Water Reuse in Southeast Florida: The Facts Matter

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Miami-Dade Water and Sewer Department (MDWASD)
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Your Water and Sewer Provider:

- MDWASD is the largest utility in Florida and top 10 in the country
- 420,000 retail customers, 15 wholesale customers, serving 2.3 million residents
- 300+ MGD of water production and wastewater treatment
- 3 regional WW plants and 3 large water plants
- 14,000 miles of water and sewer lines
Generalized Cross-Section of the Biscayne and Floridan Aquifers

Water Supply Well

Biscayne Aquifer

Coastal Ridge

Biscayne Bay

Key Biscayne

Florida Straits

Rimini Bahamas

Lower Floridan Aquifer

BOULDER ZONE: TDS = 35,000

Depth of casings vary from 2403 to 2746 ft. (Not to Scale)

(adapted from USGS)
Why Reuse?

1. To meet water supply needs
2. To meet wastewater disposal needs
3. Combination of 1 & 2
4. Because the law says so
Reuse in Florida

- Florida is a national leader in reuse
- Statewide, 64% reuse capacity (treatment & distribution)
- Statewide, 49% actual reuse (722 MGD of 1618 MGD capacity)
- Most reuse is irrigation, which solves both water supply and effluent disposal issues in central and west Florida
- MDWASD reuses 5% of annual flows, mostly for wastewater operations-typical of SE Florida
Reuse Options

- Irrigation (Tertiary treatment/HLD)
- Industrial use (Tertiary treatment/HLD/maybe nutrients)
- Biscayne Aquifer replenishment (indirect potable reuse)(RO/Advanced Oxidation/nutrient reduction)
- Floridan Aquifer replenishment (Tertiary/HLD)
- Aquifer Storage and Recovery (ASR-stormwater reuse) (disinfection)
- Direct potable reuse (the works)
- Reuse is typically an energy intensive process
Reuse/Water Supply Capital Costs

- Biscayne aquifer replenishment/indirect potable reuse: $30-$35/gallon
- Floridan aquifer replenishment: $2/gal HLD treatment + high pressure recharge system + RO water treatment
- Irrigation reuse: $2/gallon HLD treatment + distribution cost or $11/gallon for MBR treatment + distribution
- Direct potable reuse: $22-$25/gallon
- Floridan aquifer brackish water supply (RO): $10/gal
- ASR (stormwater reuse for water supply): $1.3/gal
- Conservation: $1/gallon
MDWASD Reuse Future

• Agreement to provide 90 MGD of reclaimed water to FPL for powerplant cooling, largest single reuse project in Florida history
• Mandate to reuse 117 MGD as part of state ocean outfall discontinuation mandate but for which no water supply need before 2030 has been identified: Floridan aquifer recharge
• ASR (25 MGD)
Conclusions

• Reuse is technically feasible, up to and including direct potable reuse, but very expensive and energy-intensive in the southeast Florida context

• Cost-Effective Reuse opportunities are greatest for industrial uses

• Mandated reuse that does not reflect demand, cost, and energy factors distorts market and public investment processes and can fail the “common sense” test

• Potential climate impacts in SE Florida complicate assessment of return on investment analysis
Water Management and the Future

Current Conditions

3 Feet of Sea Level Rise