A Snapshot of Southern California Reuse - The Carollo Perspective

Lauren Bray

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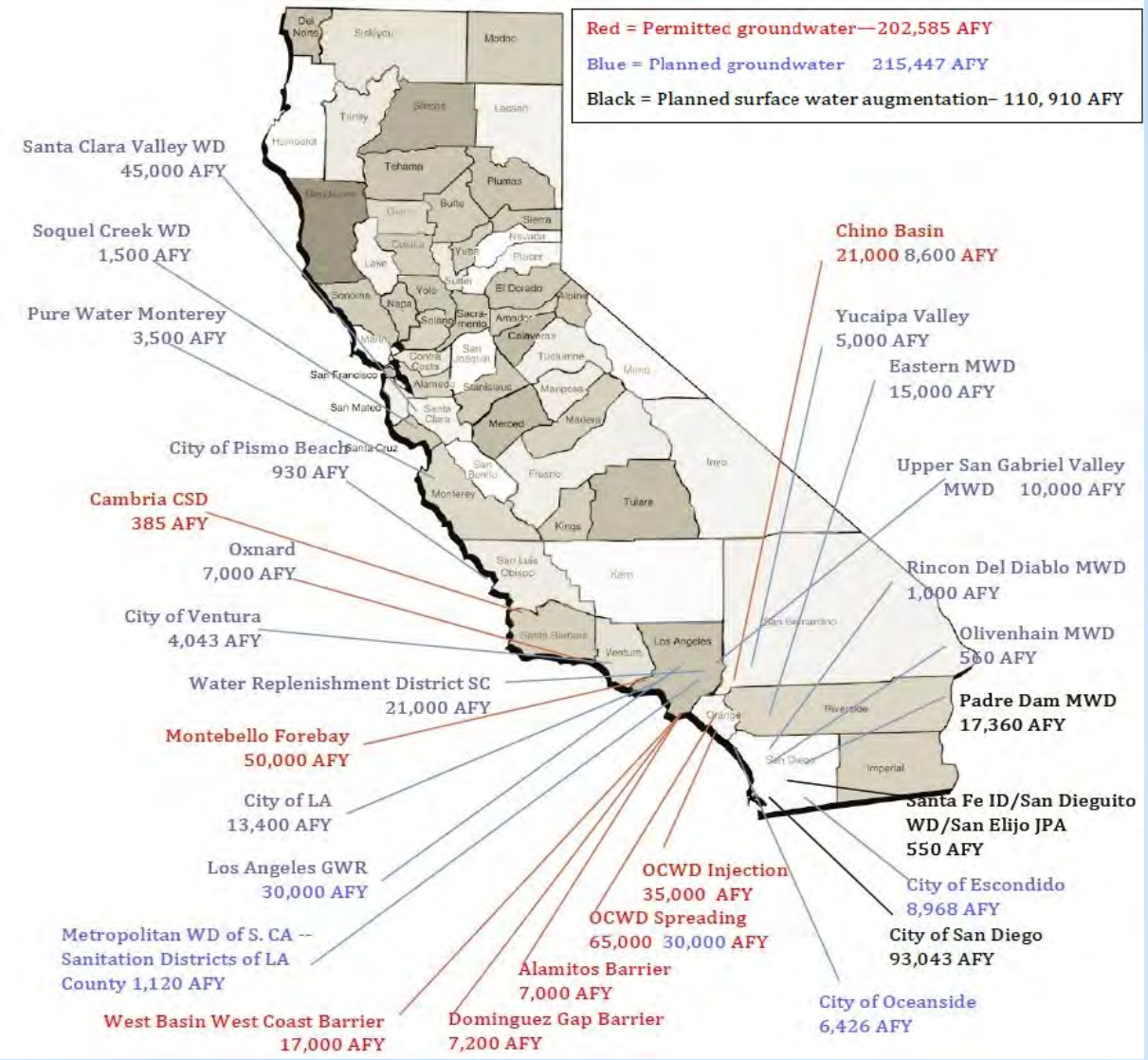
Engineers...Working Wonders With Water®

Potable Water Reuse is Seeing Substantial Use and Expansion in CA



- 206 mgd today
- Plans for 400+ mgd by 2023
  - NCPWF: 34 mgd
  - Tillman: 25 mgd
  - Ventura: 5 mgd
  - Las Virgenes Demo: 100 gpm
  - MWD Demo: 0.5 mgd

