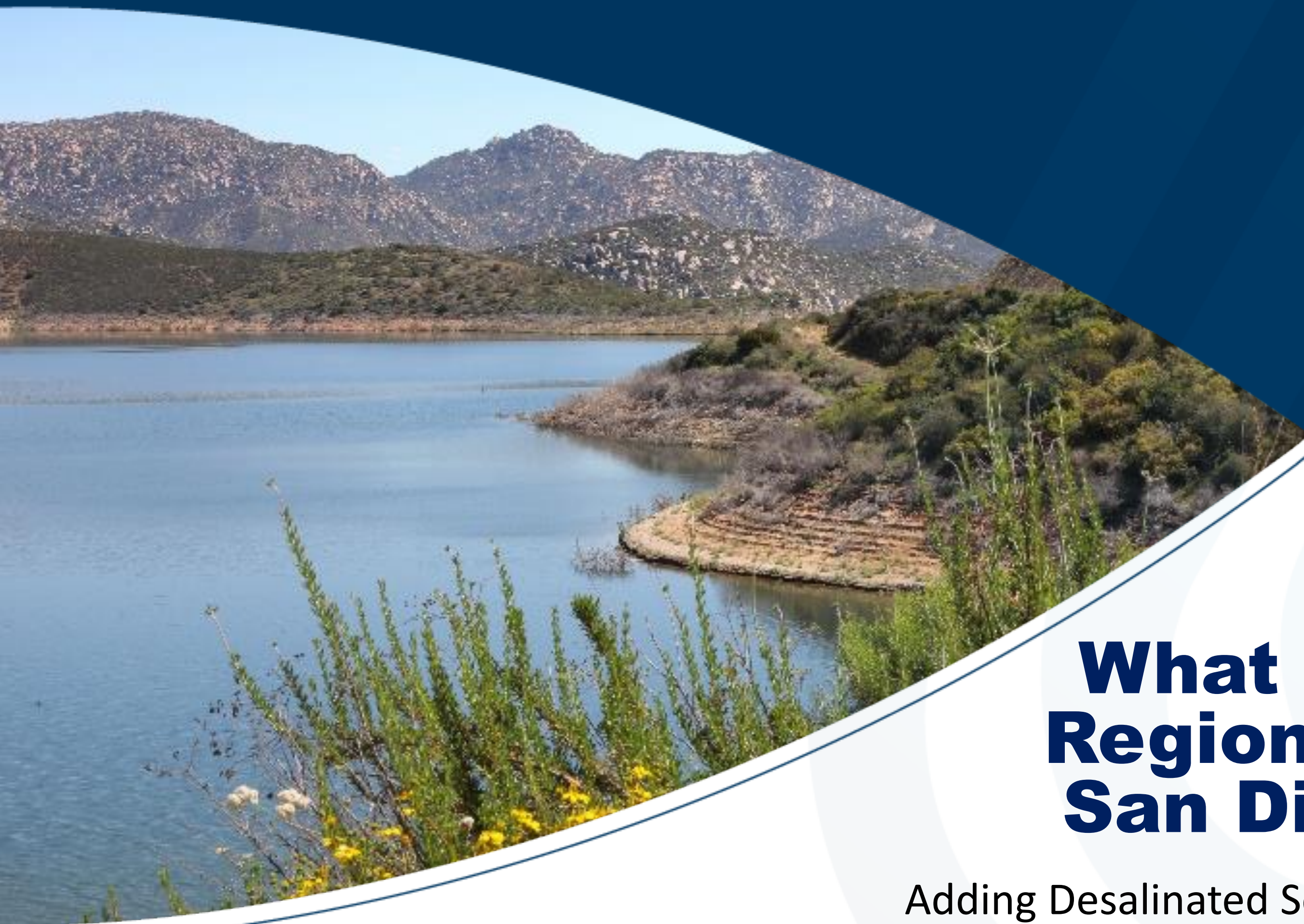


San Diego County Water Authority
And Its 24 Member Agencies

What Happened to Regional Salinity in San Diego County?

Adding Desalinated Seawater as a Source Water and related One Water Implications

Nathan Faber, P.E.
Principal Engineer

October 26, 2022

SCSC One Water Salinity Management Innovation Summit 2022

Thank You!

Your support on this project has made this research possible.

Southern California Salinity Coalition

Arcadis – Brent Alspach/Greg Imamura

Water Research Foundation

Poseidon Water

Carlsbad Municipal Water District

City of Escondido

City of San Diego

Helix Water District

Olivenhain Municipal Water District

Otay Water District

Sweetwater Authority

Vallecitos Water District

Overview

1. New local supplies reduce salinity
    - Seawater Desalination
    - Potable Reuse
2. Economic benefits - over $70M annually in 2040
3. Primary benefits:
    - Residential - reduced appliance and plumbing damage
    - Agriculture - higher yields, less leaching
    - Commercial/Industrial - less end-user treatment
    - Wastewater/Recycled Water - lower influent TDS supporting Basin Plan Objectives (BPO) and Salt and Nutrient Management Plans (SNMP)

Imported Water

Water supplies from the Colorado River and Northern California (SWP)

