



WaterReuse California
ANNUAL CONFERENCE
2021

THE USE OF RECYCLED WATER IN FIREFIGHTING SYSTEMS:

Safety and Practical Applications

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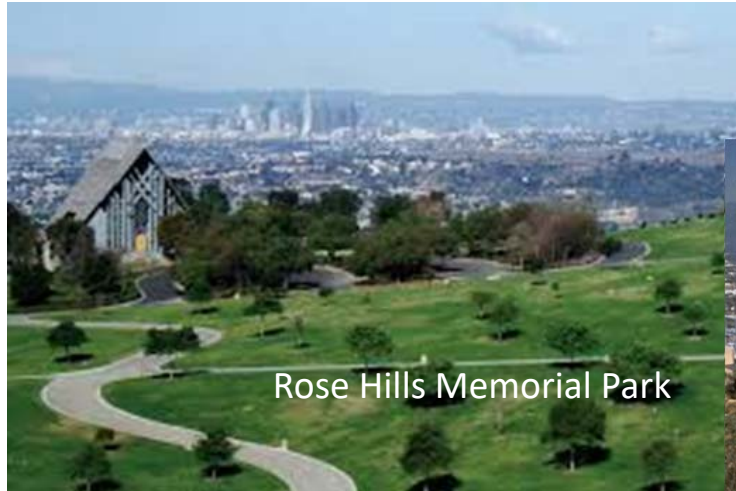
BUILDING A RESILIENT FUTURE TOGETHER

