



# Meet the new NORM in water management.

In most developments, used water from sinks, toilets, and showers is pumped and piped away to a city's centralized wastewater treatment plant. That takes a LOT of energy, and can burden the treatment plants. At Hassalo on Eighth, wastewater is handled in a way that makes much more sense for an eco-community...and really, for any community.

Say hello to NORM, Hassalo on Eighth's Natural Organic Recycling Machine. Unlike energy-intensive, conventional wastewater plants, NORM is a hybrid system that combines the best of natural processes, with the best of low-energy, simple mechanical processes to treat and recycle wastewater.

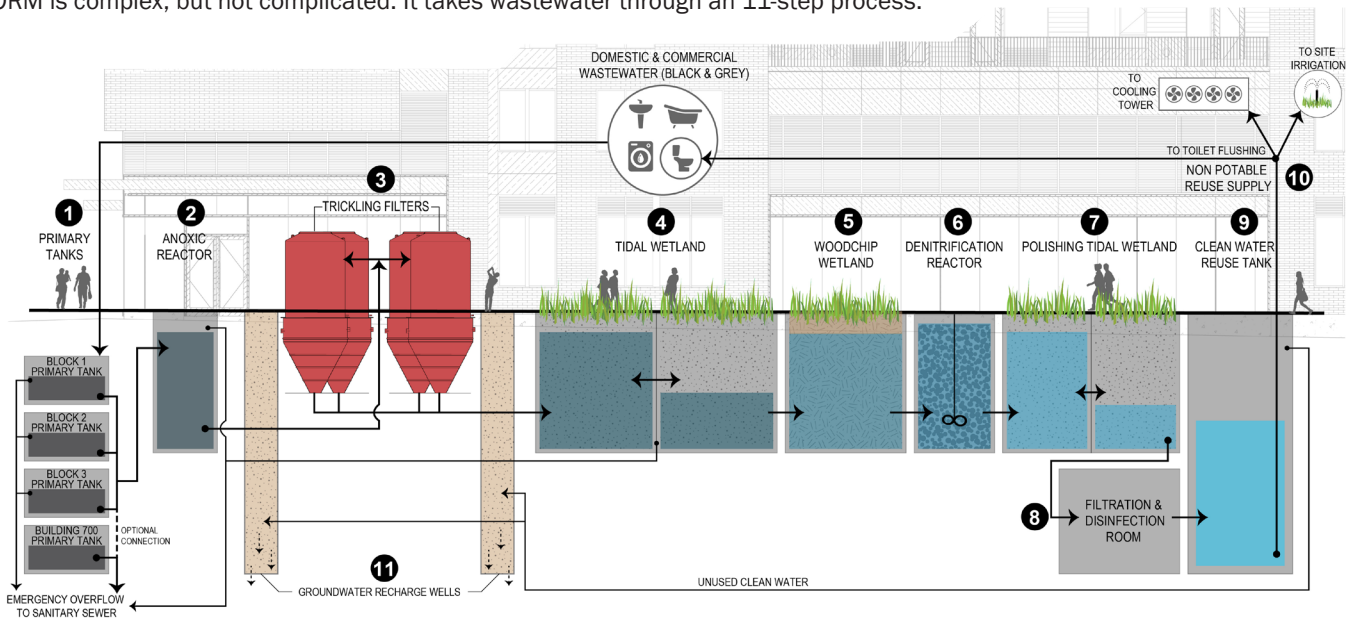
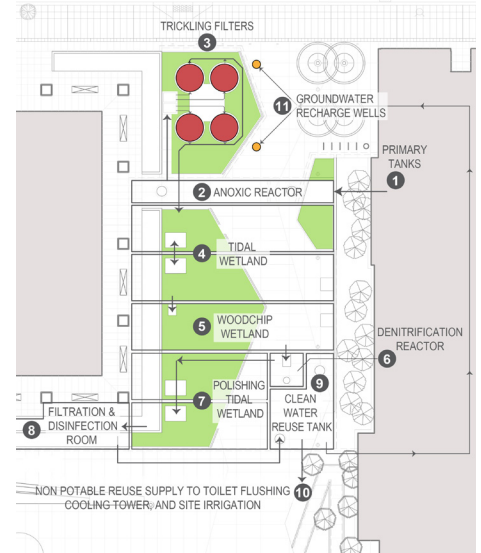
NORM recognizes water for the life-giving resource it is. Rather than whisking it away, NORM treats the water right here, and recycles it for use in toilet flushing, irrigation, and cooling towers at Hassalo on Eighth. NORM also recharges the local groundwater.