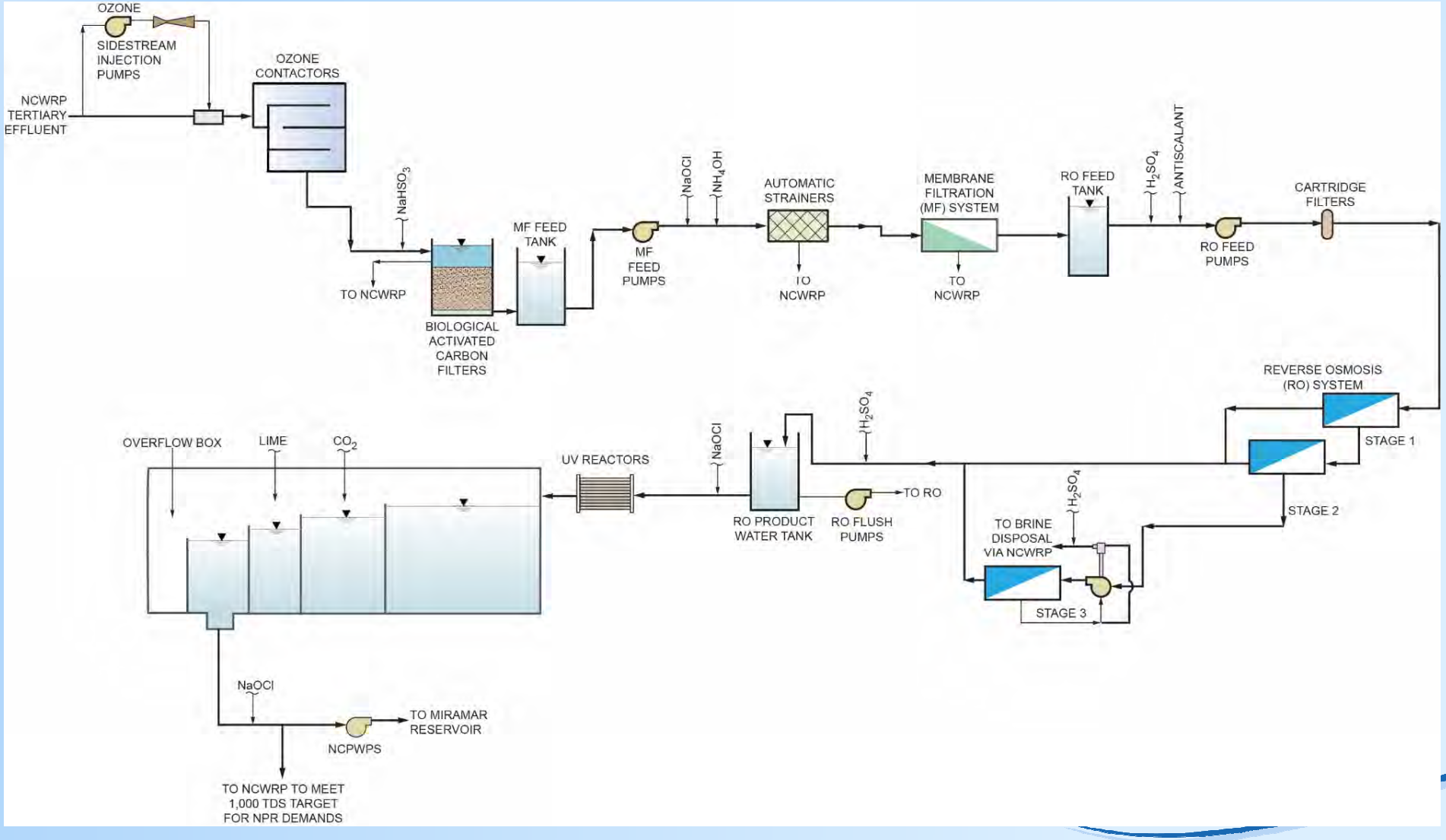
North City Pure Water Facility, San Diego

NCPWF design developed simultaneously with surface water augmentation regulations.