Imported Water

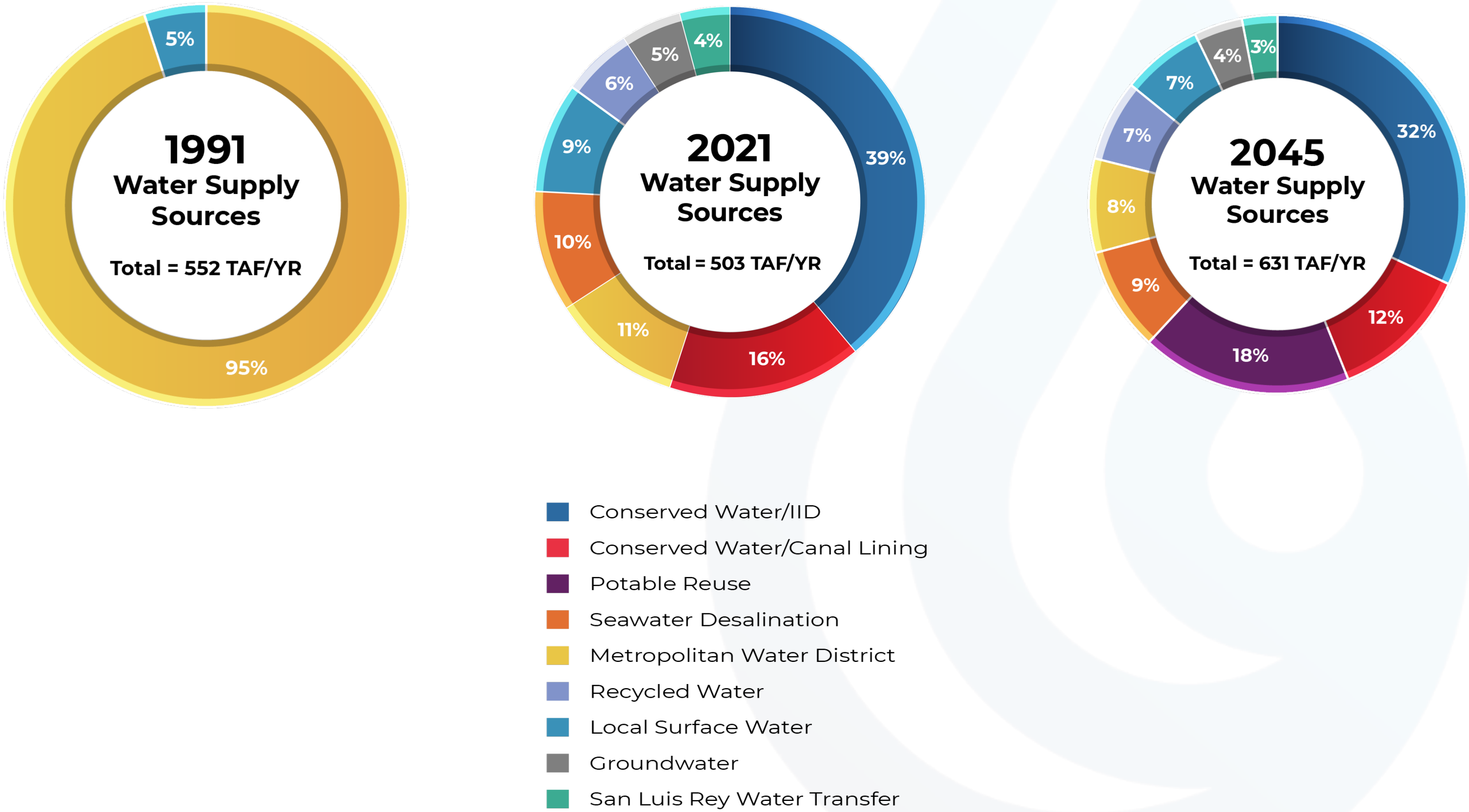
New Local Supplies

New Local Supplies

New Local Supplies

Diversification of San Diego's Supplies

Desalination and Potable Reuse will be 27% of the region's supplies in 2045



New Local Supply Treatment

Projects use Reverse Osmosis (RO) treatment

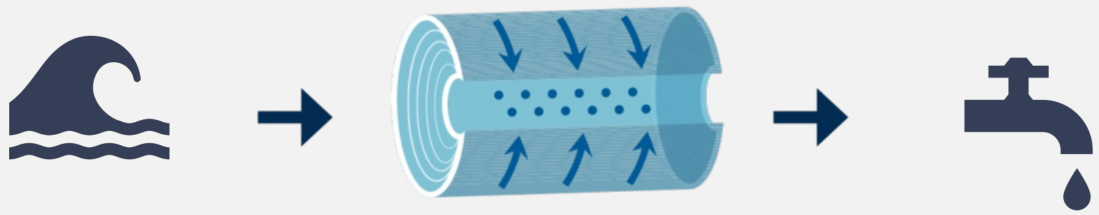
Project	Online Date	Capacity (MGD)	Primary Treatment Processes
Claude "Bud" Lewis Carlsbad Desalination Plant	2015	50	Pre-Treatment, MF, **RO**
Pure Water Oceanside	2022	4	UF, **RO,** UV
Pure Water San Diego – Phase 1	2025	30	Ozone, BAC, MF, **RO,** UV
East County Advanced Water Purification Project	2026	10	MF, **RO,** UV
Pure Water San Diego – Phase 2	2035	53	Ozone, BAC, MF, **RO,** UV
		147 **(27% of region's demand)**	

