

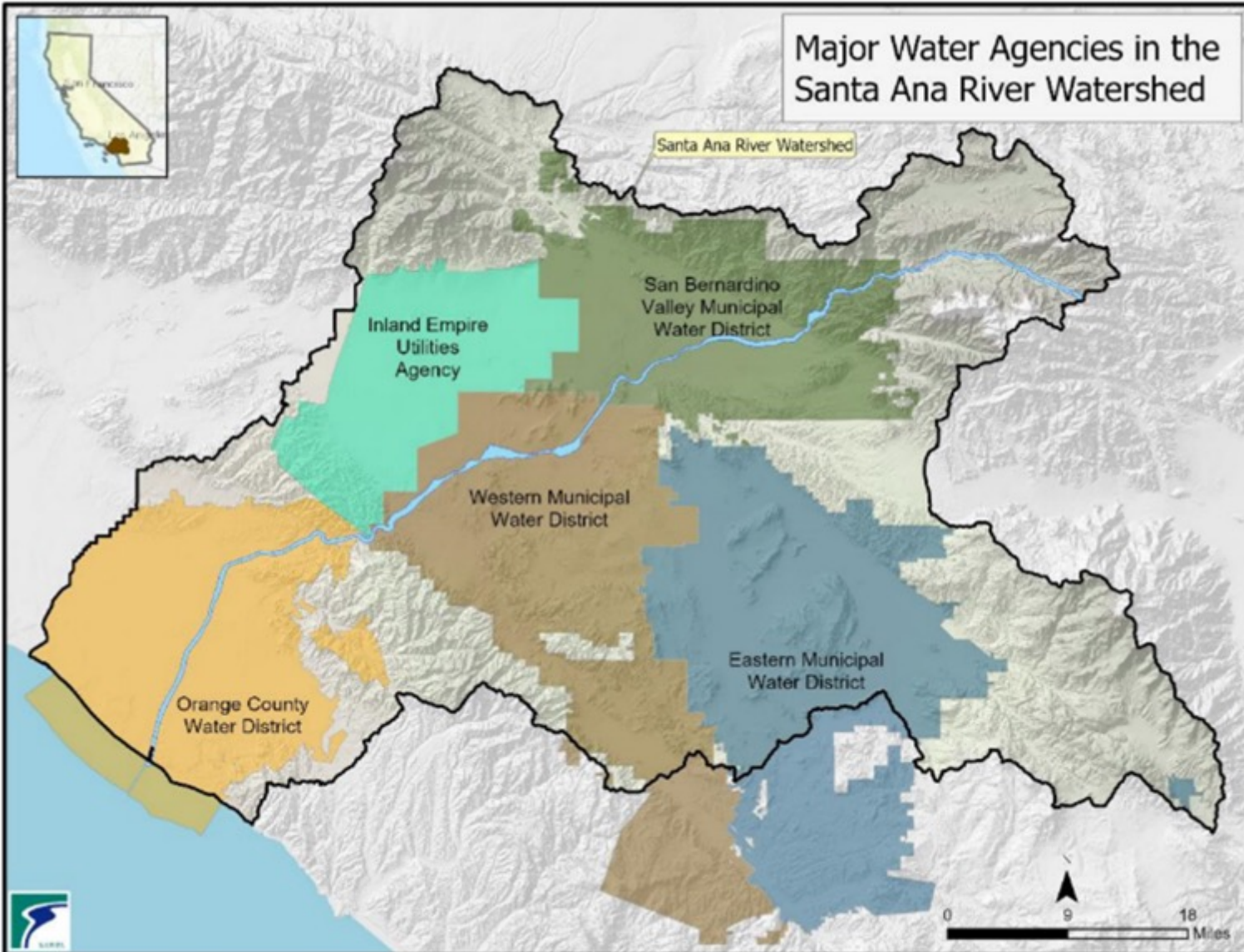


Inland Empire Brine Line

Jeff Mosher
General Manager
Santa Ana Watershed Project Authority

2-24 Annual Salinity Summit
Multi-State Salinity Coalition
February 29, 2023

SAWPA Member Agencies



SAWPA Activities

- Inland Empire Brine Line
- One Water One Watershed (OWOW) Program
- Regional Roundtables and Task Forces

Inland Empire Brine Line

- 73 miles (~\$400M value)
 - Plus ~60 miles of laterals
 - Plus ~20 miles in OC
- ~14 MGD Flow (30 MGD capacity)
- Direct dischargers
- Indirect (trucked disposal)
- Brine and high saline wastewater
 - Desalters (~70% of flows)
 - Industrial/Commercial/WW RO
- Salinity is **~6,000 TDS**
- Removes **500,000 lbs/day of salt**
- **OC San – Partner**
 - Conveyance
 - Treatment (segregated train)
 - Ocean discharge



Benefits of Inland Empire Brine Line

Purpose

- Provide public agencies and commercial industries with a cost-effective salinity management option
- Allows for salt removal from the watershed
- Help achieve long-term, watershed-wide salinity balance