	Regulations	NCPWF
Wastewater Source Control	Required	✓
Pathogen Log Removal (V/G/C)	≥ 8/7/8	✓
Full Advanced Treatment	Required	✓
Regulated/Emerging Contaminants and Physical Characteristics Control	≤ MCLs, NLs, or action levels	✓ (1)
Reservoir Retention Time	≥ 180 days	~ 60 days (2)

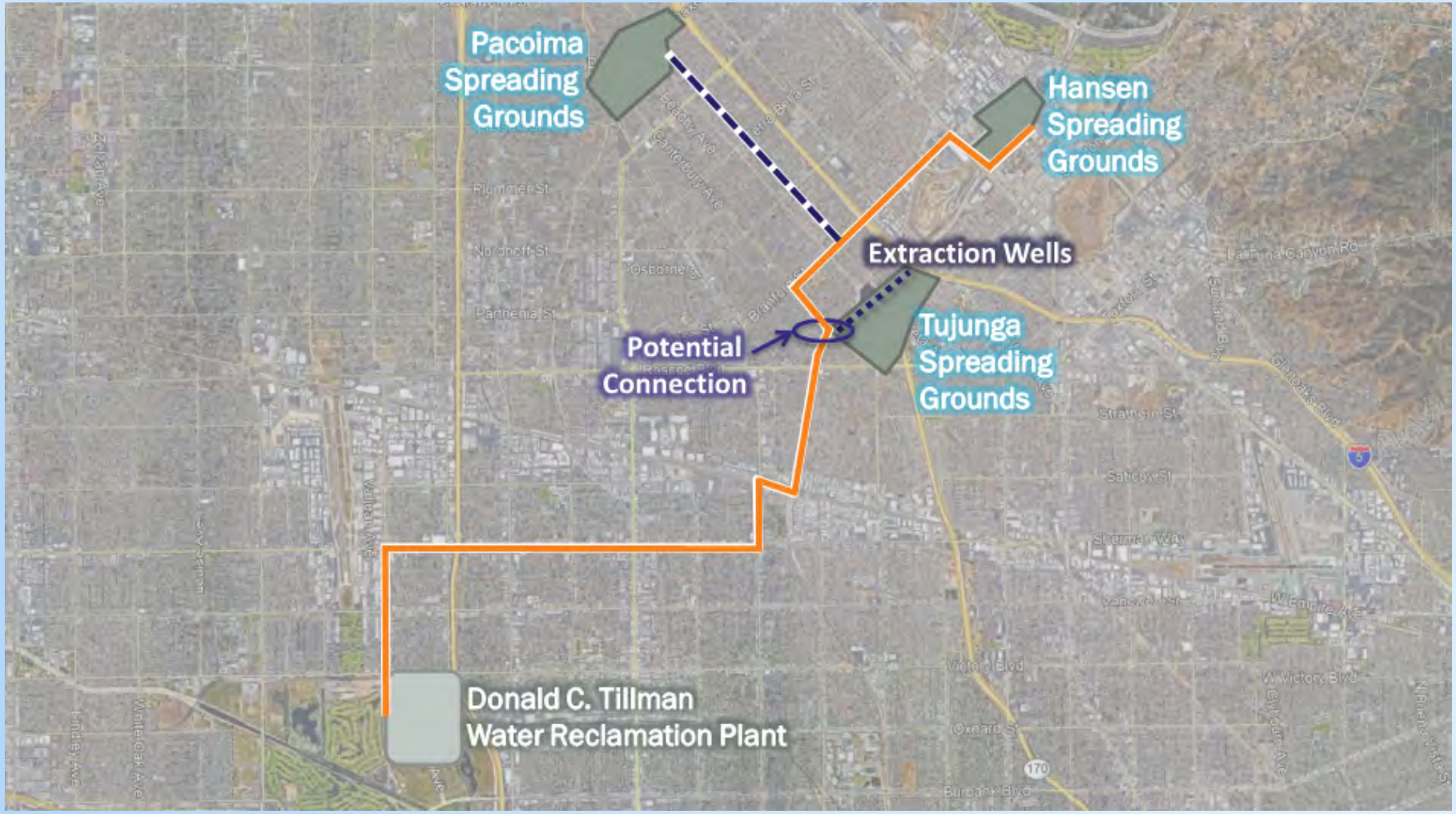
Notes:
1) NDMA will likely be based on 10^{-6} risk of infection (0.69 ng/L) as a more stringent requirement instead of its notification level (10 ng/L).
2) Increased minimum pathogen log removal requirement of 10/9/10.

Ozone, BAC filtration, UF, RO, and UV AOP provide multiple treatment barriers for both chemical and pathogen removal.

