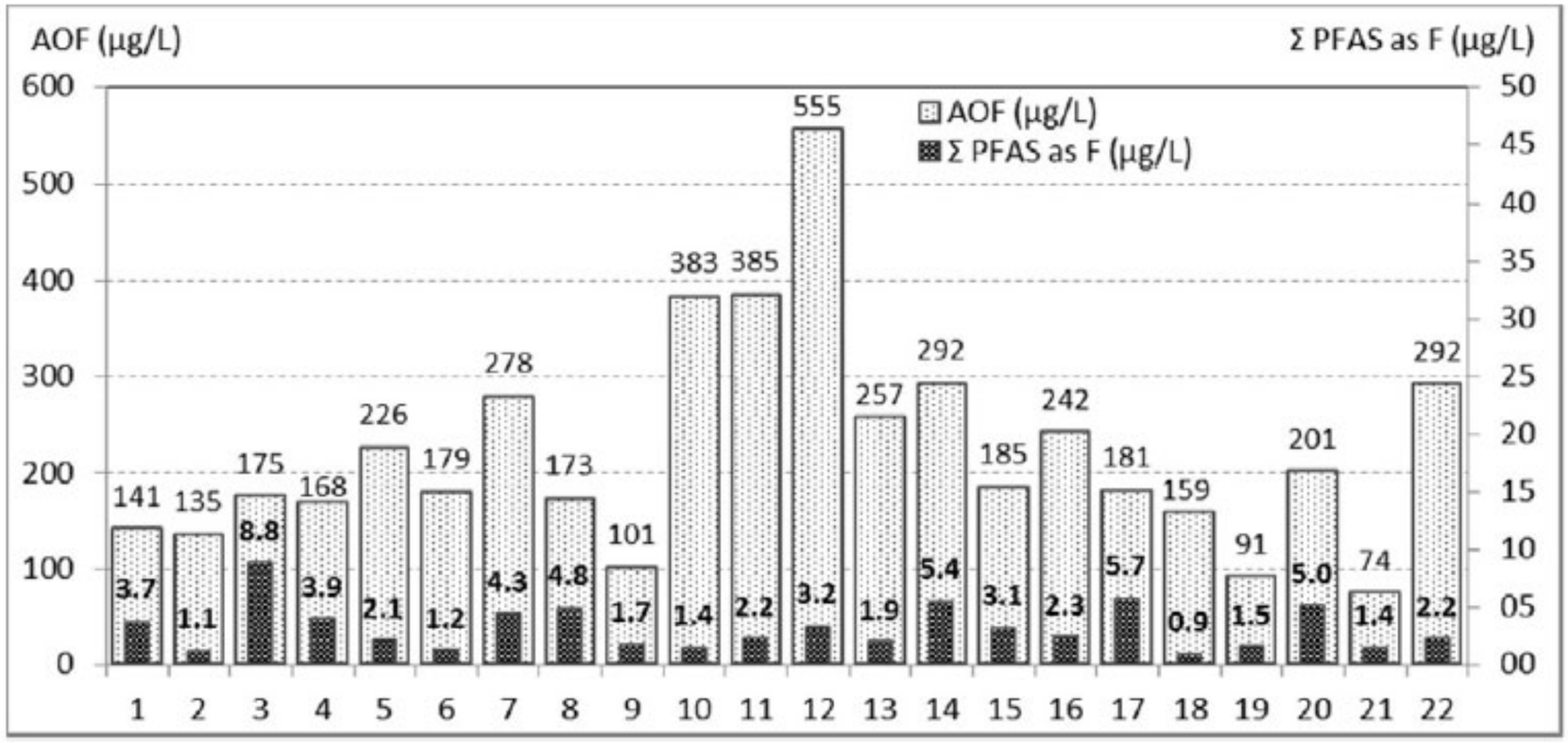


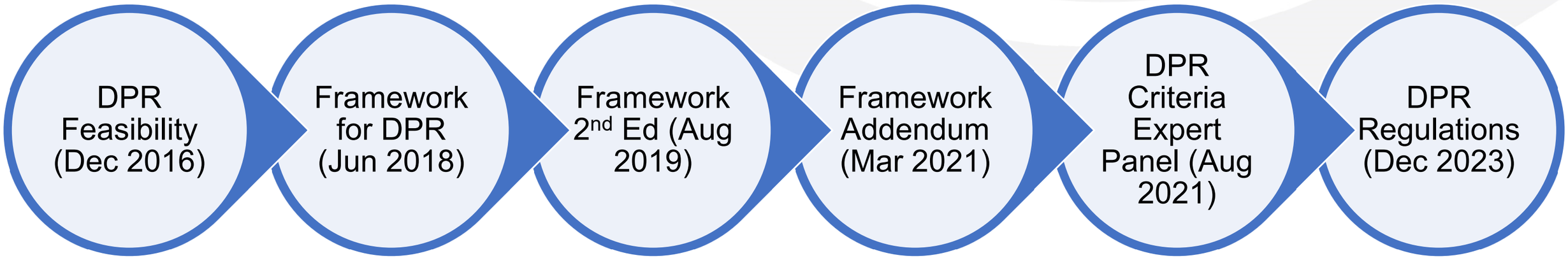
Fig. 5. AOF and the sum of PFAS as fluorine in industrial waste water (n = 22). The individual AOF values and the sum of the PFAS of each sample, calculated as fluorine (Σ of PFAS as F) are shown.

“Broad Spectrum” PFAS Methods Take-Home Message

- Moving forward with response actions using limited information may be costly both from a financial planning perspective and for human health and environmental impacts
- The tools to break the data gap analysis cycle are available, and their utility will improve over time with use – use U.S. EPA 1621 draft method!
- The ability to use “true source control” measures depends on our ability to identify sources – AOF-CIC is a tool to help get us there

Direct Potable Reuse (DPR) and Enhanced Source Control

DPR Regulatory Development



References for Enhance Pretreatment Program Development

- Water Research Foundation (WRF). 2023. An Enhanced Source Control Framework for Industrial Contaminants in Potable Reuse. Project No. 4960, prepared by: Tyler Nading, Larry Schimmoller, Talia Assi, Erik Desormeaux, Andy Salveson, Amos Branch, Eric Dickenson, and Kyle Thompson. An Enhanced Source Control Framework for Industrial Contaminants in Potable Reuse | The Water Research Foundation (waterrf.org)
- National Water Research Institute (NWRI). 2020. Enhanced Source Control Recommendations for Direct Potable Reuse in California. https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/docs/dpr-esc-2020.pdf
- State Water Resources Control Board (State Water Board). 2019. A Proposed Framework for Regulating Direct Potable Reuse in California. https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/direct_potable_reuse/dprframewksecd.pdf
- NWRI. 2022. Memorandum of Findings, Expert Panel Preliminary Findings and Recommendations on Draft DPR Criteria. https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/docs/2022/nwri-ep-finalmemoprelimfind.pdf
- State Water Board. 2018. Water Quality Control Policy for Recycled Water (Recycled Water Policy). https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2018/121118_7_final_amendment_oal.pdf
- State Water Board. 2018. Final Staff Report with Substitute Environmental Documentation, Amendment to the Water Quality Control Policy for Recycled Water. https://www.waterboards.ca.gov/water_issues/programs/recycled_water/docs/2018/121118_7_final_staff_report.pdf

There are a number of additional resources regarding:

- The development of DPR regulations available here: Regulating Direct Potable Reuse in California.
- The Recycled Water Policy available here: Water Quality Control Policy for Recycled Water.

