

LOCATION

PORTLAND, OR

TYPE

MIXED USE

BUILDINGS SIZE

922,300 SQUARE FEET

WASTEWATER TREATED/DAY

25,000 GALLONS

CLIMATE

MEDITERRANEAN

43.6 inches of rain/year

164 days of precipitation/year

WATER PETAL CASE STUDY HASSALO ON EIGHTH

Hassalo on Eighth is a three building mixed use development on an oversized lot in Portland's Lloyd EcoDistrict, composed of 657 housing units, over 50,000 square feet of retail space, and over 250,000 square feet of commercial office space. When the project was first proposed in 2009, the city was facing a population boom. Their aging water infrastructure was struggling to keep up with development. The existing infrastructure on the site was a combined sewer overflow system, already functioning at capacity and installed in 1893. Despite the city's best efforts, heavy rains frequently caused sewage to overflow into the Willamette River. In order to reinvigorate the Lloyd District without straining municipal and environmental resources, the project team developed a strategy to treat and reuse 45,000 gallons of greywater and domestic sewage on-site per day (though it only treats 20,000 - 25,000 gallons over the course of an average day since it's been in operation).

SYSTEMS + POLICY

RAINWATER HARVESTING

A 60,000-gallon rainwater cistern collects runoff from one of the buildings before feeding it into a two-part water feature that stretches along a pedestrian corridor in the center of the site. Between the cistern, constructed wetlands and swales, the project treats 100% of a 25 year storm event before releasing it to the sewer.

WASTEWATER TREATMENT

Buildings within the complex share the largest natural organic recycling machine in North America. The system treats the domestic sewage from the three new residential buildings and reuses it for toilet flushing and sub-surface landscape irrigation in the same buildings, plus the existing office building. Nicknamed "NORM", the system is an on-site artificial tidal wetland that uses its own bacteria to clean the domestic sewage from the three new buildings. The system saves up to 20,350 gallons of potable water per day and over seven million gallons per year.

Reuse of the treated domestic sewage is allowed and permitted under Oregon's Alternative Plumbing Method: OPSC 08-04. Because the City of Portland was not forced to increase sewer capacity with a new treatment plant, they negotiated a reduced system development charge (SDC) for the development. The refund totaled \$1.48 million, almost half of the City's three million dollar fee. Based on the savings gained in water, sewer, and system development charges, the Hassalo on Eighth water system will pay for itself in under ten years.

NORM THE MASCOT



NORM might be the first wastewater treatment/reuse system to have his own social media presence. Follow him on Twitter @PortlandNORM.

WATER SAMPLES THROUGHOUT PROCESS



IMAGE COURTESY BIOHABITATS

WATER PETAL CASE STUDY SYSTEM DIAGRAM

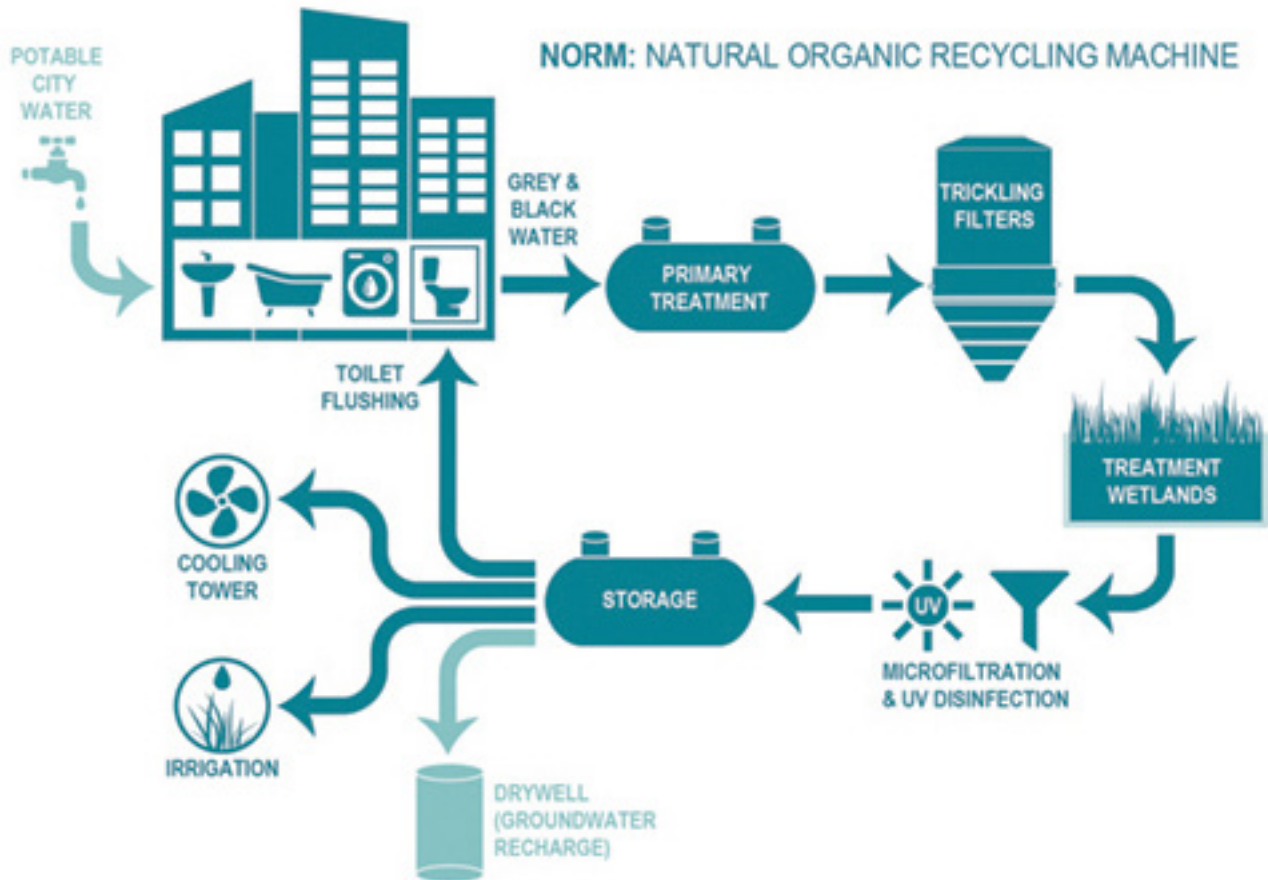


DIAGRAM COURTESY BIOHABITATS