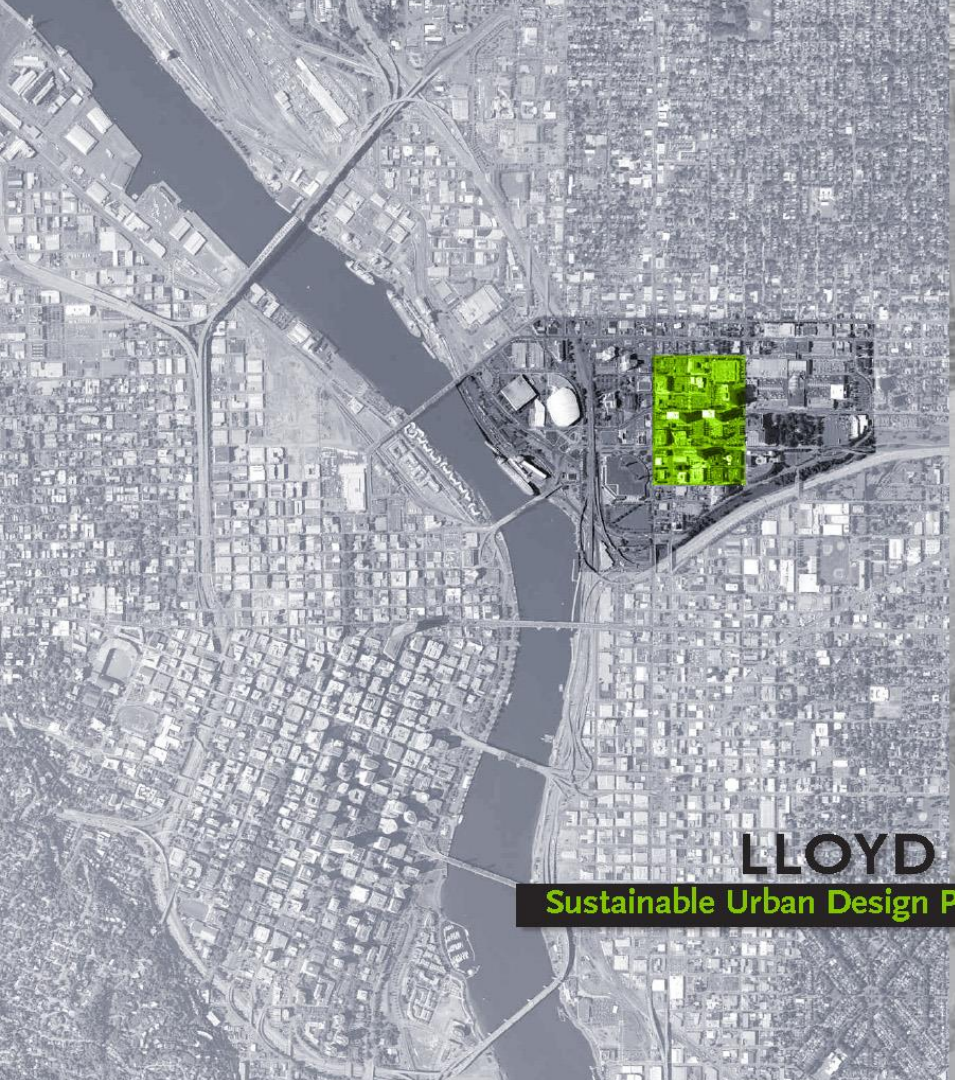

PORTLAND, OREGON

VICINITY PLAN

BEFORE: Aerial view looking southwest toward downtown.



LLOYD eco DISTRICT

LLOYD CROSSING

Sustainable Urban Design Plan & Catalyst Project

Portland, Oregon

July 1, 2004

LLOYD ECODISTRICT STRATEGIES

ENERGY

Conserve / Manage
Dashboard / Web
Office Building Plant
Connected to Retail
High Performance Envelope

HABITAT / ECOSYSTEMS

Outdoor Space
Eco-Roof / Gardens

WATER + WASTE

Rainwater Reservoir
Stormwater Treatment
100% Black/Grey Water Treatment and Re-use; Irrigation, Flush, Cooling Tower – Infiltrate (DEQ)