Local limits – Key Tool for Enhanced Pretreatment Programs

Robust Sampling and Monitoring for PoCs

↓

PoC Screening

↓

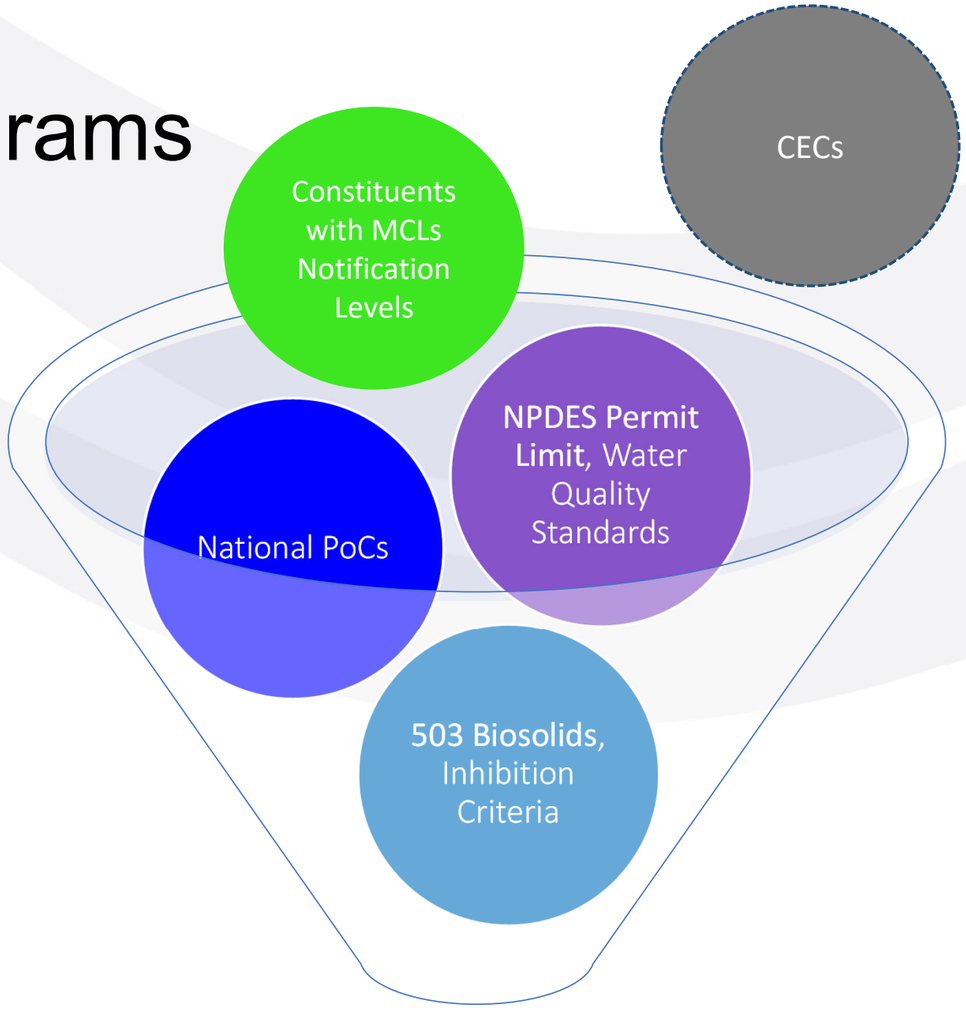
Maximum Allowable headworks loading (MAHL)