WWTP Benefits

- Disposal of emergency wastewater discharges from local WWTPs (avoids non-compliant discharges to the environment)

Water Supply Benefits

- Supports the use of groundwater desalters (brine disposal)
- Protects the Santa Ana River and groundwater basins

Recycled Water Benefits

- Supports the use of recycled water projects
- Keeps industrial effluent with high salinity out of wastewater collection systems

List of Desalters

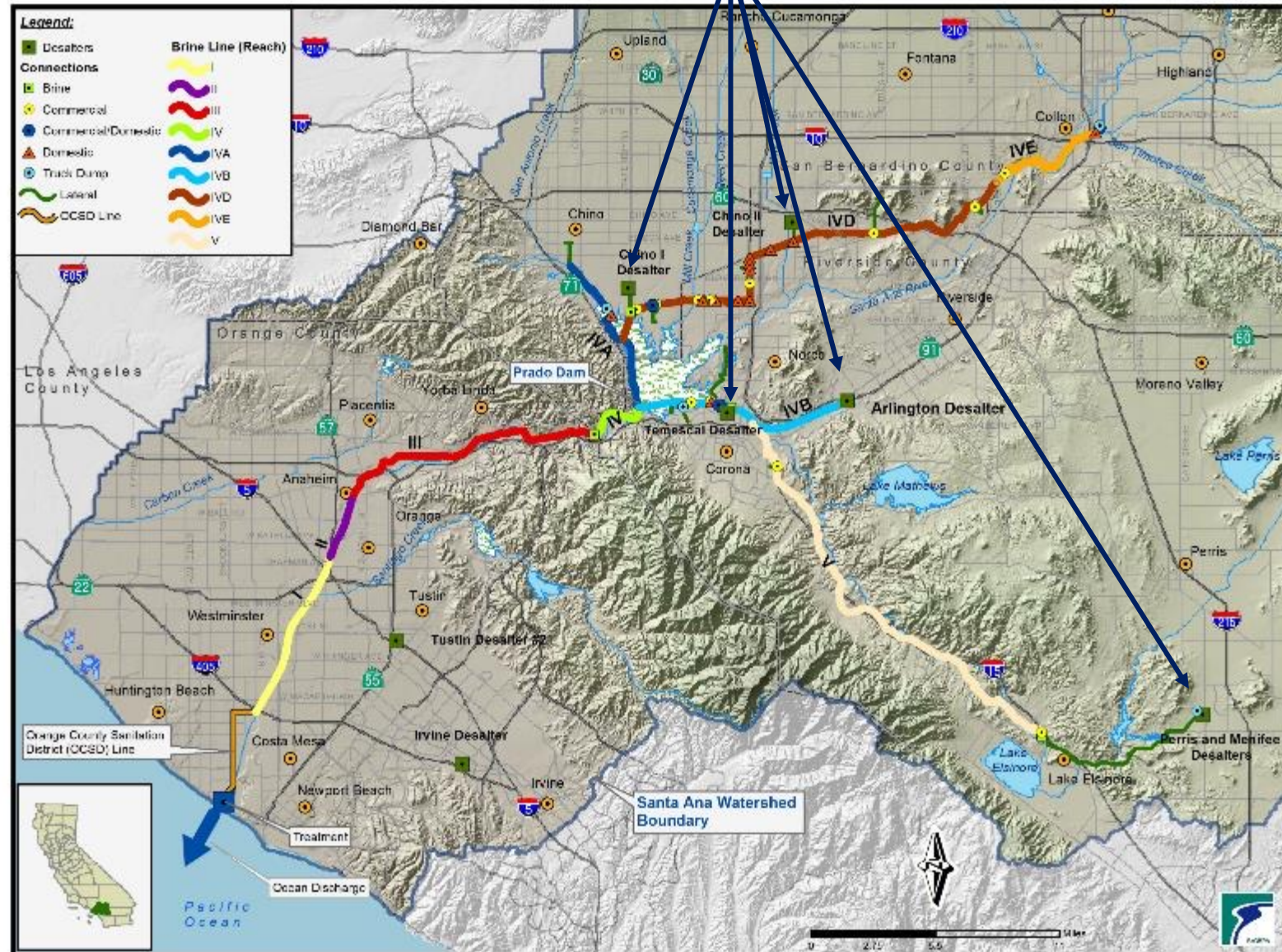
Desalter (Owner/Operator)

- Arlington (WMWD)
- Chino I (CDA / IEUA)
- Chino II (CDA / JCSD)
- Menifee (EMWD)
- Perris (EMWD)
- Perris II (New) (EMWD)
- Temescal (Corona)