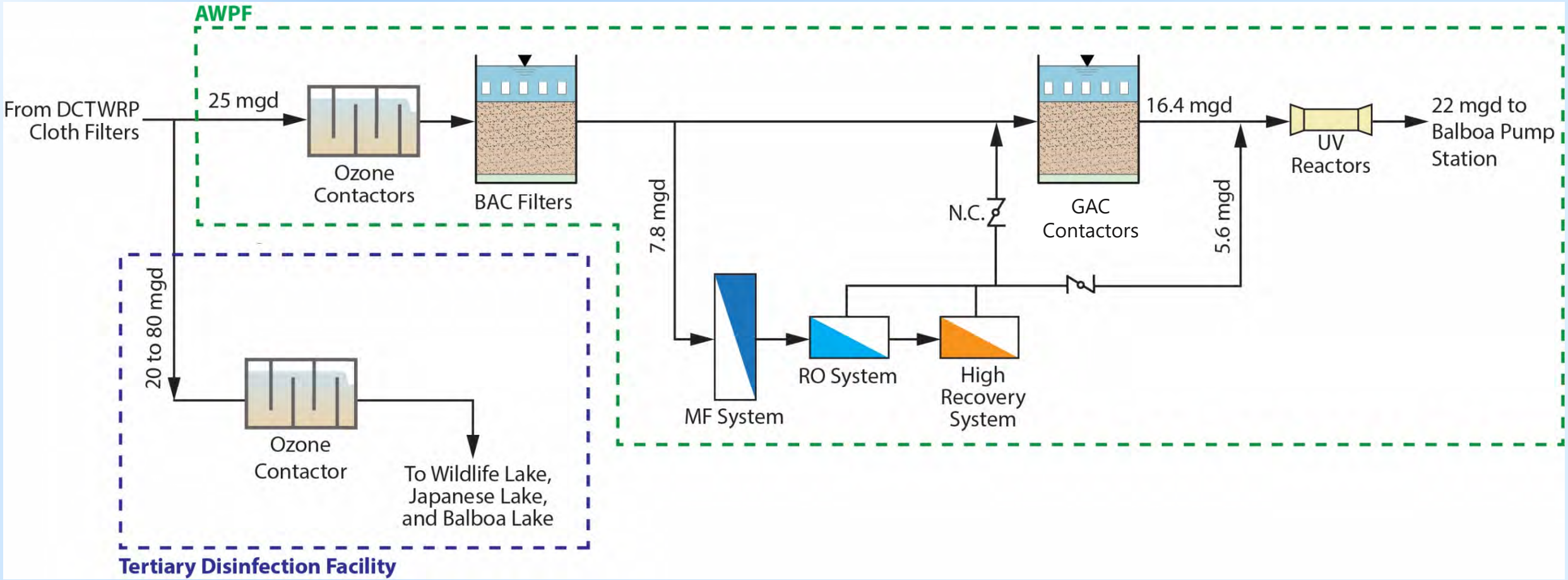


Donald C. Tillman AWPF,
Los Angeles

Tillman AWPF will produce water for groundwater replenishment via surface spreading at the Hansen Spreading Grounds.

