

Emory University Facilities and Services

The WaterHub – Emory's Innovative Leadership in Water Reuse

About the project

Summary

The WaterHub on Emory's campus is an on-site water recycling system, utilizing natural ecological systems to reclaim wastewater for heating, cooling and toilet flushing. It is the first system of its kind to be installed in the U.S. and can supply nearly 40% of Emory's total campus water needs. It meets the triple bottom line of sustainability by relieving an over-burdened municipal system that has a history of sewer overflows by reducing Emory's use of potable water by up to 400,000 gallons-per-day, saves Emory money over time, provides a living laboratory to educate and train current and future water stewards through tours, coursework and research opportunities.

Partners

The major partner for Emory's WaterHub is Sustainable Water/Reeves+Young, a leading provider of water reclamation and reuse solutions in the United States.

The results

The problem

Metropolitan Atlanta has become emblematic of 21st century water issues, with its 20-year legal battle between Georgia, Florida and Alabama over its drinking water source (known as the "Tri-state Water Wars"). The urban region has a mandated \$4 billion consent decree with the Environmental Protection Agency for improvements to Atlanta's over-burdened and aging sewer lines, as well as continued problems with drought, low reservoir levels, lack of space for additional reservoirs, and a small watershed area.

The approach

Emory has pioneered water reuse through innovative condensate capture, rainwater cisterns, graywater reuse, and, most recently, the Water Hub—an on-site water reclamation facility that treats wastewater from a portion of the Center for Disease Control and Preventions and from Emory's facilities. The WaterHub utilizes ecological engineering processes to clean water for non-potable uses in Emory's three central chiller plants and in the campus steam plant, as well as for toilet flushing when there is excess. The system will ultimately reduce Emory's use of drinking-quality water from Atlanta's municipal water supply by up to 146 million gallons of water annually, leaving more water for the community.



EMORY

Profile

- HE
- 14,769 students
- 13,225 staff
- Urban setting, Metro-Atlanta region, Georgia, United States of America

Category supported by



QUALITY OF LIFE SERVICES

Finalist's case study

Our goals

1. The WaterHub reduces load on the already overstressed municipal wastewater system.
2. The WaterHub reduces Emory's use of drinking quality water from Atlanta's municipal water supply.
3. The WaterHub combines simple mechanical components and utilizes less energy than traditional wastewater treatment facilities.
4. The WaterHub is aesthetically pleasing and odor-free for acceptability in urban areas.
5. The WaterHub functions as an educational and research facility for campus and community members.

Obstacles and solutions

Obstacles	Solutions
<ul style="list-style-type: none"> • Unpredicted wastes in the influent affecting facility functionality • Consistent water quality for all end-use locations • Water security for operations 	<ul style="list-style-type: none"> • Diversion of the wastes when possible via composting and other pollutant elimination strategies • Increased influent management to the WaterHub that allows heavy loads affecting reclaimed water chemistry to bypass extraction • Designed a 50,000 gallon cistern into the project to provide 3-4 days of utility water in the event of municipal supply disruption.

Performance and results

As of July 2015, the current successes of the WaterHub are: (1) providing less expensive water for utility purposes; (2) meeting the University's educational and research mission; (3) expanding community outreach and education around water conservation, and (4) reducing the amount of drinking quality water utilized by the Emory facilities.

The future

Lessons learned

1. Before an institution, organization or company discusses the option of constructing a wastewater treatment and reclamation plant, it is imperative to understand its total water footprint and water demands.
2. It is crucial to engage campus and community stakeholders as early and as often as possible, especially since wastewater reclamation is a unique undertaking and a relatively unknown effort on a university campus.
3. It is suggested to involve and incorporate operations staff in the design phase of a wastewater reclamation facility on a university campus. This collaboration helps to ensure smooth transmission of the recycled water to the end-use locations and eliminates the potential of future adjustment procedures.

Sharing your project

Since its construction, the facility has had numerous tour groups, including K-12 schools, Fortune 500 corporations and other universities, and tour requests continue to stream in. Moving forward, Emory plans to set up regular weekly tours and presentations for campus and community members to explain and promote the facility. In Fall 2014, 30 graduate students from the Rollins School of Public Health (RSPH) utilized the WaterHub for microbiological water research, allowing students to collect real data, to interpret results and to write reports related to water research. A growing number of classes, student programming, and staff and faculty groups are integrating educational experiences at the WaterHub into their work.

What has it meant to your institution to be a Green Gown Award finalist?

Emory University is honored to be considered for a Green Gown Award because we seek out, learn from and strive to implement best practices and models for sustainability, as does the Environmental Association for Universities & Colleges. We are realizing innovations that will improve the resilience of our community, and we hope by sharing with the Green Gown Awards community that global collaboration will deepen and allow us to innovatively take on environmental challenges together.

Further information

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