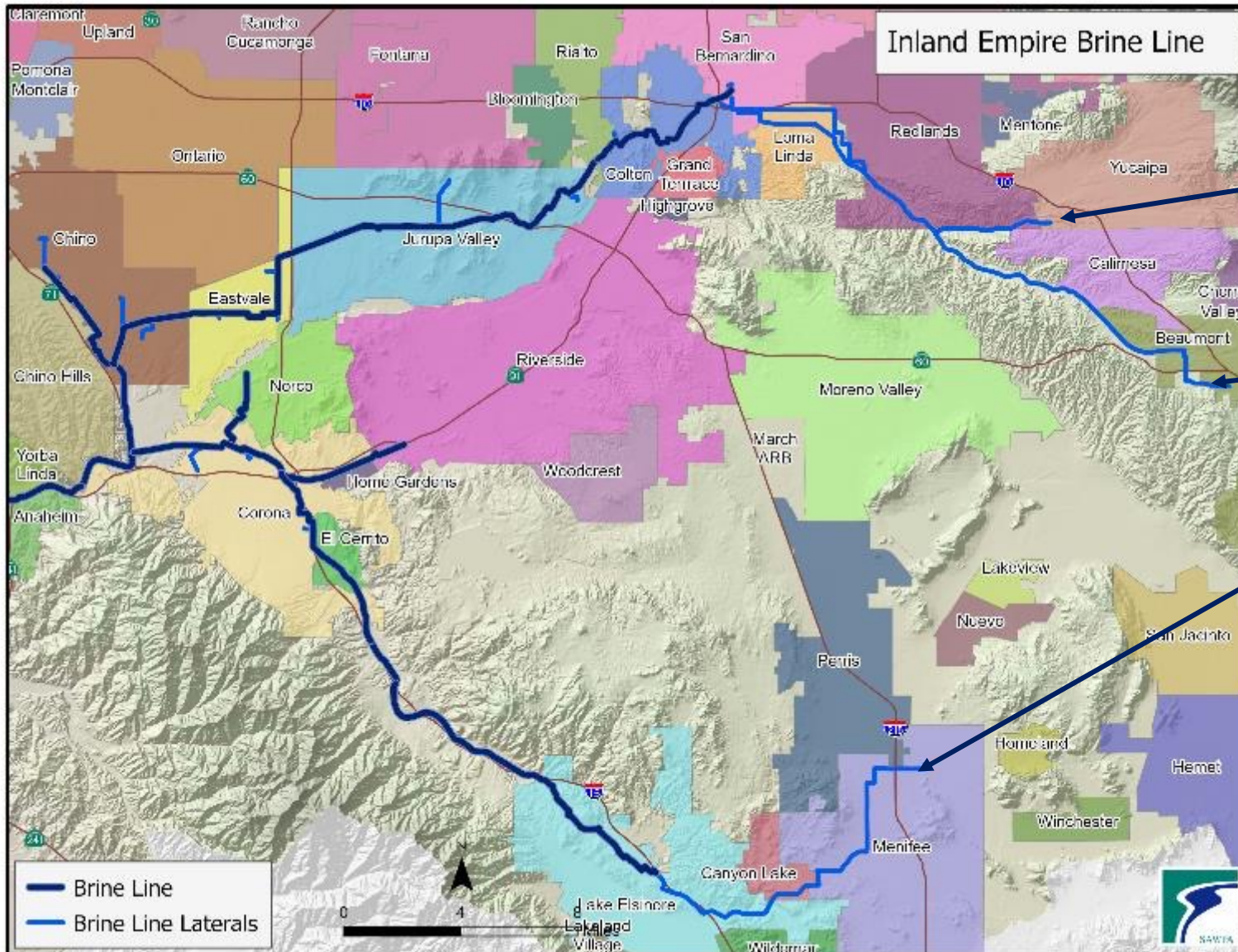
Capacity of Desalters

- 50 MGD

Desalters
(brine discharges)



Major “laterals” (extensions to the Brine Line)