ACKNOWLEDGEMENTS

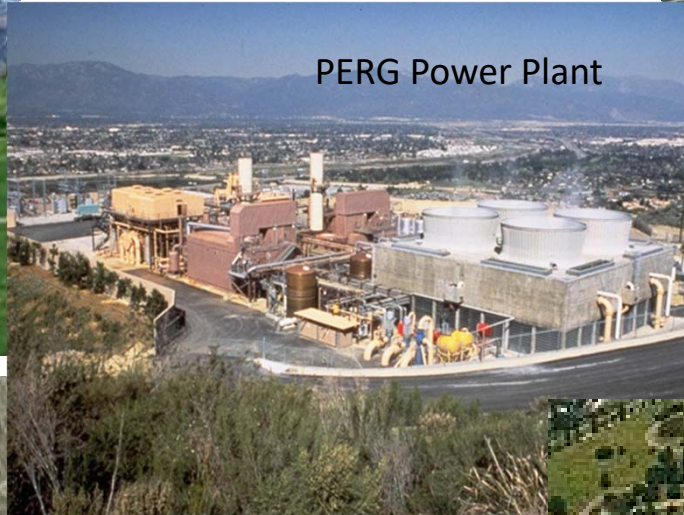


**LOS ANGELES COUNTY
SANITATION DISTRICTS**
Converting Waste Into Resources

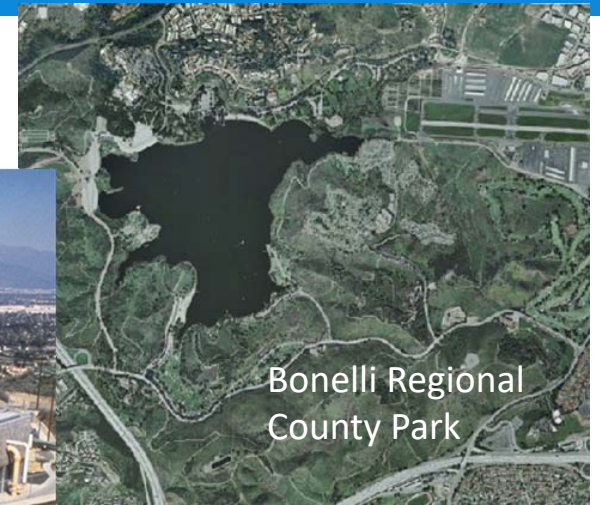




Rose Hills Memorial Park



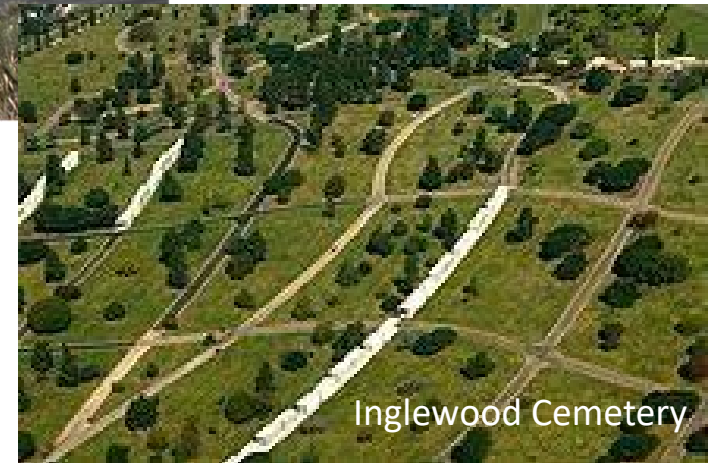
PERG Power Plant



Bonelli Regional
County Park



Apollo Lakes Park



Inglewood Cemetery



BUILDING A RESILIENT FUTURE TOGETHER

WATEREUSE CALIFORNIA ANNUAL CONFERENCE

WATER RECYCLING CRITERIA

(California Title 22)

Section 60307. Use of Recycled Water for Other Purposes

- *(a) Recycled water used for the following shall be disinfected tertiary recycled water:*
 - (4) Structural firefighting*
- *(b) Recycled water used for the following shall be at least disinfected secondary-23 recycled water:*
 - (2) Nonstructural firefighting*



NOT THIS



THIS



OTHER STATES

- Arizona Department of Environmental Quality
- Virginia Water Reclamation and Reuse Regulations
- Oregon Administrative Rules, Chapter 340, Division 55
- Texas Administrative Code, Title 30, Part 1 Chapter 201(C)
- Florida Administrative Code 62-610
- Nevada Administrative Code 445A
- Utah Rule 317-3-11

TURBIDITY LIMITS

Section 60301.320

The turbidity of the filtered wastewater does not exceed:

