



Ground Water Desal – Technology, Projects & Policy

CalDesal – Annual Desalination and Salt Management Conference

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SWRCB – Division of Drinking Water

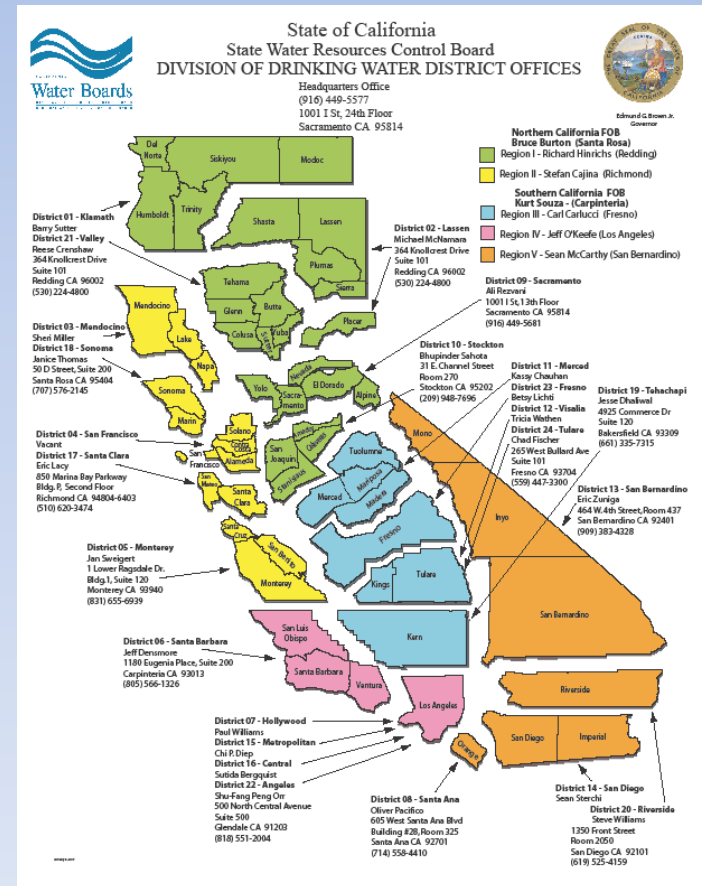
Presentation Outline

1. Overview/ Regulatory Background
2. Source Water Considerations
3. Treated Water Quality
4. Design and Permitting Considerations
5. Extremely Impaired Sources
6. Questions?

California's Division of Drinking Water

- Division of State Water Resources Control Board
- 2 Field Operations Branches
 - 5 Regions
 - 24 District Offices
- CA Safe Drinking Water Act
- Title 22 Drinking Water Standards
 - MCLs
 - Surface Water Treatment
 - Disinfection By-Products
 - Distribution System Water Quality

PUBLIC HEALTH PROTECTION



CA Health and Safety Code

§116555. Operational requirements.

(a) Any person who owns a public water system shall ensure that the system does all of the following:

- (1) Complies with primary and secondary drinking water standards.
- (2) Will not be subject to backflow under normal operating conditions.
- (3) Provides a reliable and adequate supply of pure, wholesome, healthful, and potable water.
- (4) Employs or utilizes only water treatment operators that have been certified by the state board at the appropriate grade.
- (5) Complies with the operator certification program established pursuant to Article 3 (commencing with Section 106875).

Water Supply Permit

- Permit required for any change in source of supply or method of treatment
- Application includes
 - Design and specifications
 - Operations and Maintenance Manual
 - Compliance monitoring plan
- Evaluation of sanitary hazards and public health safeguards

Source Water Quality Considerations

- Brackish water from seawater intrusion, deep aquifers
 - TDS, dissolved metals
- Other land-use activities may have contaminated aquifers
 - Nitrate
 - Perchlorate
 - Pesticides, Herbicides (DBCP, 123-TCP)
- Source Water Assessments
 - Potential Contaminating Activities
 - Historical Land-Use Practices

Treated Water Quality

- Meet all primary and secondary drinking water standards
- Maintain distribution system water quality
 - Disinfection by-products
 - Non-corrosive
 - Physical characteristics (color, odor, turbidity)
- Reliability of water treatment plant
 - Alarms, redundancy, robustness

Extremely Impaired Sources

- Mixture of constituents exceeding MCL
- Acute contaminant more than 3x MCL
- Chronic contaminant more than 10x MCL
- Known contaminant plume
- Need for multiple treatment technologies, increased reliability
- Consider alternative sources of water readily available

Design and Permitting Considerations

- Reverse Osmosis
- Ion-exchange
- Aeration, air-stripping, GAC
- Pre-treatment for Iron and Manganese

Depending on source water quality, multiple treatment barriers may be needed

Design and Permitting Considerations

- Meets treated water quality objectives and customer acceptance
- Source water characteristics
 - Bacteriological issues may require additional disinfection
 - Shallow brackish water may be under direct influence of surface water requiring surface water treatment

Design and Permitting Considerations

- Internal cross-connections
- Bacteriological contamination of membranes
- Membrane integrity and performance
 - Fouling due to manganese precipitation
 - Scale inhibitors
- Corrosion Control Treatment
 - Aeration, pH adjustment
 - Orthophosphate addition

Permitted Projects

- Chino Basin Desalter Authority
- Western MWD
- City of Corona
- City of Oceanside
- Irvine Ranch Water District
- City of Tustin
- San Juan Basin Authority
- South Coast Water District
- Zone 7 Water Agency
- Cal American WC – Sand City
- Sweetwater Authority
- Eastern MWD
- City of Torrance
- City of Beverly Hills
- Cal Water Service Co. – Dominguez
- City of Oxnard
- City of San Simeon
- City of Simi Valley
- Cal Poly Pomona
- Alameda County Water District

Questions?

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