## WHAT NORM DOES FOR HASSALO ON EIGHTH...AND FOR PORTLAND

- » Treats and recycles 100% of all wastewater from Hassalo on Eighth's three new buildings and reuses it to recharge groundwater and supply water for all of the toilet flushing, irrigation, and cooling demands.
- » Prevents up to 45,000 gallons of water per day from entering Portland's sewer system. This helps reduce the impact of combined sewer overflow during storms, and helps protect water quality in the Willamette River.
- » Saves up to 20,350 gallons of potable water per day and over seven million gallons per year!

## HOW NORM WORKS

NORM is complex, but not complicated. It takes wastewater through an 11-step process.



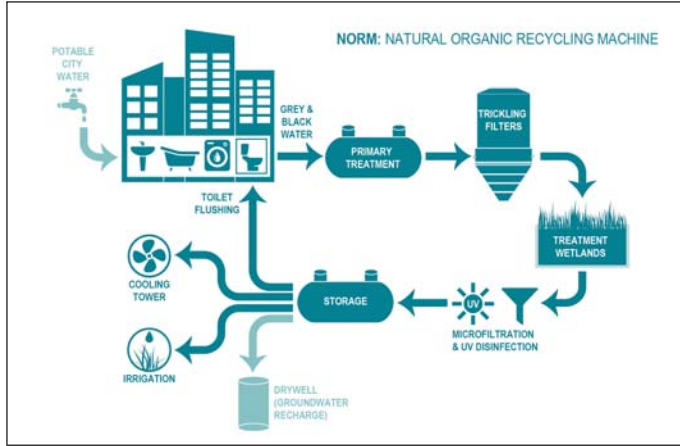
Follow NORM  
(@PortlandNORM)  
on Twitter.

 **Biohabitats**  
CASCADIA BIOREGION

800.220.0919  
www.biohabitats.com

# Hassalo on 8th Wastewater Treatment & Reuse System

Portland, Oregon



*An urban redevelopment project treats its wastewater for reuse onsite, redirecting it away from stressed city sewer infrastructure.*



Portland’s Lloyd neighborhood is a dense cluster of office buildings with little residential space. The area is served by a combined sewer overflow system, in which rainwater is conveyed along with sewage and ultimately treated as wastewater. Envisioned as an “eco-district,” Hassalo on 8th is a four-block, sustainable urban development. Pending LEED Neighborhood Development Platinum certification, Hassalo on Eighth boasts the highest level of certification in renewable, clean energy development, green roofs, a bike hub, access

to mass transportation, and numerous other eco-friendly technologies and amenities. It is also one of the first urban neighborhoods to treat and recycle its wastewater on site.

Biohabitats designed an onsite wastewater system nicknamed NORM (Natural Organic Recycling Machine). This decentralized treatment and reuse system is designed to divert 100% of the wastewater generated in the three new buildings away from the municipal sewer. The project lessens the burden on this public utility, staving off costly repairs and infrastructure expansion, which garnered considerable support from the City as well as the Oregon Department of Environmental Quality. It is also a popular sustainability feature on the site.

GBD Architects, Glumac, and PLACE studio, treats 45,000 gallons per day to State of Oregon Class A reuse standards through a series of trickling filters and constructed wetlands. The trickling filters are integrated into the design of the park-like pedestrian corridor at the center of the project and the wetlands are an element of the landscaping. Treated, disinfected wastewater is reused for toilet flushing, running the buildings’ cooling systems, and landscape irrigation. Excess, unused treated wastewater is injected into dry wells for crucial groundwater recharge in a largely impervious urban area, ensuring that no element of this new ‘waste’ stream is wasted.

**SERVICES**

- Design
- Green Infrastructure
- Permitting

The system, which was designed in collaboration with

**“NORM is going to change the paradigm of large scale development”**

— Kyle Andersen, AIA, LEED AP, Design Principal, GBD Architects

*conservation planning  
ecological restoration  
regenerative design*



800.220.0919  
www.biohabitats.com