Salinity Reduction

RO treatment significantly reduces salinity

Seawater Desalination

Ocean | Reverse Osmosis | Potable Water

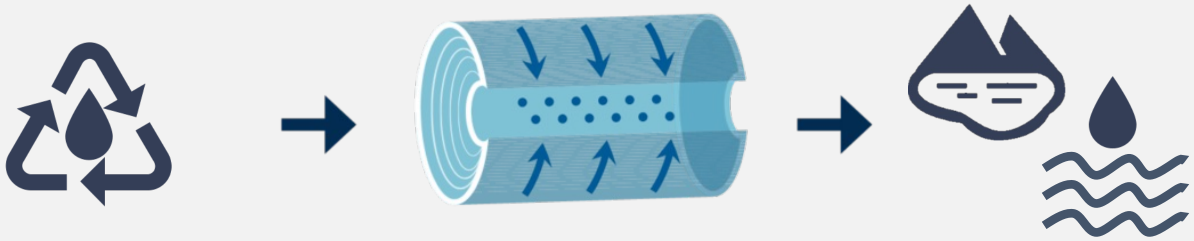


TDS ~ 31,000 mg/L

TDS ~ 210 mg/L

Potable Reuse

Reclaimed Water | Reverse Osmosis | Reservoir/Groundwater

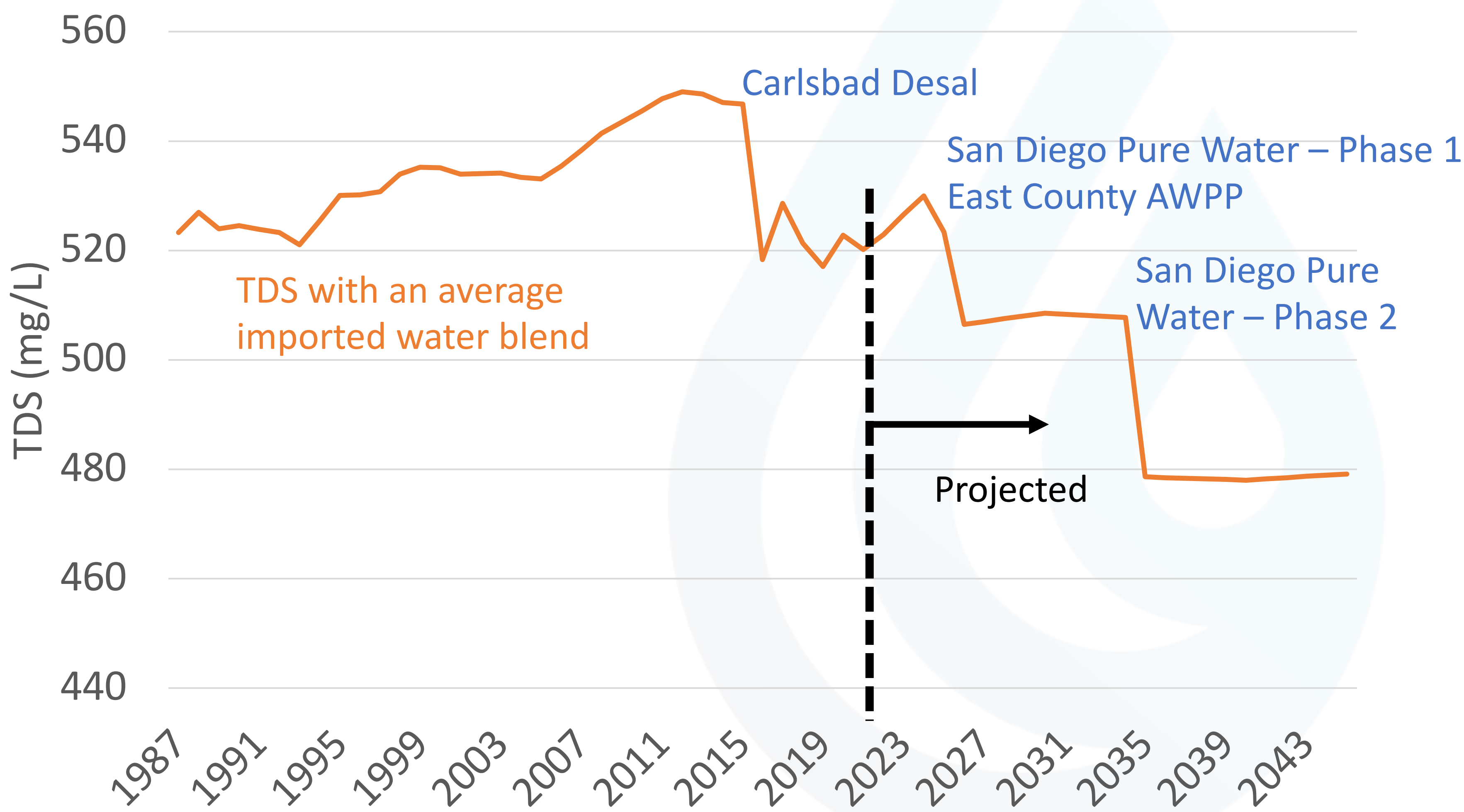


TDS ~ 880 mg/L

TDS ~ 120 mg/L

Salinity Loading Modeling Results

Removed the influence of imported water blending variability



Economic Benefits of Salinity Reduction

Lower salinity has many advantages

Residential – less plumbing/appliance damage

Agricultural – less yield loss, leaching

Commercial/Industrial – less on-site treatment, disposal costs

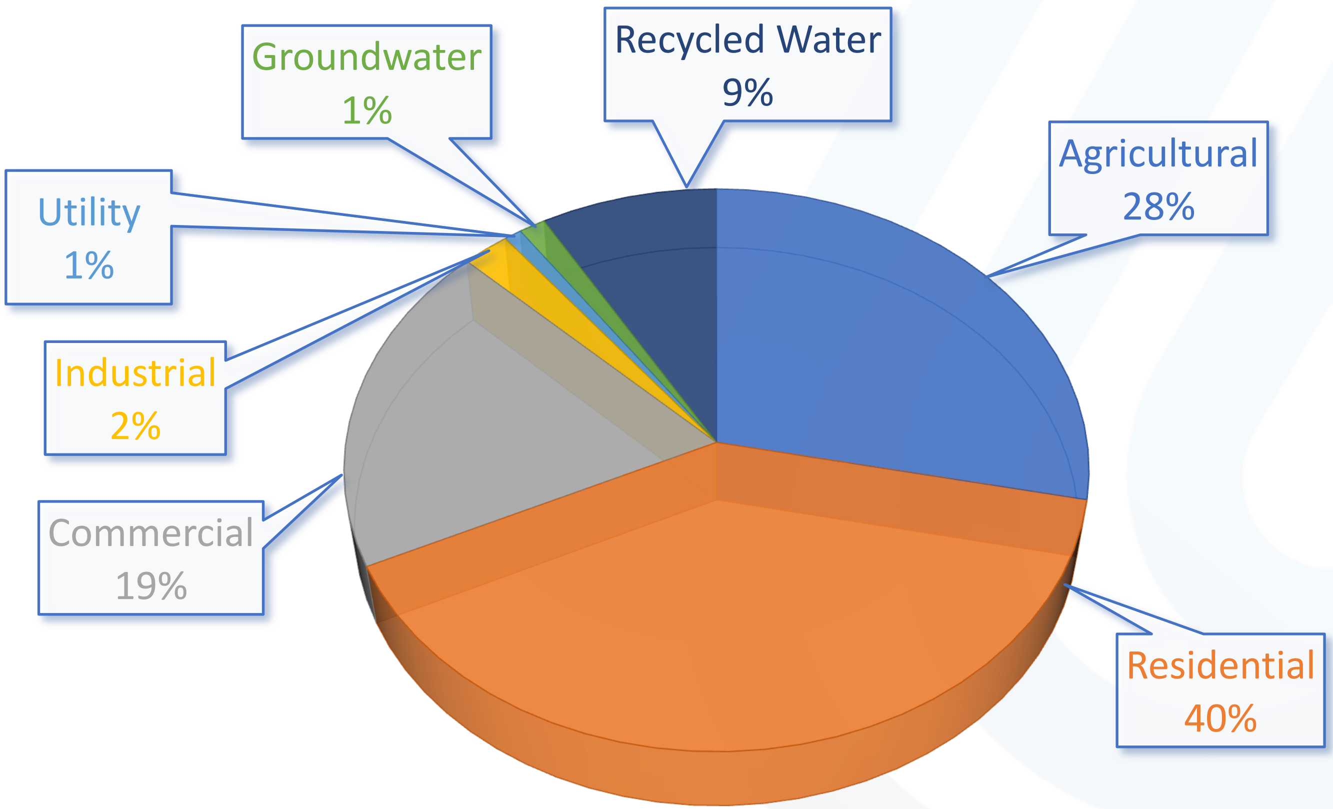
Utilities – longer asset life

Groundwater – less treatment

Recycled Water/Wastewater – less treatment for beneficial reuse/discharge (BPOs/SNMPs)

Economic Benefits of Reduced Salinity

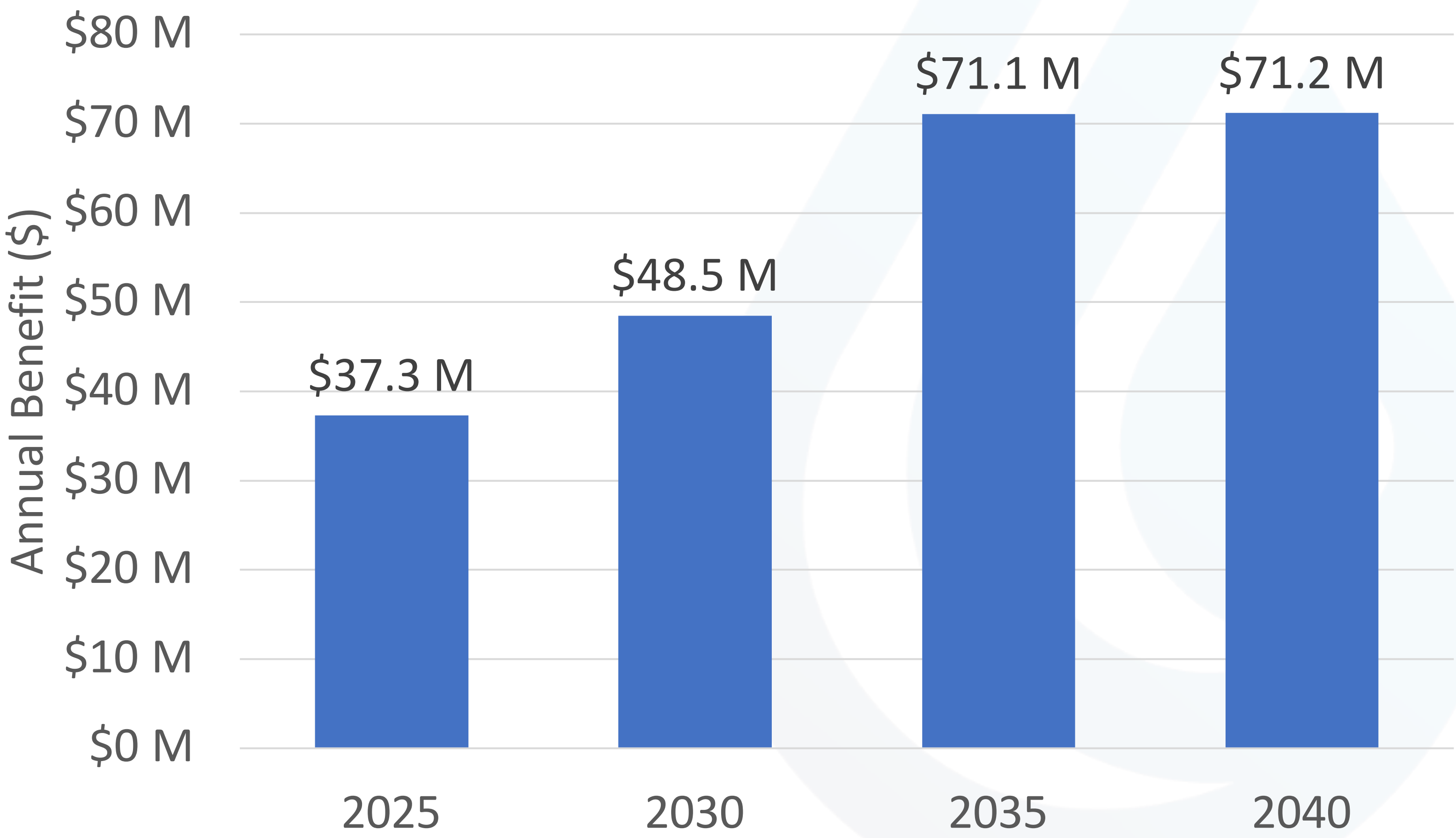
Over $70 Million annually in 2040 for the region (USBR SEIM*)



* Results generated from the US Bureau of Reclamation’s Salinity Economic Impact Model (May 2020 version)

Economic Benefits Over Time

Economic benefits from new local supplies (USBR SEIM*)



* Results generated from the US Bureau of Reclamation's Salinity Economic Impact Model (May 2020 version)

Economic Benefits – Carlsbad Desal

Over $20M annual benefits from reduced salinity (USBR SEIM*)

Category	Annual Benefits (Year 2040)
Agricultural	$8.2 M
Residential	$8.3 M
Commercial	$3.9 M
Industrial	$0.5 M
Utility	$0.2 M
Groundwater	$0.3 M
Recycled Water	$1.7 M
Total	**$23.1 M Annually**

* Results generated from the US Bureau of Reclamation's Salinity Economic Impact Model (May 2020 version)

Summary

1. New local supplies reduce salinity
2. Economic benefits - over $70M annually in 2040
3. Primary benefits:
    - Reduced residential appliance and plumbing damage
    - Higher agricultural yields, less leaching
    - Less end-user treatment costs (commercial/industrial)
    - Lower TDS in wastewater/recycled water supporting BPOs and SNMPs

Thank You!