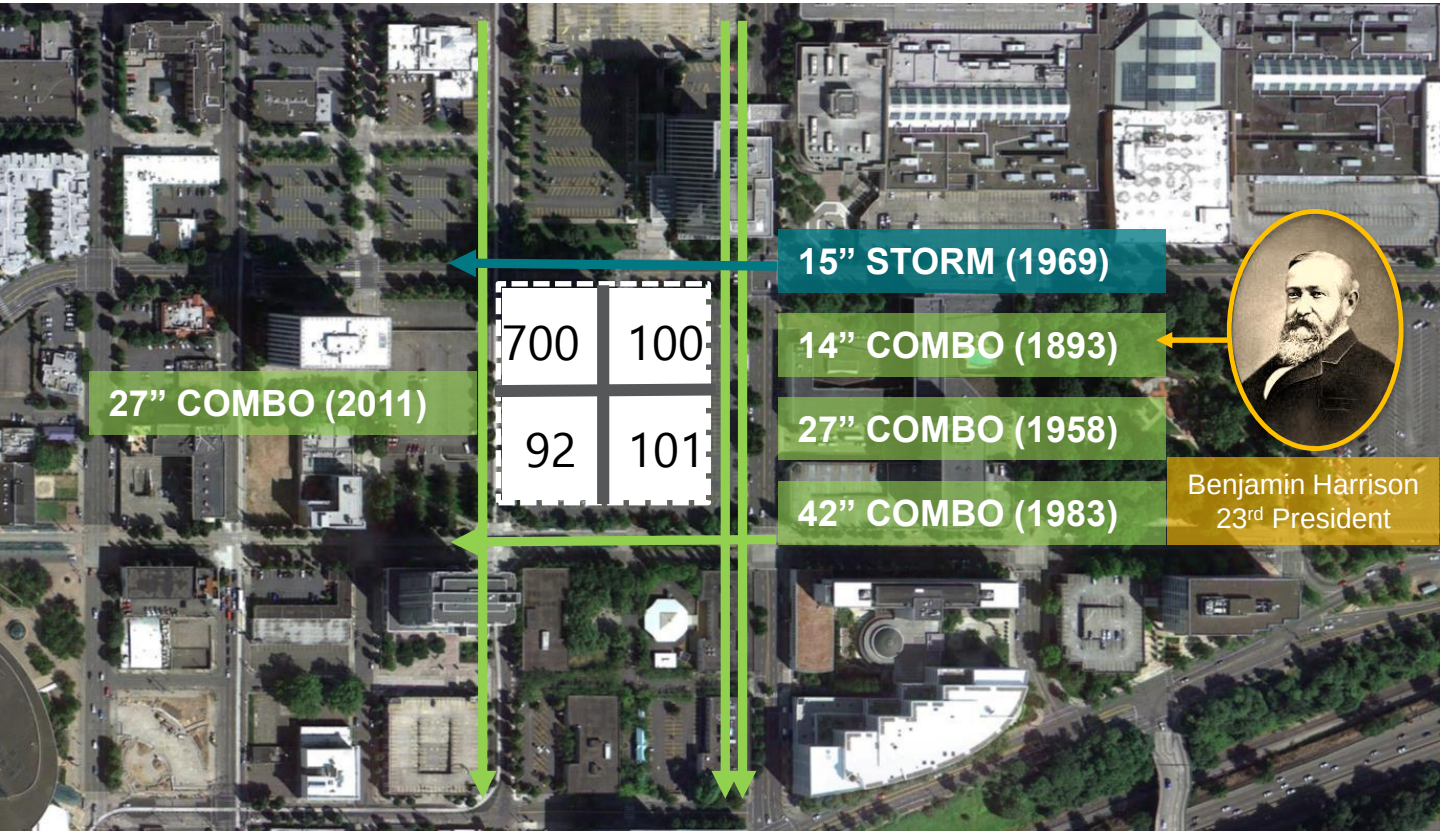
HEALTH + COMMUNITY

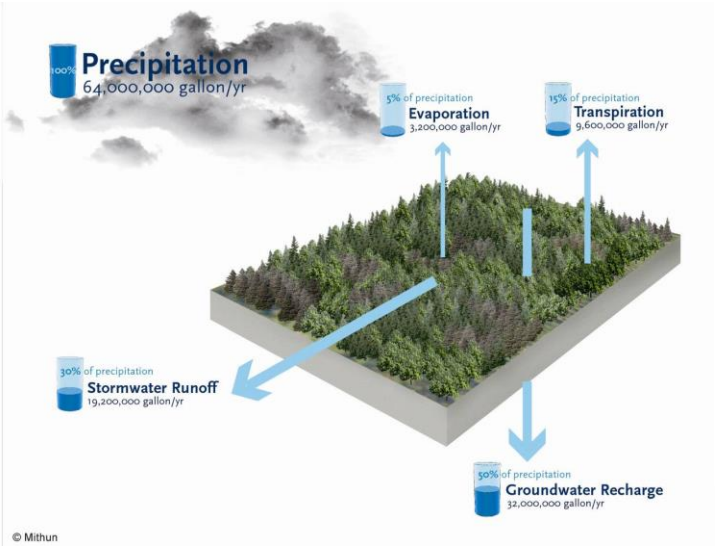
Essential Services
Multi-Generational Living
Mix of Housing Types
Eat/Drink/Sleep/Work/ Study/ Play/Flirt

TRANSPORTATION + MOBILITY

Bike Hub / Valet at L700
Streetcar
Max Line
Zip Car
Charging Station
20 Minute Living