- *an average of 2 NTU within a 24-hour period*
- *10 NTU at any time*

MICROBIOLOGICAL LIMITS

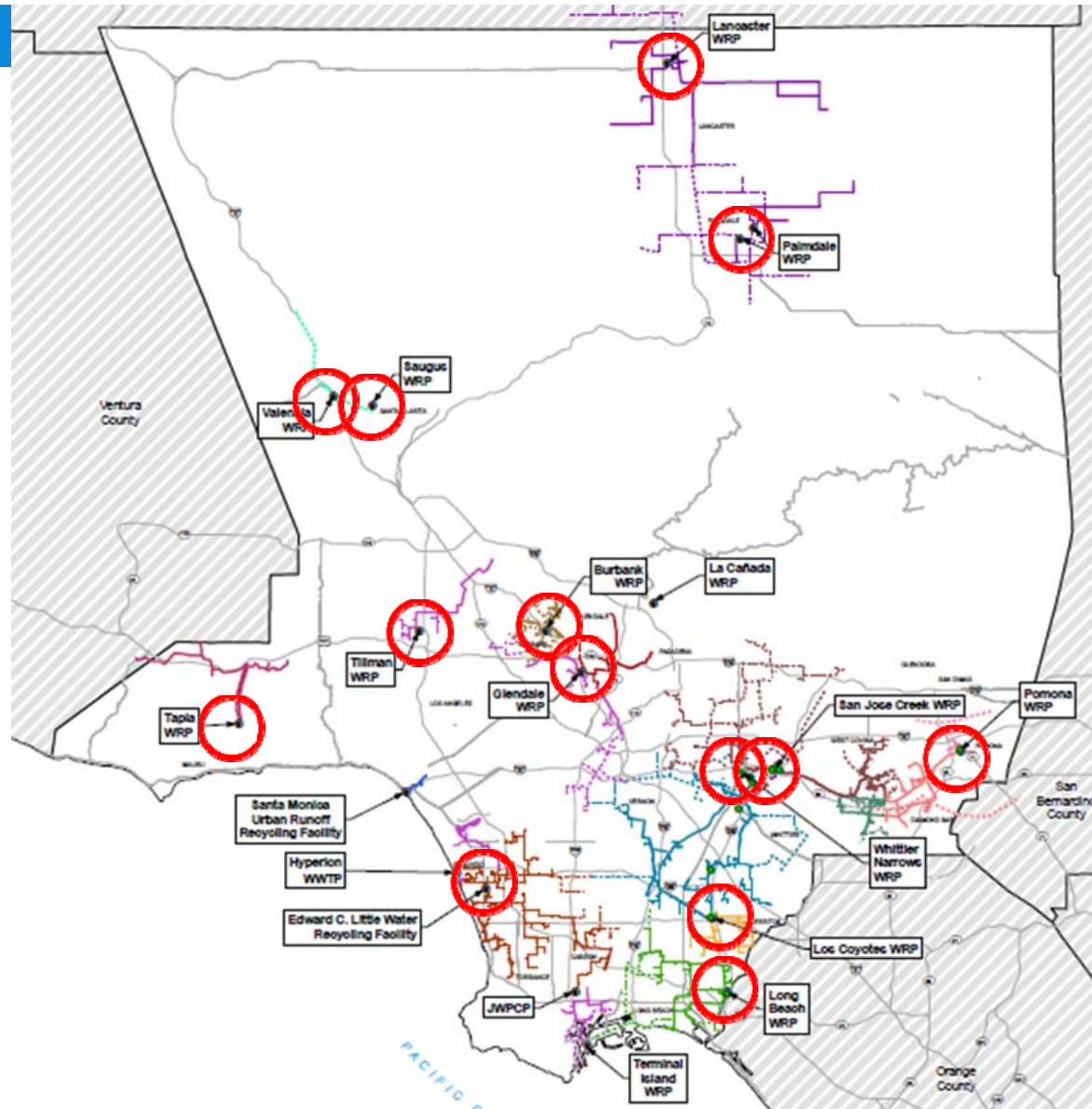
Section 60301.230

- *7-day total coliform median concentration does not exceed 2.2 per 100 milliliters*
- *The number of total coliform does not exceed 23 per 100 milliliters in more than one sample in any 30-day period*
- *No sample exceeding 240 total coliform per 100 milliliters*

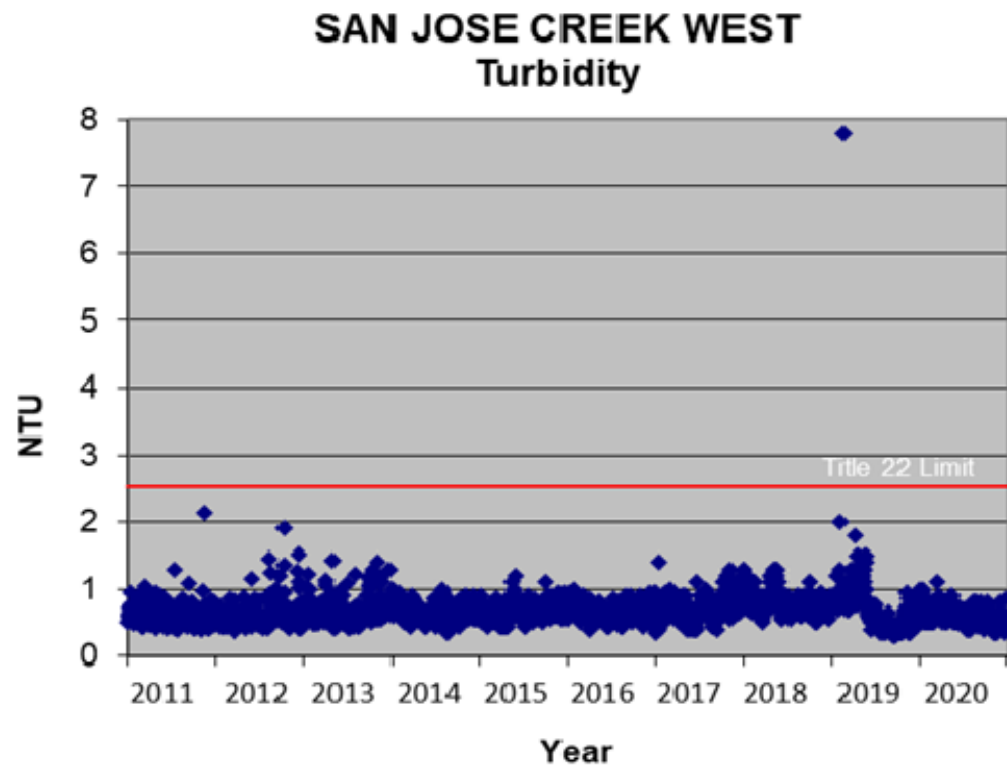


STUDY PARAMETERS

- 15 Water Reclamation Plants
- 10 years of daily turbidity and total coliform (2011-20)
- Additional fecal coliform and *E. Coli*
- Enteric virus
- Drinking water MCLs