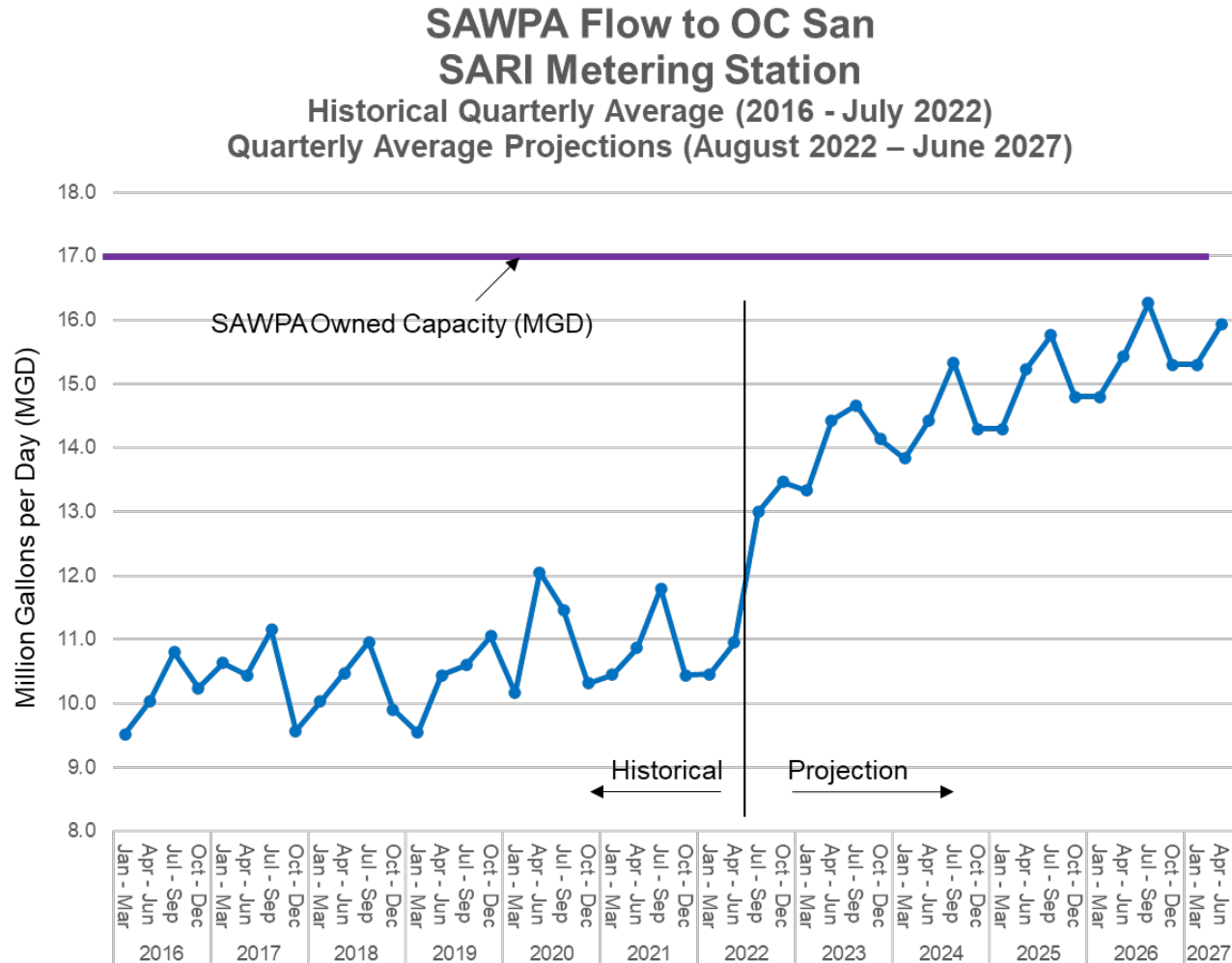


- **Wastewater RO Concentrate Dischargers**

- Yucaipa Valley Water District Henry Wochholz Regional Water Recycling Facility (~13 miles)
- City of Beaumont Wastewater Treatment Plant (~24 miles)

- **Menifee and Perris Desalters (~20 miles)**

Brine Line Flows and Costs



- Costs of disposal based on:
 - Treatment
 - Volume discharged
 - Pounds of BOD
 - Pounds TSS
 - Fixed pipeline capacity charges
 - But not TDS!

- **\$170 per 100,000 gal based on 5 BOD and 5 TSS**

Brine Line – Current Activities

Brine Line Master Plan (in progress)

- Long-term planning document that addresses facility needs
 - Serve the watershed, Member Agencies, and BL dischargers
- System Evaluation
 - Focus resources and prioritize projects (in reaching 30 MGD capacity)
 - Maintain system reliability (operations)
 - Accommodate future growth
 - Meet future regulatory requirements
- Opportunities
 - Enhanced resiliency (emergencies, climate, etc.)
 - Included in revised Reserve Policy (2022)
 - Brine concentration facilities
 - Centralized or regional
 - Investigate treatment opportunities
 - BOD and/or TSS



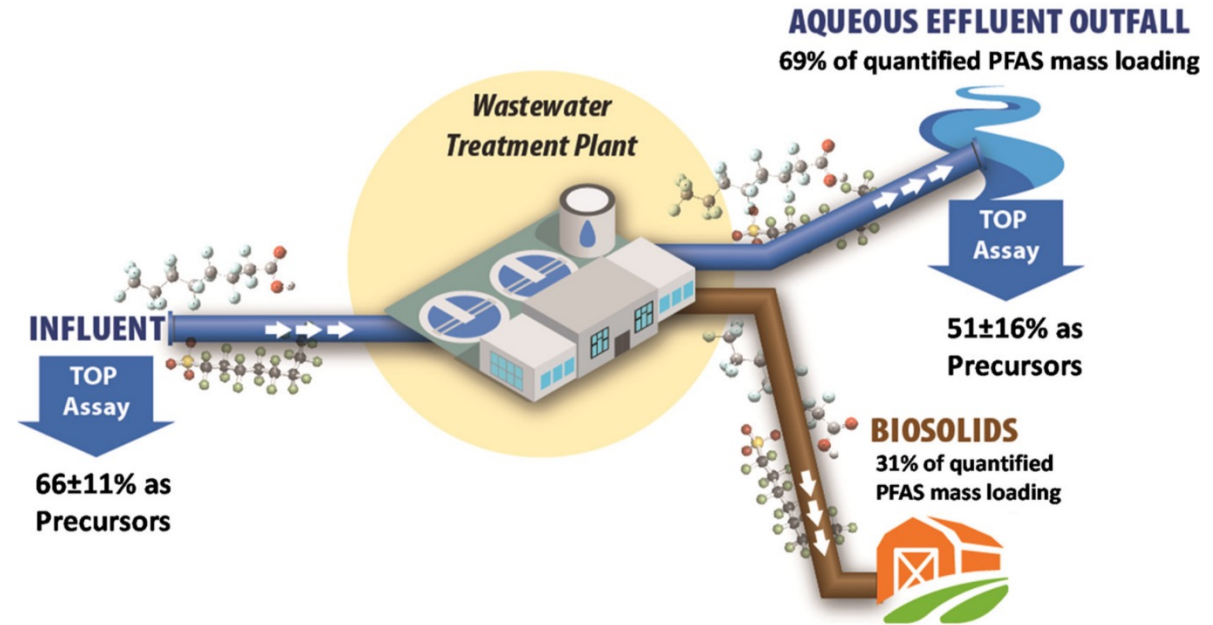
Brine Line – Challenges and Opportunities

