

Reclaimed Water

A reliable, safe alternative water supply

With constant demands on water resources, the Southwest Florida Water Management District (District) relies on alternative water supplies such as reclaimed water to meet existing and future needs.

Reclaimed water is wastewater that has received at least secondary treatment and is used for beneficial purposes. Reclaimed water is currently used for agricultural irrigation, groundwater recharge, industrial processes, and the irrigation of lawns, landscapes, cemeteries and golf courses. By offsetting demand for groundwater and surface water, this nontraditional, alternative water source reduces stress on environmental systems, provides economic benefits by delaying costly water system expansions and eliminates the need to discharge wastewater effluent to surface waters.

Through proper design and efficient use, reclaimed water has become an important, safe and proven alternative water source within the District.



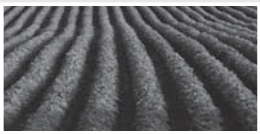
History of Reclaimed Water

For nearly 100 years, highly treated reclaimed water has been used in the United States. In 1912, the first small urban reuse system began with the irrigation of Golden Gate Park in San Francisco.¹ In 1966, Florida entered the reclaimed water arena with the construction of the Tallahassee Reclaimed Water Farm.² Since then, reuse within Florida has successfully grown to include more than 440 systems that reclaim 659 million gallons of water per day (mgd) — more water than any other state.³

The District and the utilities within its borders have been leaders in the growth of reclaimed water. In 1977, the City of St. Petersburg built the first large urban reuse system in the United States.⁴ In addition, as of 2009, the District has developed Florida's largest and most aggressive reuse development program with 288 projects funded and \$298 million in grants budgeted for \$862 million in reclaimed water construction.

(See Literature Cited on back)

The Facts on Reclaimed Water



Major Uses of Irrigation With Reclaimed Water

- **306 mgd**, Australian agriculture⁵
- **248 mgd**, California agriculture⁶
- **94 mgd**, Japan⁷
- **82 mgd**, Florida agriculture⁸
- **246,841 Florida residences**³
- **794 Florida parks**³
- **477 Florida golf courses**³
- **272 Florida schools**³
- **More than 9,800 acres of land**, Italy⁷
- **More than 8,995 acres of forests, vineyards, olives, alfalfa, fruit trees and other crops**, Argentina⁷
- **70% of all artichokes**, United States⁶
- **10% of the total national water supply and almost 20% of the total water supply for irrigation**, Israel⁷

Safety Assured

Strict requirements for the design, operation and monitoring of reclaimed water system facilities ensure that reclaimed water can be safely used for landscape irrigation and other purposes. Municipal reuse facilities treat the water with a six-step process before delivering it to consumers through a reclaimed water distribution system. These facilities are continuously monitored to ensure that only high-quality reclaimed water goes into the distribution system. Reclaimed water that has been treated to this level is essentially pathogen-free, sparkling clear and can safely be used by residents for irrigation and by businesses for irrigation, cooling and other industrial purposes.

Florida has been a leader in safety with no reclaimed water-related illnesses since the state's use of reclaimed water began more than 40 years ago.⁹ The District will continue to support the development of reclaimed water as a safe, effective and efficient alternative water supply.

Decades of historical data demonstrate that both urban and agricultural irrigation use of reclaimed water is a safe and effective water supply. Existing literature adequately addresses quality and safety questions about the use of reclaimed water.

Government Actions Ensure the Continued Safety of Reclaimed Water

2001

Florida Department of Agriculture and Consumer Services, Department of Health, Department of Environmental Protection, United States Environmental Protection Agency, Public Service Commission and all five water management districts sign the Florida Statement of Support for Water Reuse.¹⁰

1992

California adopts extensive Title 22 reclaimed water rules.¹¹

1989

The Florida Legislature establishes "the encouragement and promotion of water conservation and reuse of reclaimed water" as formal state objectives in sections 403.064(1) and 373.250, Florida Statutes.¹²

1989

Florida adopts extensive reclaimed water rules.¹³

1988

Inauguration of the Specialist Group on Wastewater Reclamation, Recycling and Reuse at the 14th Biennial Conference of the International Association on Water Pollution Research and Control (currently the International Water Association, headquartered in London, UK).¹⁴

1980

United States Environmental Protection Agency publishes "Guidelines for Water Reuse."¹⁵ (Updated in 1992 and 2004.)

The Facts on Reclaimed Water

Major Studies Prove Safety

2009

WateReuse Foundation

"A Reconnaissance-Level Quantitative Comparison of Reclaimed Water, Surface Water and Groundwater" study
*Reclaimed, surface and groundwater more similar than dissimilar.*¹⁶

2008

David York, et al.

Comprehensive and definitive paper on the safety of irrigation of food crops with reclaimed water
*Safe and protective of public health and can be marketed without a negative public reaction.*⁶

2005

WateReuse Association

"Irrigation of Parks, Playgrounds, and Schoolyards with Reclaimed Water: Extent and Safety" study
*No incidences of illness or disease from either microbial pathogens or chemicals, and risks are not measurably different from risks associated with irrigation using potable water.*¹⁷

2003

Florida Department of Environmental Protection

Proceedings of the 19th Annual WateReuse Symposium,
"Monitoring for Protozoan Pathogens in Reclaimed Water"
*There is no evidence or documentation of any disease associated with water reuse systems in the United States or in other countries that have reasonable standards for reuse.*¹⁸

1998

"Recycled Water Food Safety Study for Monterey County Water Recycling Projects"

*Recycled water is as safe for irrigation of vegetables as other sources of irrigation water.*¹⁹