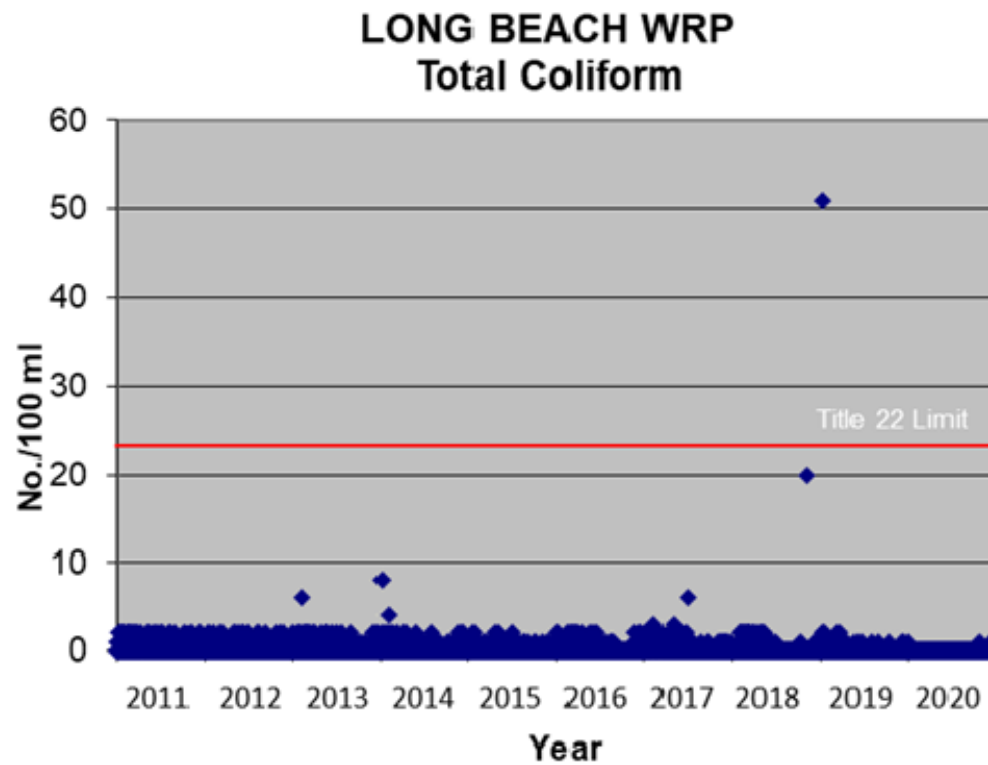
TURBIDITY



TURBIDITY SUMMARY

- 53,545 samples
- 32 exceedences
- Maximum of 7.8 NTU (<10 limit)
- 99.94% compliance rate
- 0.06% non-compliance
- Nearly all instances of non-compliance associated with heavy rainfall
- Not one resulted in either elevated bacteria counts or exceedences