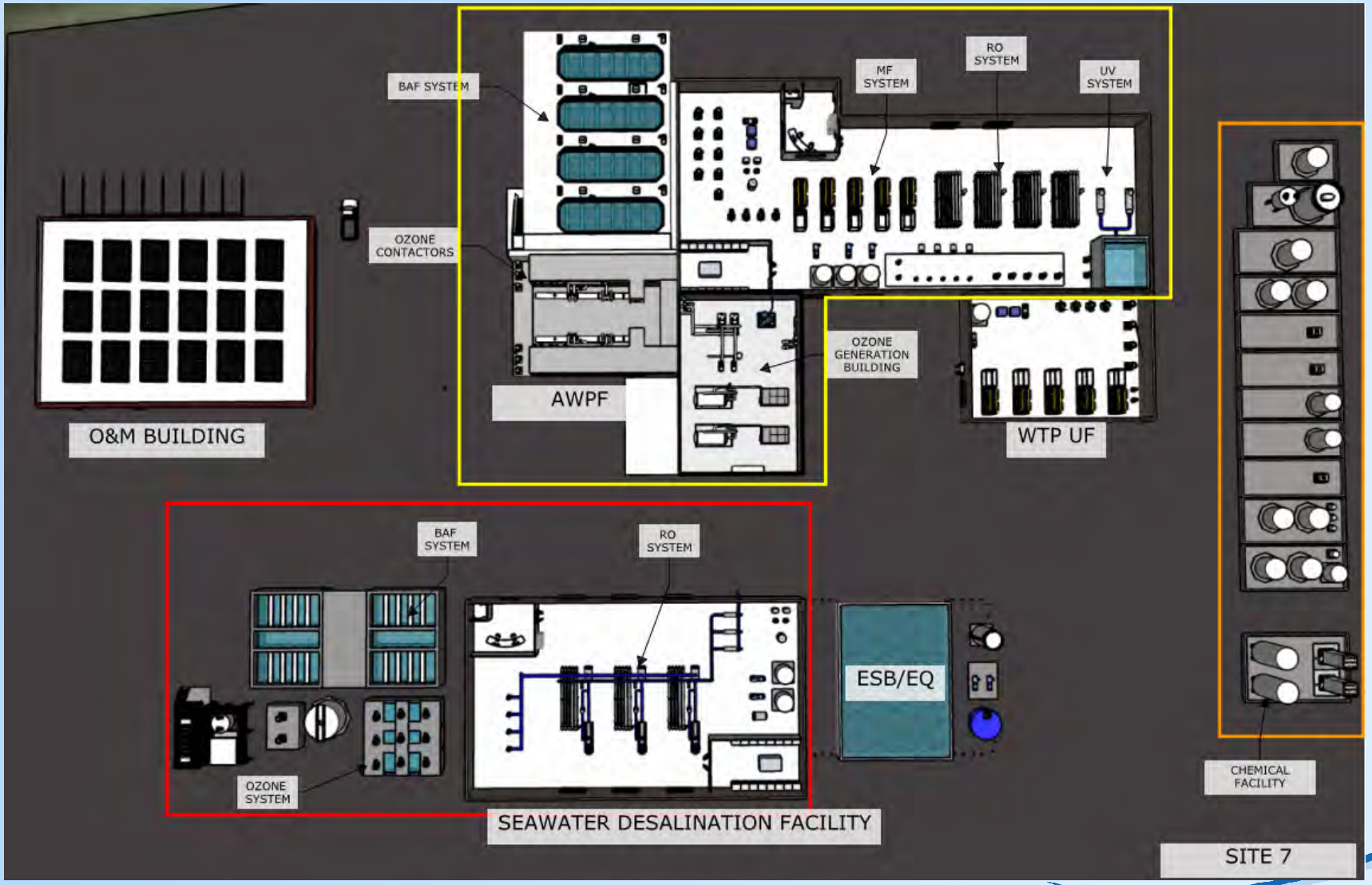


Ozone, BAC filtration, GAC contactors, and UV with MF, RO, and high recovery system sidestream