Scale Formation



PFAS in Brine Flows

- OC San is our partner on brine treatment and discharge
- 2021 Sampling Study
 - 6 monthly sampling events
 - 38 chemicals
- Findings
 - 10 chemicals found in all samples



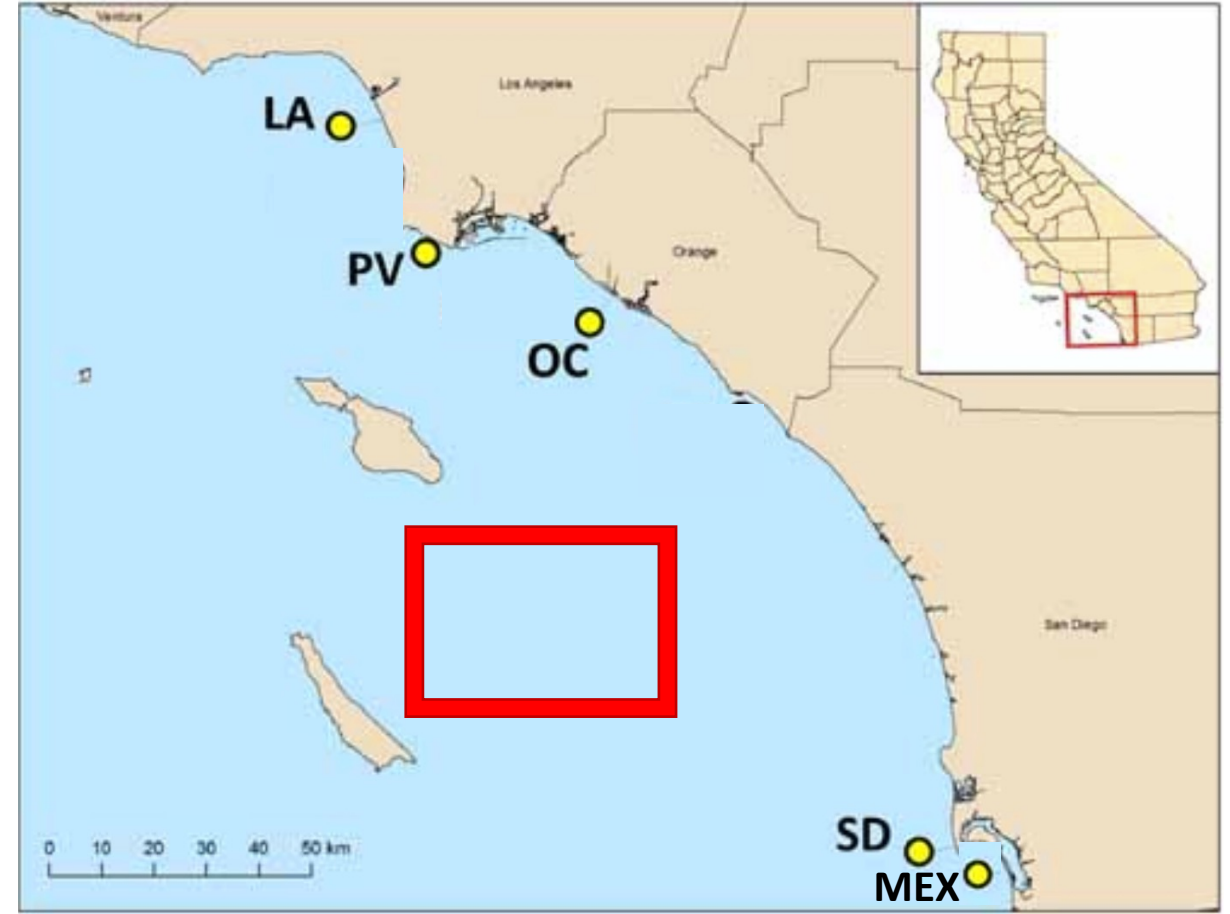
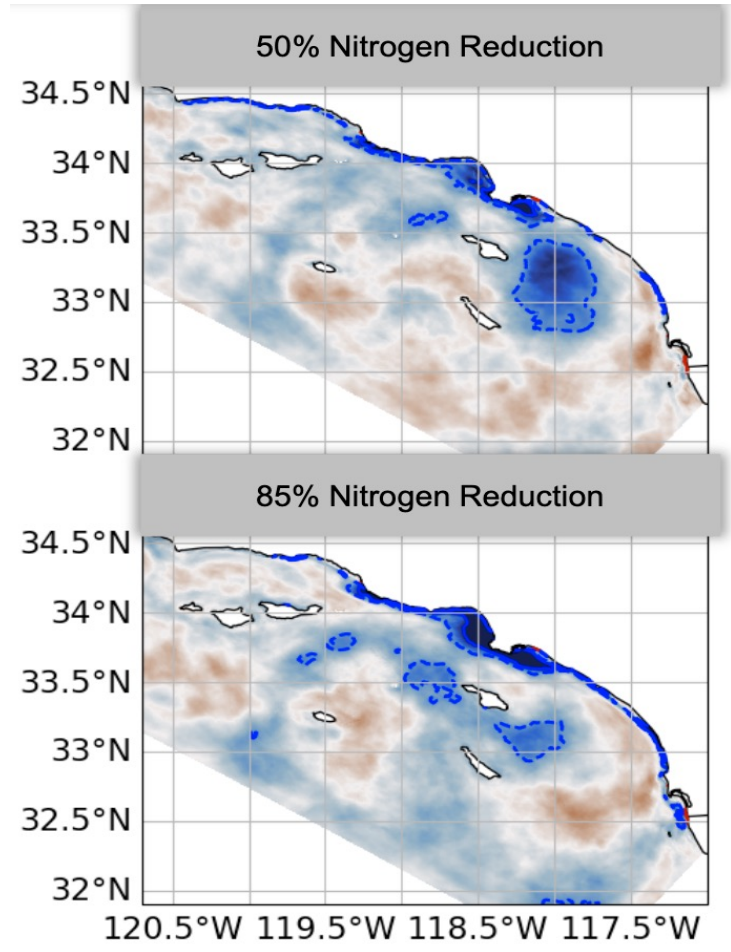
Source: Schaefer et al. (2023) Occurrence of quantifiable and semi-quantifiable PFAS in united states wastewater treatment plants