↓

Removal Efficiency

↓

Local Limit Derivation



↓

"Enhanced" Local Limits

Related Science Advisory Panels and Projects

2009
Recycled Water Policy Adopted

2010
Recycled Water CEC Advisory Panel

2012
Aquatic Ecosystems CEC Advisory Panel

2014
Bioanalytical Techniques Report

2016
Direct Potable Reuse Advisory Panel

2017
Recycled Water CEC Advisory Panel II

2018
Recycled Water Policy Amendment

2019-2022
CEC Data Synthesis Project

2020-2022
Aquatic Ecosystems Science Advisory Panel II

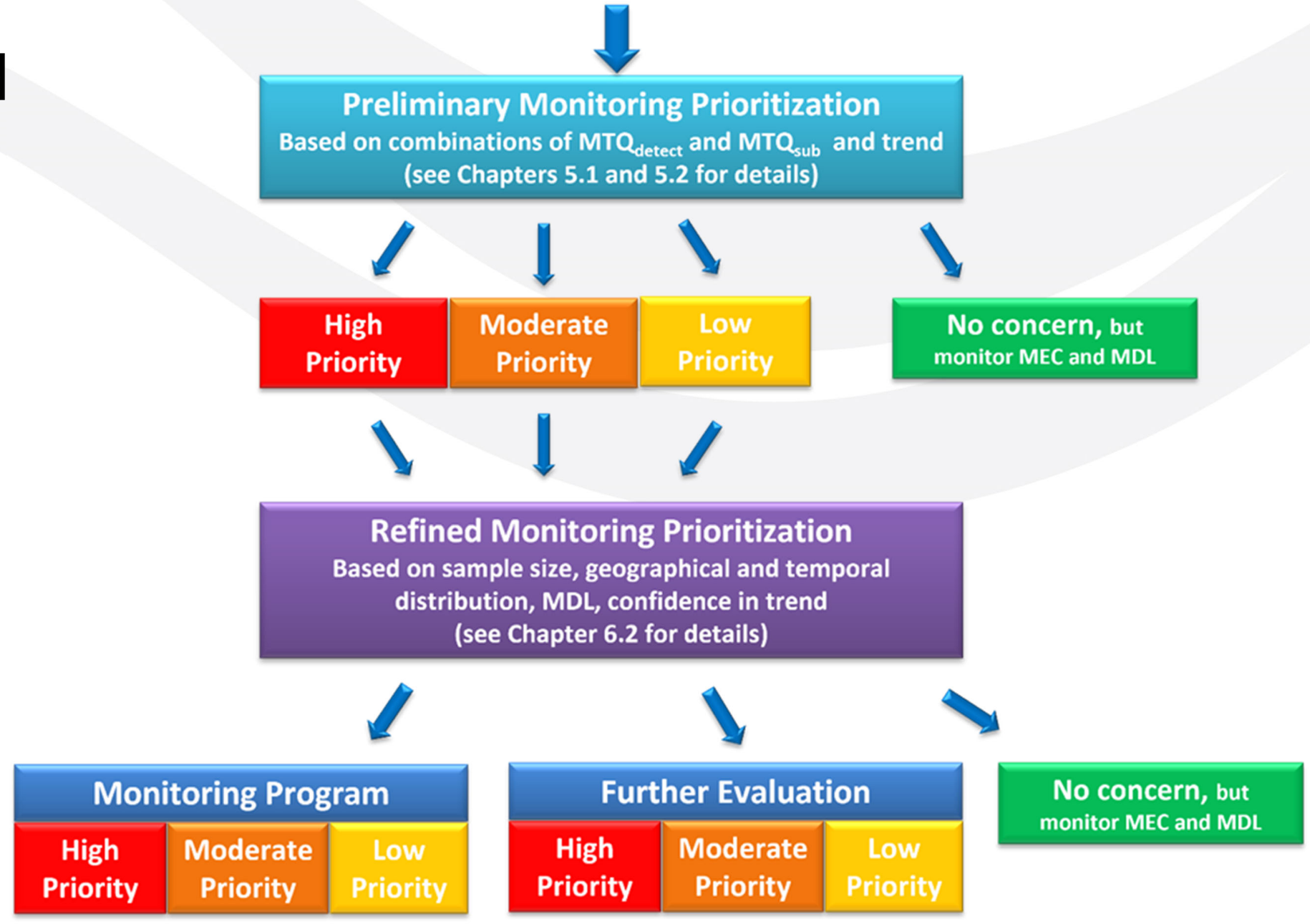
2021-2022
Direct Potable Reuse Criteria Panel

2020-2024
CEC Bioanalytical Screening Toolkit

2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024

LEGEND
- Recycled Water
- Aquatic Ecosystems
- Direct Potable Reuse
- Bioanalytical Tools

Risk-Based Screening Approach



Develop CECs Lifecycle Management Strategies

An ounce of prevention is worth a pound of cure.

-Benjamin Franklin

Questions/ Comments?

Contact Us!

Erica.Kalve@waterboards.ca.gov
Olivia.Magana@waterboards.ca.gov
Arnold.Wong@waterboards.ca.gov