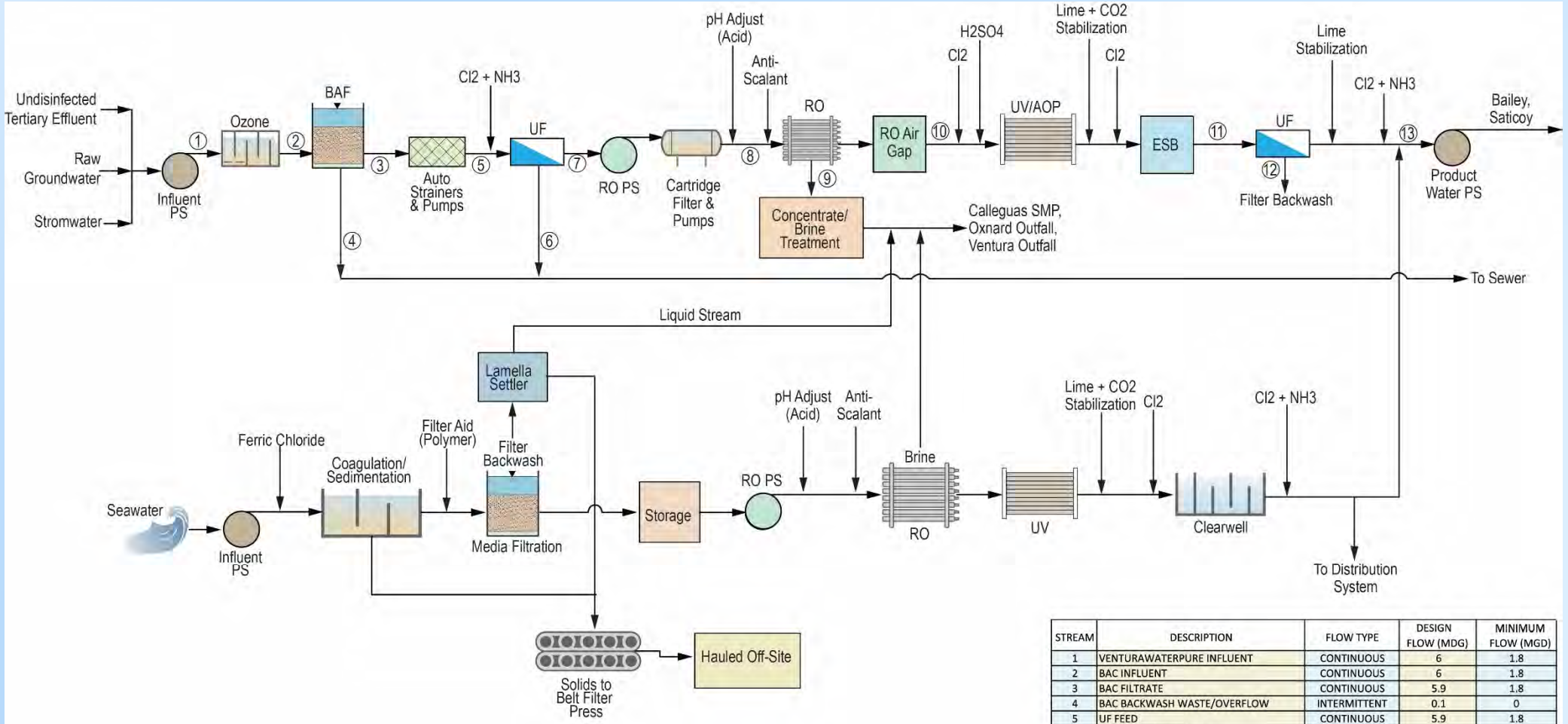


VenturaWaterPure Facility, City of Ventura

Ventura is looking into DPR due to recent consent decree that doesn't allow them to discharge tertiary effluent into the estuary



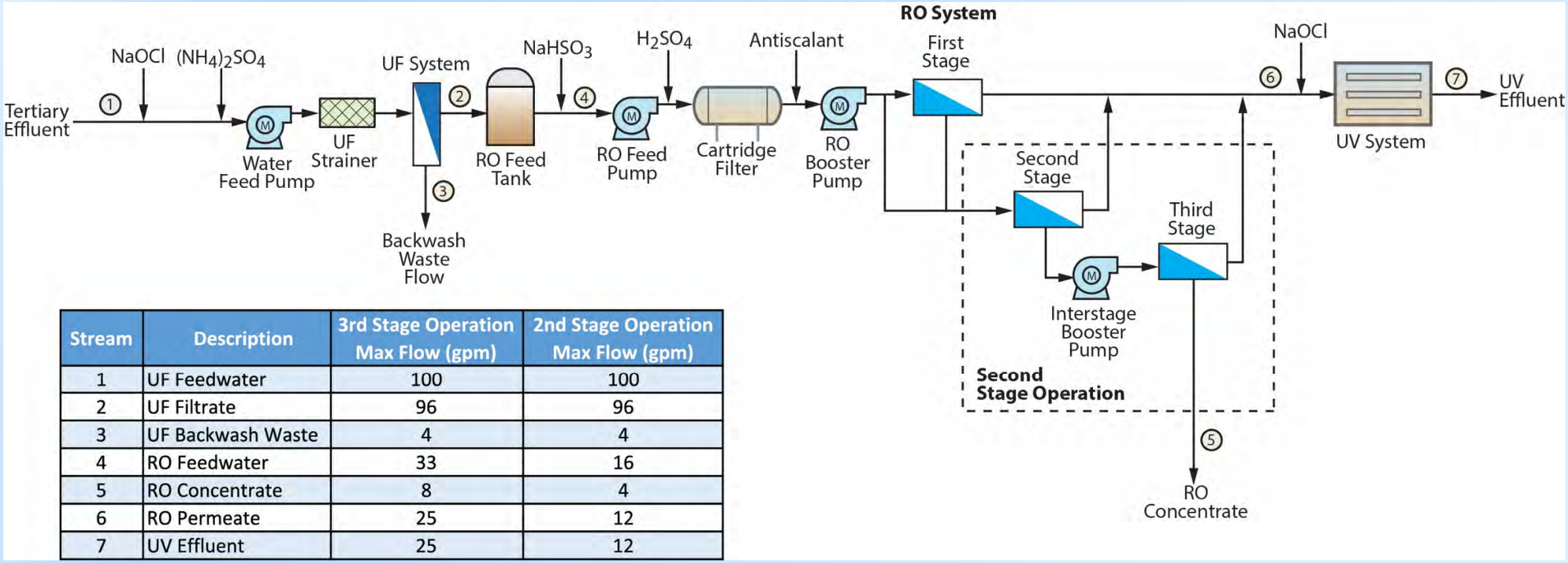
VenturaWaterPure is on the path to become the first direct potable reuse project in California