Chemical	Average (ng/L)	Maximum (ng/L)	Wastewater (Avg ng/L) (Schaefer et al., 2023)
PFOA	106	130	8-69
PFOS	136	170	7-83
Other 8 chemicals	6-81	7-90	--

Nutrients in Ocean Outfalls: Assessing Ocean Acidification and Hypoxia (OAH) Impairments Using ROMS-BEC (SCCWRP Study)



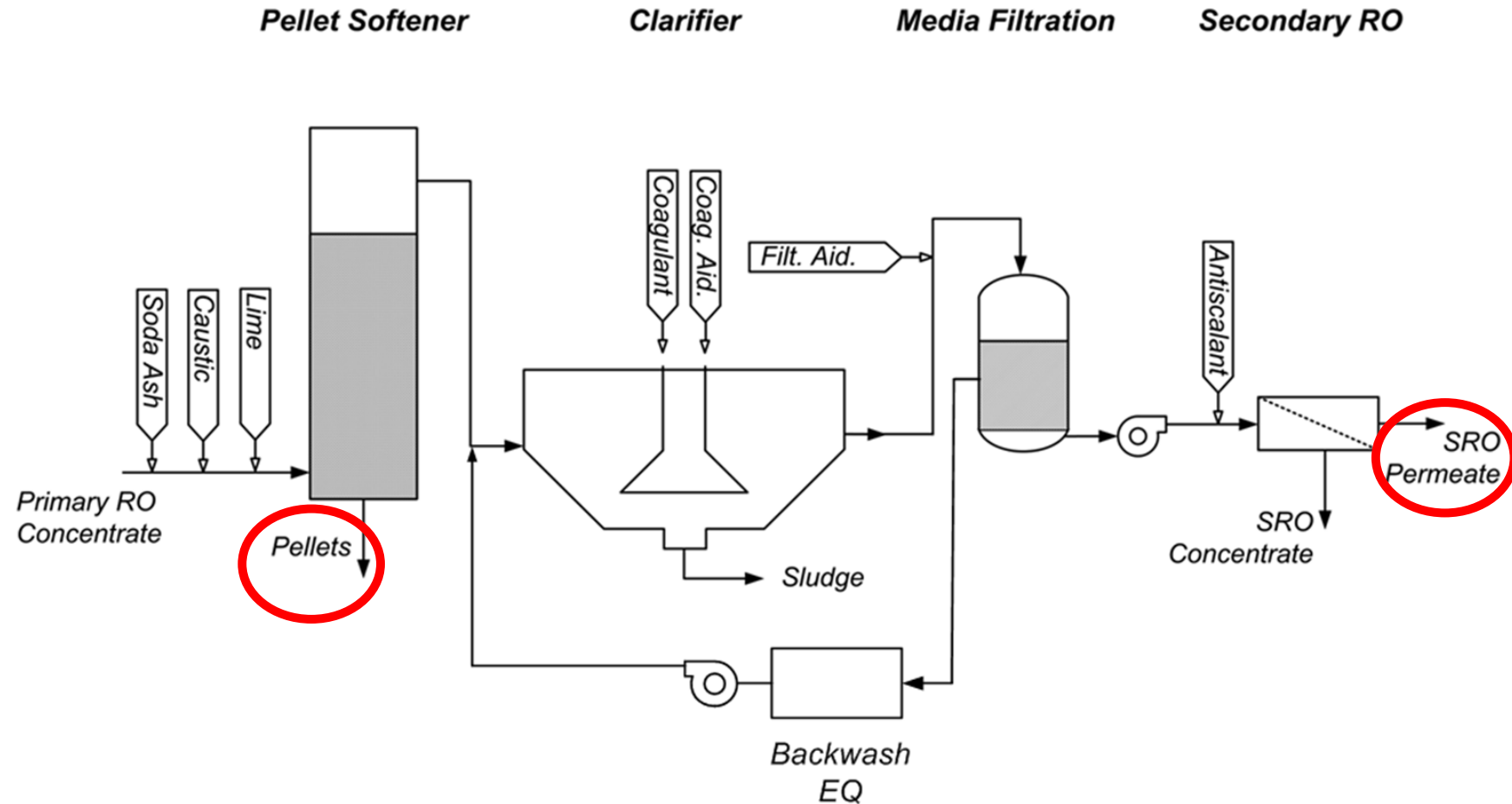
Change in Algal Production from OCEAN+ LAND-BASED Scenario