TOTAL COLIFORM



TOTAL COLIFORM SUMMARY

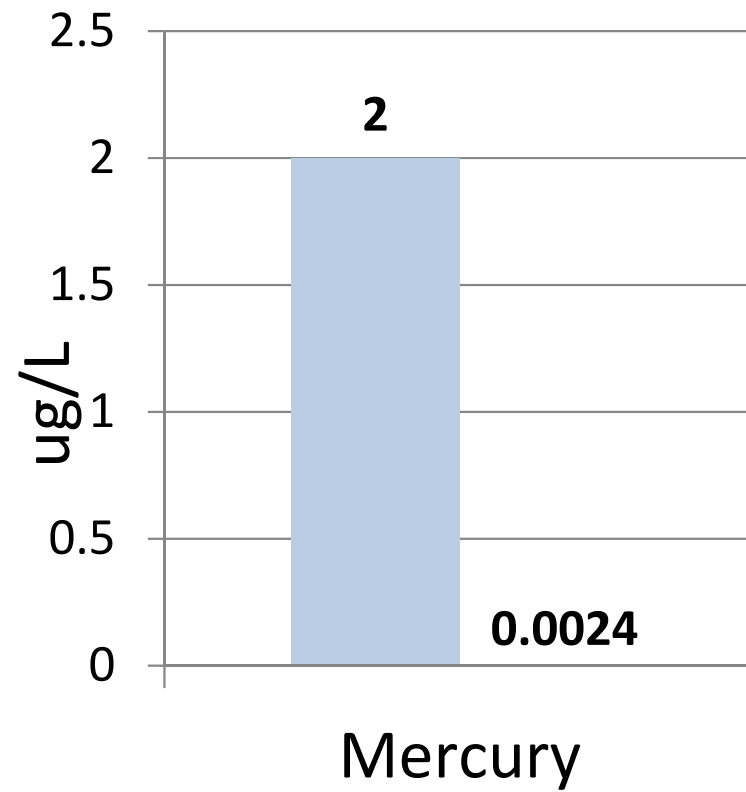
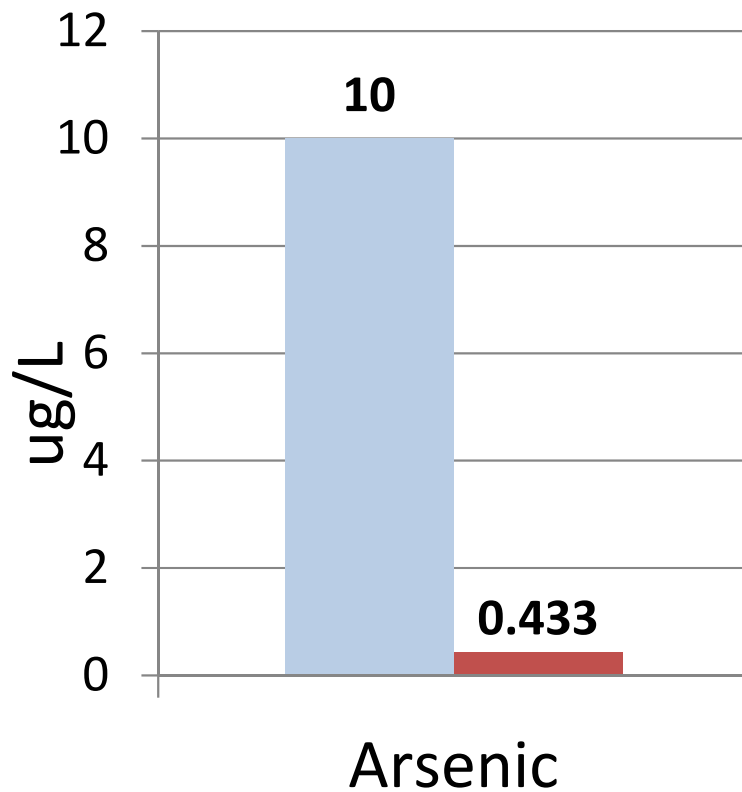
- 53,030 samples
- 56 days of non-compliance (only at 3 of the 15 WRPs)
- 99.89% compliance rate
- 0.11% non-compliance
- 90.6% non-detectable total coliform
- 99.1% non-detectable fecal coliform
- 99.8% non-detectable *E. coli*



VIRUS

- January 1979 – November 2020
- 1,538 samples
- 1.63 million liters
- 2 confirmed positives
- 1,114 years, 114 days

DRINKING WATER MCLs



RESEARCH

- 2004, Water Services Association of Australia
- Class A recycled water (equivalent to tertiary)
- Estimate of exposure through ingestion, absorption and inhalation
- Microbial and chemical health risk assessment
- Comparative risk assessment with other water sources (e.g. swimming pools)

RESULTS

- Risks from enteric pathogens low enough that its use need not be opposed
- Risks from chemical hazards low enough that its use need not be opposed
- Risks below observable levels and equivalent to, or lower than, risks from using alternative and accepted water sources
- ***Firefighting with Australian Class A recycled water can be considered to represent an acceptable health risk***



RESEARCH, REDUX

- 2007, independent Health Risk Assessment
- Exposure to chemicals would be more than 1,000 times lower than the drinking water guideline safe levels
- Estimated risks comparable with USEPA and WHO drinking water benchmarks
- ***Recycled water is considered safe for firefighting***



WRP OPERATIONS

- Certified, experienced operators
- Redundant equipment and processes
- Back-up power supplies
- Computerized control system
- Real-time monitoring
- Comprehensive alarm system
- Emergency procedures



PRACTICAL CONSIDERATIONS





“DRY” FIRE SPRINKLER SYSTEM

TYPICAL DRY PIPE SPRINKLER SYSTEM