STREAM	DESCRIPTION	FLOW TYPE	DESIGN FLOW (MDG)	MINIMUM FLOW (MGD)
1	VENTURAWATERPURE INFLUENT	CONTINUOUS	6	1.8
2	BAC INFLUENT	CONTINUOUS	6	1.8
3	BAC FILTRATE	CONTINUOUS	5.9	1.8
4	BAC BACKWASH WASTE/OVERFLOW	INTERMITTENT	0.1	0
5	UF FEED	CONTINUOUS	5.9	1.8
6	UF BACKWASH WASTE	INTERMITTENT	0.2	0.1
7	RO FEED	CONTINUOUS	5.7	1.7
8	RO CARTRIDGE FILTER TOTAL EFFLUENT	CONTINUOUS	5.7	1.7
9	RO CONCENTRATE	CONTINUOUS	0.8	0.3
10	UV/AOP EFFLUENT	CONTINUOUS	4.8	1.5
11	WTP UF FEED	CONTINUOUS	4.8	1.5
12	WTP UF BACKWASH WASTE	INTERMITTENT	0.2	0.1
13	PRODUCT WATER	CONTINUOUS	4.6	1.4

Las Virgenes – Triunfo Pure Water Demonstration AWPF, Calabasas

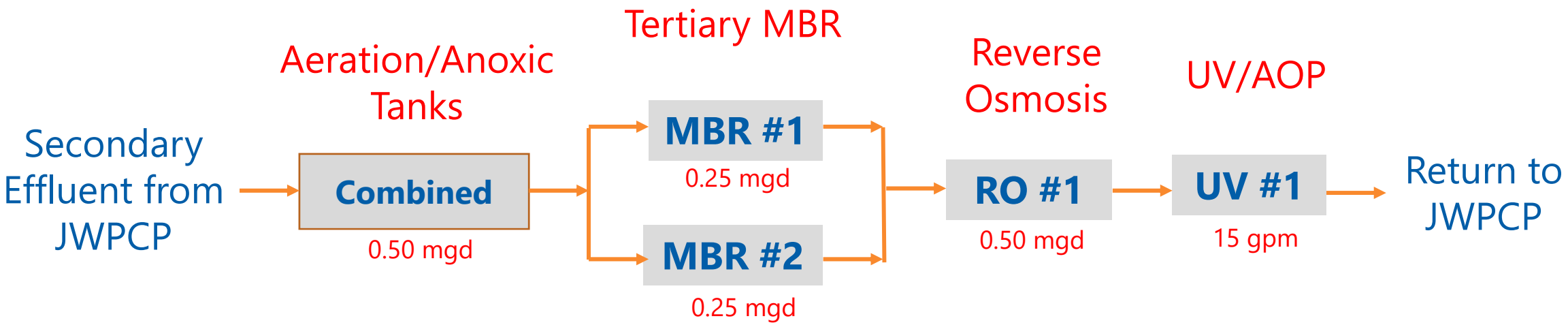
UF, RO, and UV AOP pilot testing for seasonally full scale AWPF



Stream	Description	3rd Stage Operation Max Flow (gpm)	2nd Stage Operation Max Flow (gpm)
1	UF Feedwater	100	100
2	UF Filtrate	96	96
3	UF Backwash Waste	4	4
4	RO Feedwater	33	16
5	RO Concentrate	8	4
6	RO Permeate	25	12
7	UV Effluent	25	12

Metropolitan Demonstration AWPF, Los Angeles

Aeration/Anoxic Tanks, Tertiary MBR, RO, and UV/AOP pilot testing to try to receive pathogen log removal credit for MBR



Thank You!

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