Is there correlation to CA POTW inputs for predicted offshore impacts?

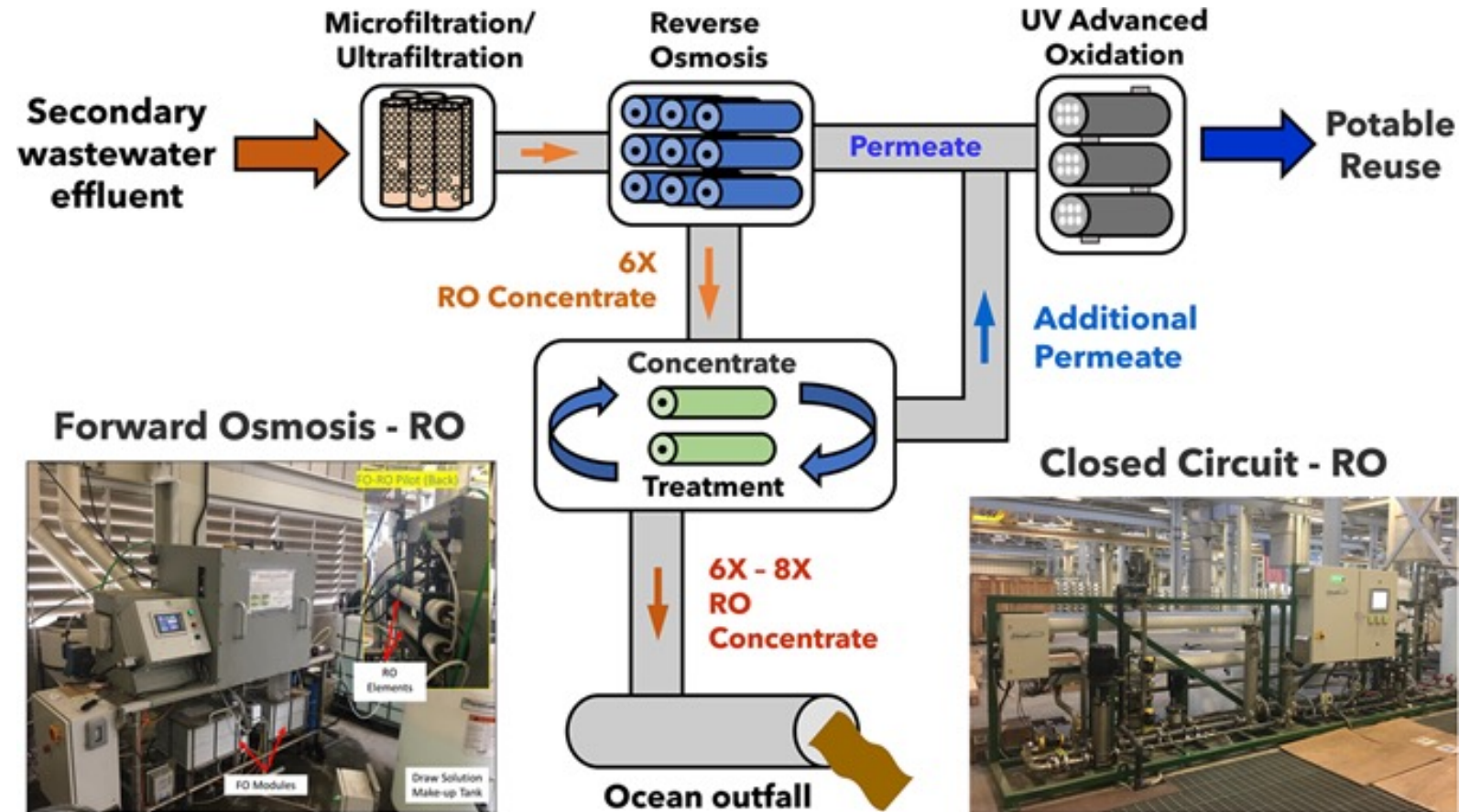
Concentrate Treatment

- Chino Basin Desalter Authority
- Concentrate Reduction Facility (CDF)
- Purpose:
 - Reduces scale
 - Water supply
 - Reduces brine flow
 - Beneficial byproduct (pellets)