@sdcwa

SanDiegoCountyWaterAuthority

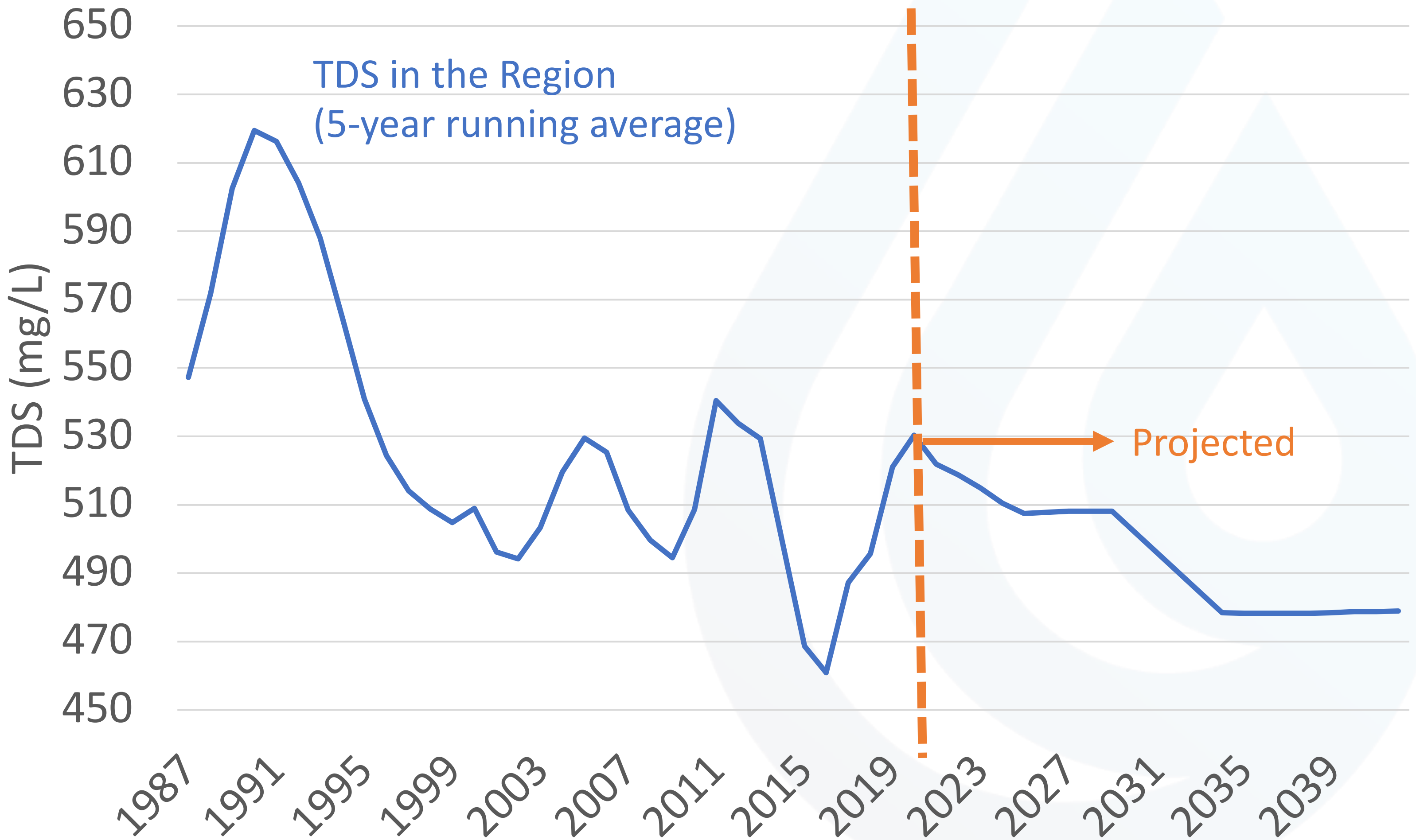
@sdcwa

Imported Water

Water supplies from the Colorado River and Northern California (SWP)

