ADVANCED TREATMENT

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Wastewater Management has Evolved
Advanced Wastewater Treatment is...

Any process which reduces the level of pollutants in wastewater below that attainable through conventional secondary treatment.
Pollutants Targeted by Advanced Wastewater Treatment Typically Include ...

- Residual particulates
- Nutrients – Nitrogen & Phosphorus
- Salinity / Dissolved Solids
- Trace constituents (CECs)
- Pathogens
Advanced Treatment Technologies

- Secondary with Nutrient Removal
- Depth Filtration
- Surface Filtration
- Microfiltration
- Ultrafiltration
- Dissolved Air Flotation
- Nanofiltration
- Reverse Osmosis
- Electrodialysis
- Carbon Adsorption
- Ion Exchange
- Advanced Oxidation
- Disinfection
“Full Advanced Treatment”

GWR System Flow Diagram

OC San
Secondary Treated Effluent

OC San Enhanced Source Control

Microfiltration
Backwash
OC San Plant No. 1

Reverse Osmosis
Brine
OC San Ocean Pipeline

Ultraviolet Light
(Hydrogen Peroxide added)

GWRS Purified Water
Recharge Basins
Natural Soil Filtration
OC San's TSS, BOD, and Ammonia Have Decreased by 95%, 97% and 54% since 1990
Metals In OC San Effluent

Pounds per Day

Total Effluent Heavy Metals

77 80 82 85 88 91 94 97 00 03 06 09 12 15 18 21
We've Made Great Progress
Southern California Four Largest Ocean Dischargers
Recycled Flows 2000 - 2020 + Planned

Million Gallons per Day

2000 2020 Planned / In Progress

Aggregated volumes from City of LA, LACSD, OC San, and City of San Diego
Trade Offs and Considerations

- Energy Usage
- Greenhouse Gases
- Other Cross-media Impacts
- Costs
- Storage Issues
Limitations of Advanced Treatment

• There's no such place as away ...
• Concentrate disposal is key to potable reuse
  • RO Concentrate is microfiltered secondary effluent with water extracted
Questions

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