1996

National Academies of Science, National Research Council
"Use of Reclaimed Water and Sludge in Food Crop Production" study
*Crops irrigated with reuse do not present a greater risk to the consumer than do crops irrigated from conventional sources.*²⁰

1987

Monterey County Water Resources Agency

"Monterey Wastewater Reclamation Study for Agriculture, Final Report"
*Irrigation of raw-eaten vegetable crops and artichokes with reclaimed water was shown to be as safe as irrigation with well water.*²¹

History Demonstrates the Safety of Reclaimed Water

2005

Florida Department of Environmental Protection's "Water Reuse: Regulatory and Safety Perspectives" report indicates Florida has 40 years of reuse with no illness.⁹

1999

The Virginia Pipeline Project, the largest water reclamation project in Australia, irrigates vegetable crops using reclaimed water from the Bolivar Wastewater Treatment Plant.¹⁴

1998

Monterey County, California, begins irrigation with reclaimed water, including 12,000 acres of vegetables such as lettuce, strawberries, cauliflower, broccoli, artichokes, celery and fennel. The vegetables continue to be irrigated with reclaimed water.²²

1989

Spain begins irrigation of golf courses with reclaimed water from the Consorci de la Costa Brava wastewater treatment facility.¹⁴

1985

Water Conserv II, the largest reuse project that combines agricultural irrigation with aquifer recharge via rapid infiltration basins, begins operation in Orlando, Florida.²³

1984

Tokyo begins using reclaimed water from the Ochiai Wastewater Treatment Plant, which is operated by the Tokyo Metropolitan Sewerage Bureau, for toilet flushing in commercial buildings in Shinjuku District.¹⁴

1977

The City of St. Petersburg builds the first large urban reuse system in the United States.⁴

1966

Florida enters the reclaimed water arena with the construction of the Tallahassee Reclaimed Water Farm.²

1965

Israel begins using reclaimed water for crop irrigation.¹⁴

1912

The first small urban reuse system begins with the irrigation of Golden Gate Park in San Francisco.¹

Literature Cited

1. California Recycled Water Task Force, "Role & Potential of Water Recycling," *Water Recycling 2030*, 2003.
2. Florida Department of Environmental Protection, "Water Reuse – Florida's Reuse Projects," 2008, <<http://www.dep.state.fl.us/water/reuse/project.htm>>
3. Florida Department of Environmental Protection, *2007 Reuse Inventory*, Tallahassee, 2009.
4. Andrade, A., et. al., *Reclaimed Water Guide*, Southwest Florida Water Management District, 1999.
5. Land & Water Australia, Horticulture Australia Limited, Arris Pty Ltd, Department of Primary Industries Victoria and the Cooperative Research Centre for Irrigation Futures, *Water Recycling in Australia* (2006 Report), 2005.
6. York, D. W., R. Holden, B. Sheikh, L. Parsons, "Safety and Suitability of Recycled Water for Irrigation of Edible Crops," *Proceedings of the 23rd Annual WaterReuse Symposium*, Dallas: WaterReuse Association, 2008.
7. United States Environmental Protection Agency, *Guidelines for Water Reuse*, 2004; Washington, DC: 255–267.
8. Florida Department of Environmental Protection, *2006 Reuse Inventory*, Tallahassee, 2007.
9. York, D. W., "Water Reuse: Regulatory and Safety Perspectives," FWEA, 2006.
10. Florida Department of Environmental Protection; United States Environmental Protection Agency, Region 4; Florida Department of Health; Florida Public Service Commission; Florida Department of Agriculture and Consumer Services; Florida Department of Community Affairs; Northwest Florida Water Management District; South Florida Water Management District; St. Johns River Water Management District; Southwest Florida Water Management District; Suwannee River Water Management District, "Statement of Support for Water Reuse," 2001.
11. California Health Laws Related to Recycled Water, "Water Code," June 2001 Ed., Article 7, Sec. 13522 — Restrictions on Sections 13550 and 13551.
12. Section 403.064, Florida Statutes (2008). Reuse of Reclaimed Water, History — s. 7, ch. 89–324.
13. Chapter 62-610.100, Florida Administrative Code, 1989. Reuse of Reclaimed Water and Land Application, History — new 4-4-89, formerly 17-610.100.
14. Metcalf & Eddy, *Water Reuse: Issues, Technologies and Applications*, 2007, New York: 60.
15. CDM, *Guidelines for Water Reuse 1980 Guide*, 1980.
16. WaterReuse Foundation, "A Reconnaissance-Level Quantitative Comparison of Reclaimed Water, Surface Water and Groundwater," Alexandria, Virginia, 2009.
17. WaterReuse Foundation, "Irrigation of Parks, Playgrounds, and Schoolyards with Reclaimed Water: Extent and Safety," Alexandria, Virginia, 2005.
18. York, D. W., L. Walker-Coleman, L. Williams, and P. Menendez, "Monitoring for Protozoan Pathogens in Reclaimed Water: Florida's Requirements and Experience," *Proceedings of the 19th Annual WaterReuse Symposium*, WaterReuse Association, Phoenix, AZ, 2004.
19. Sheikh, B., and R. C. Cooper, "Recycled Water Food Safety Study for Monterey County Water Recycling Projects," 1998.
20. National Research Council, "Use of Reclaimed Water and Sludge in Food Crop Production," Washington, DC: National Academy Press, 1996.
21. Monterey County Water Resources Agency, "Monterey Wastewater Reclamation Study for Agriculture, Final Report," 1987.
22. Monterey Regional Water Pollution Control Agency, 2009, <<http://www.mrwpc.org/recycling/>>
23. Cross, P., "Water Conserv II, Agricultural Benefits," <http://www.waterconservii.com/agr_bene.htm>

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