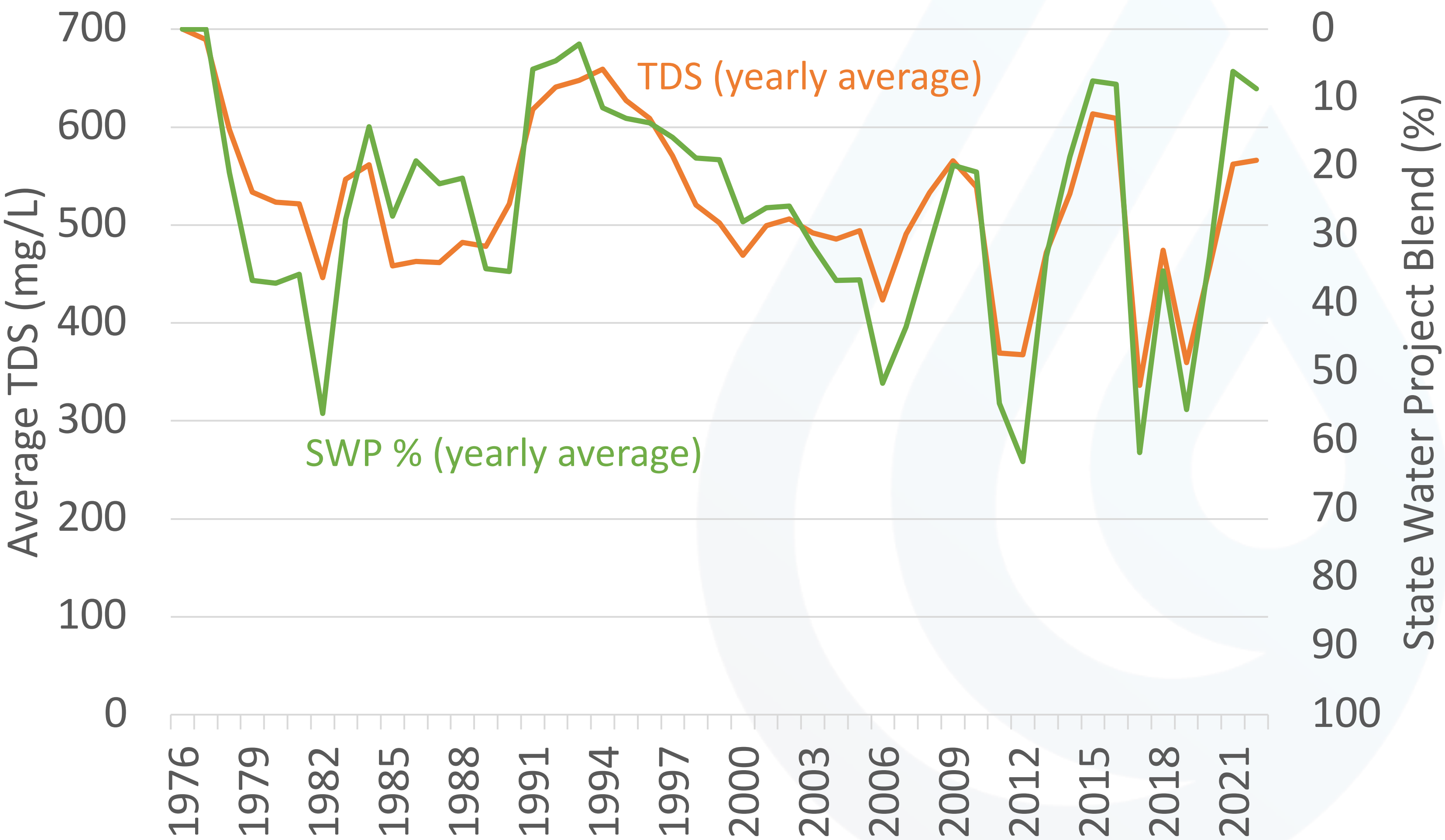
Salinity Loading Model Results

Average TDS (salinity) in the region is expected to drop in the future

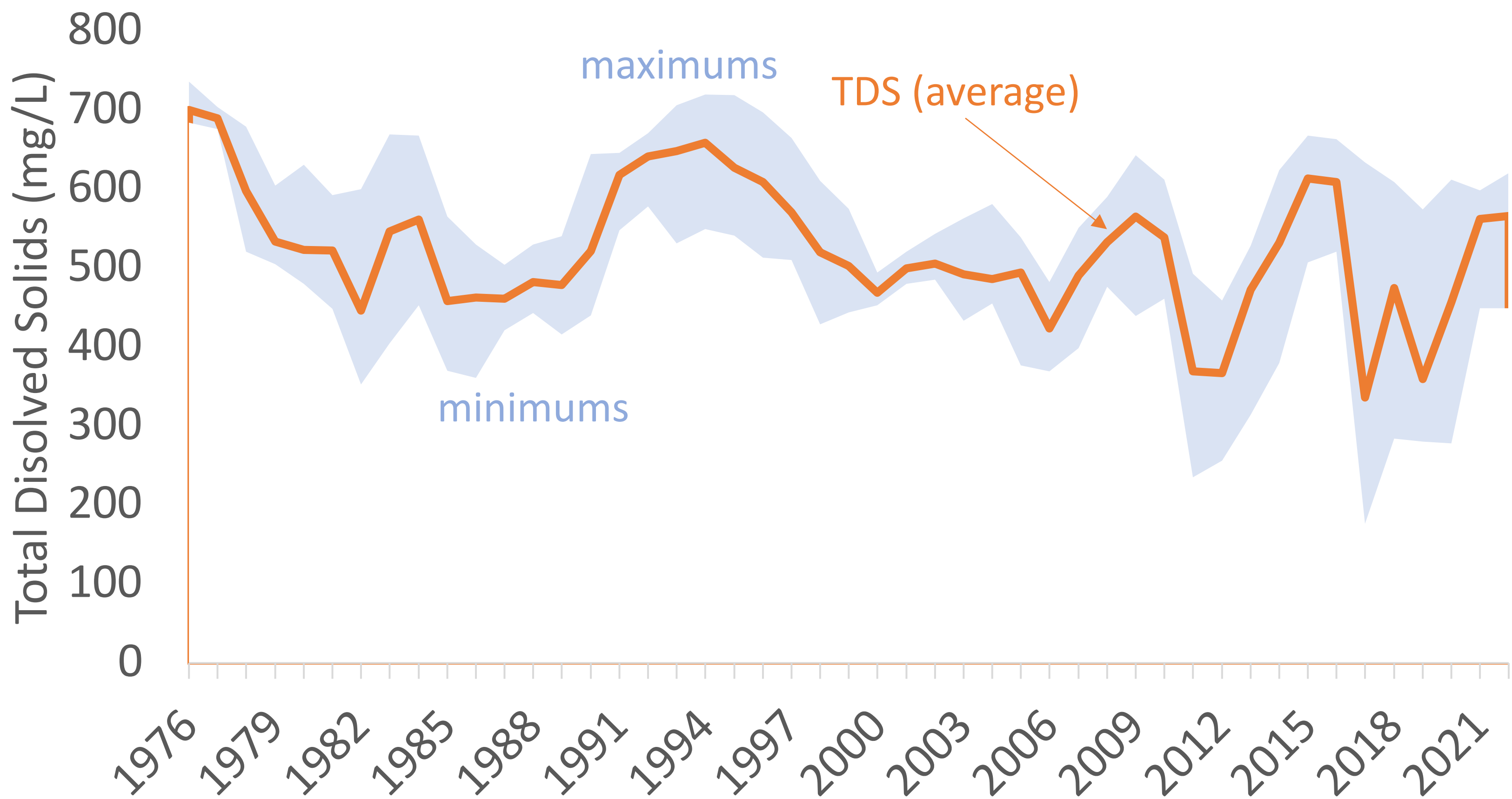