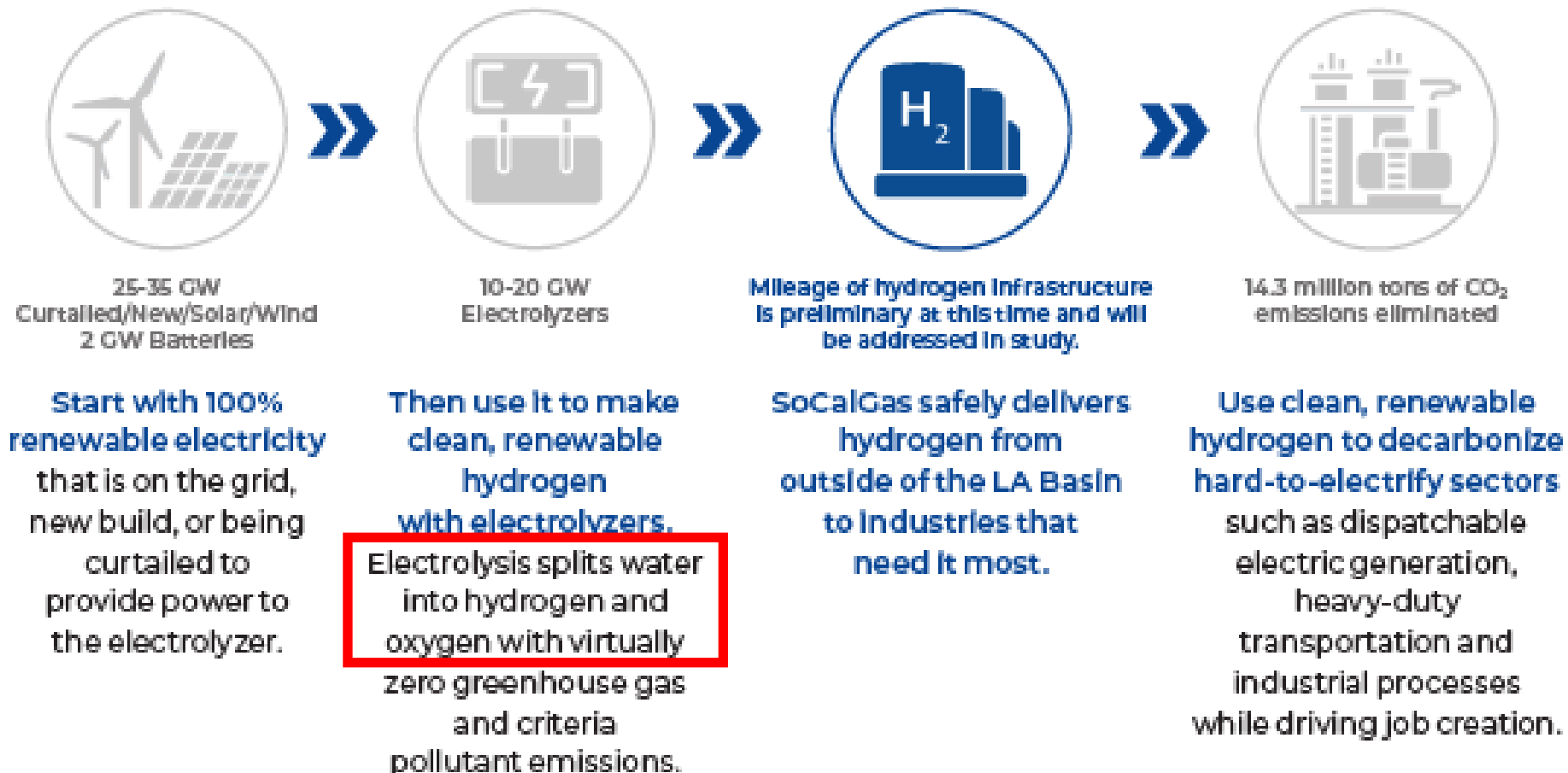
Concentrate Treatment Studies in Watershed

- EMWD
 - Brine Concentration Pilot Project
 - Closed Circuit Reverse Osmosis (CCRO)
- OCWD
 - CCRO
 - Forward Osmosis



Clean Hydrogen (for train locomotives and trucks)

“Angeles Link” – SoCal Gas Feasibility Study





Thank you!