TDS and Imported Water

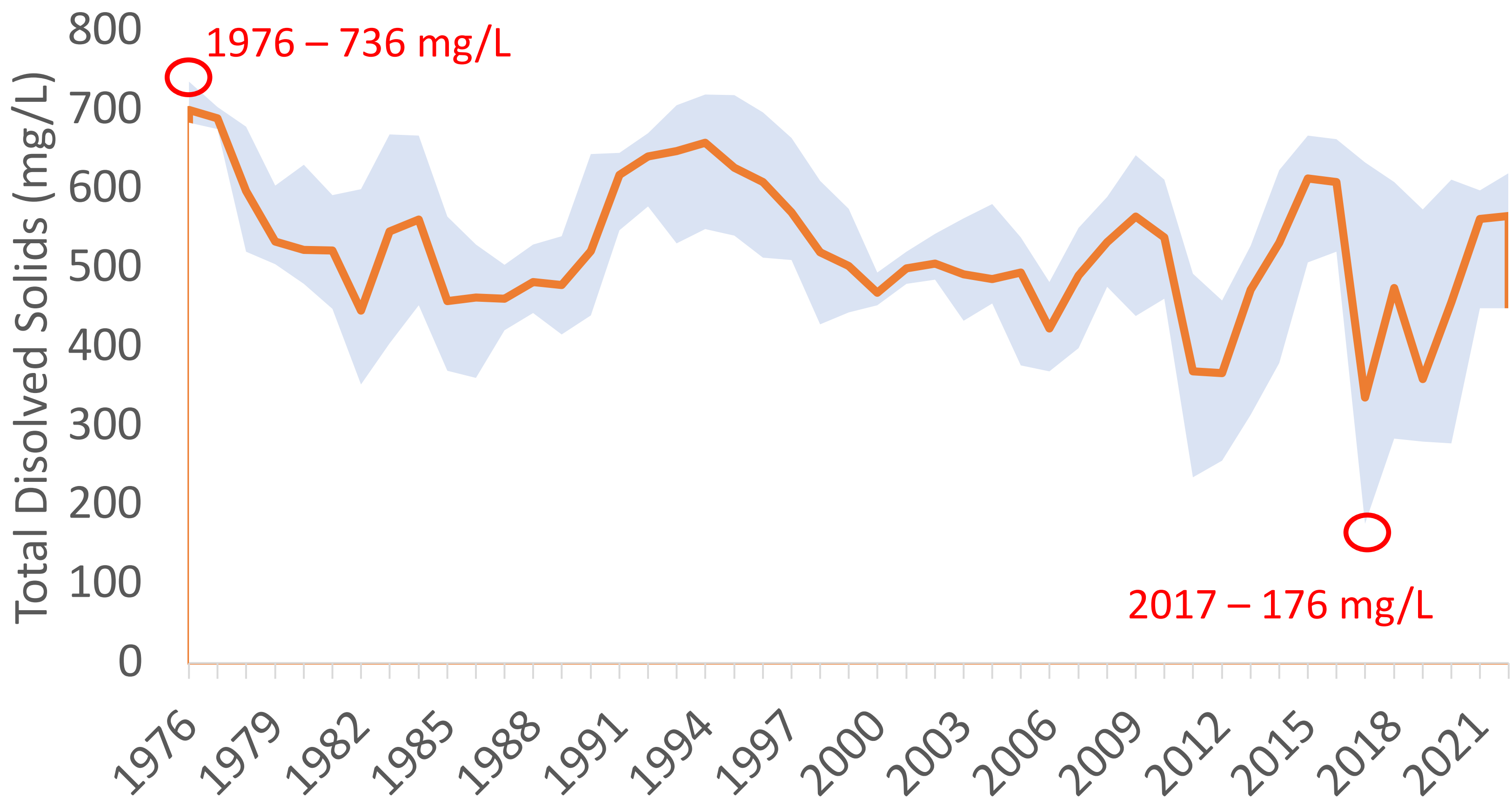
Average TDS correlates with State Water Project (SWP) blends



Imported Water Salinity (TDS)

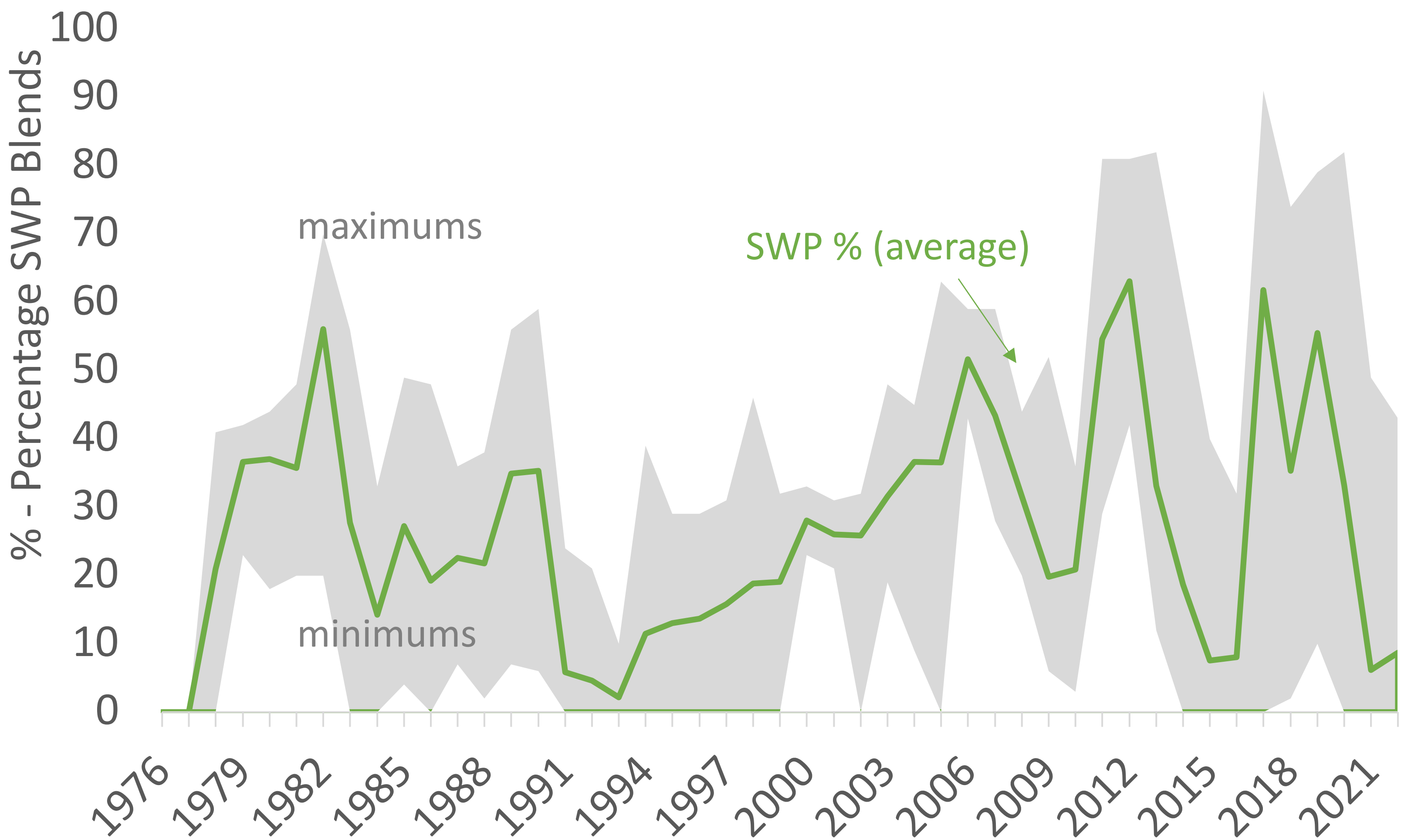


Imported Water Salinity (TDS)



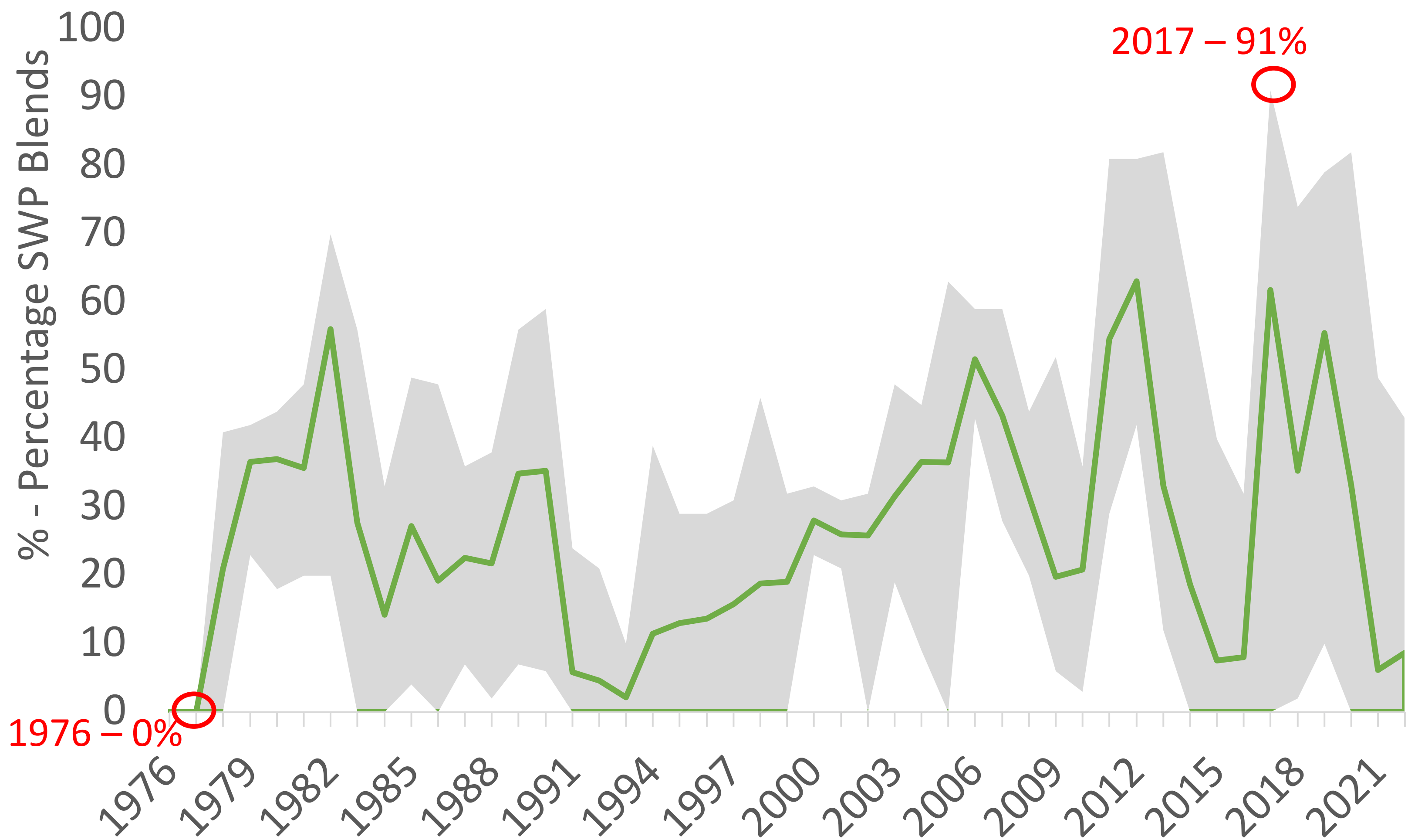
Imported Water Blend

% State Water Project (SWP)



Imported Water Blend

% State Water Project (SWP)



Economic Benefits of Salinity Reduction

Lower salinity in the region has many advantages

1. Residential
2. Agricultural
3. Commercial
4. Industrial
5. Utilities
6. Groundwater
7. Recycled Water/ Wastewater