EXISTING STORM / SANITARY SYSTEM

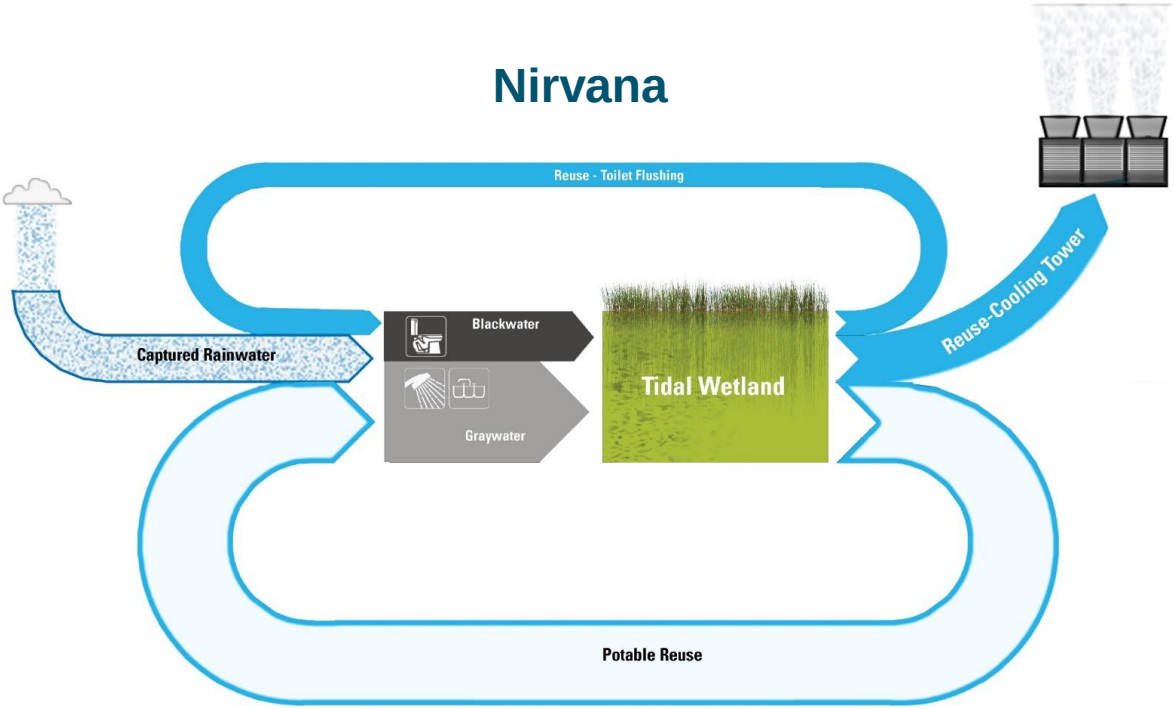



100% Precipitation
64,000,000 gallon/yr
5% of precipitation
Evaporation
3,200,000 gallon/yr
15% of precipitation
Transpiration
9,600,000 gallon/yr
30% of precipitation
Stormwater Runoff
19,200,000 gallon/yr
50% of precipitation
Groundwater Recharge
32,000,000 gallon/yr
© Mithun

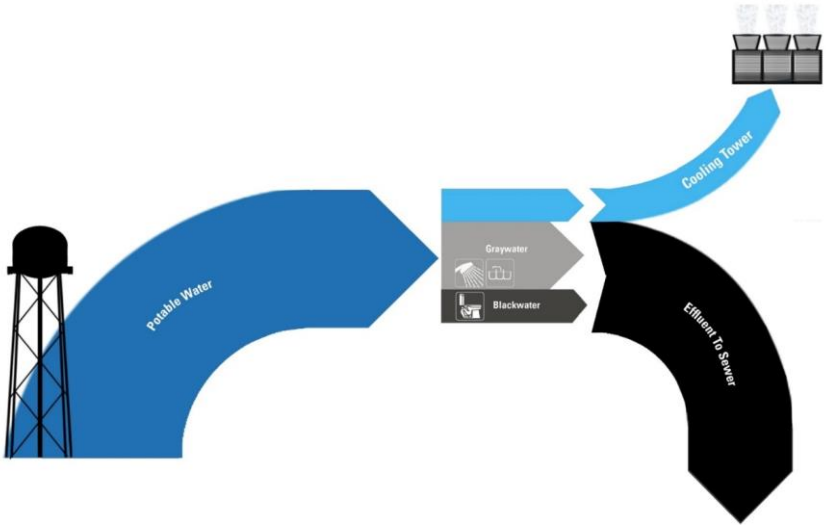

100% Precipitation
64,000,000 gallon/yr
10% of precipitation
Evaporation
6,400,000 gallon/yr
2% of precipitation
Transpiration
1,280,000 gallon/yr
Potable Water
22,956,288 gallon/yr
100%
88% of precipitation
Stormwater Runoff
56,320,000 gallon/yr
90% of potable water
Waste Water
20,660,659 gallon/yr
10% of potable water
Building System/Occupant Consumptions (System Loss)
2,295,629 gallon/yr
Groundwater Recharge
negligible

NET ZERO WATER USE

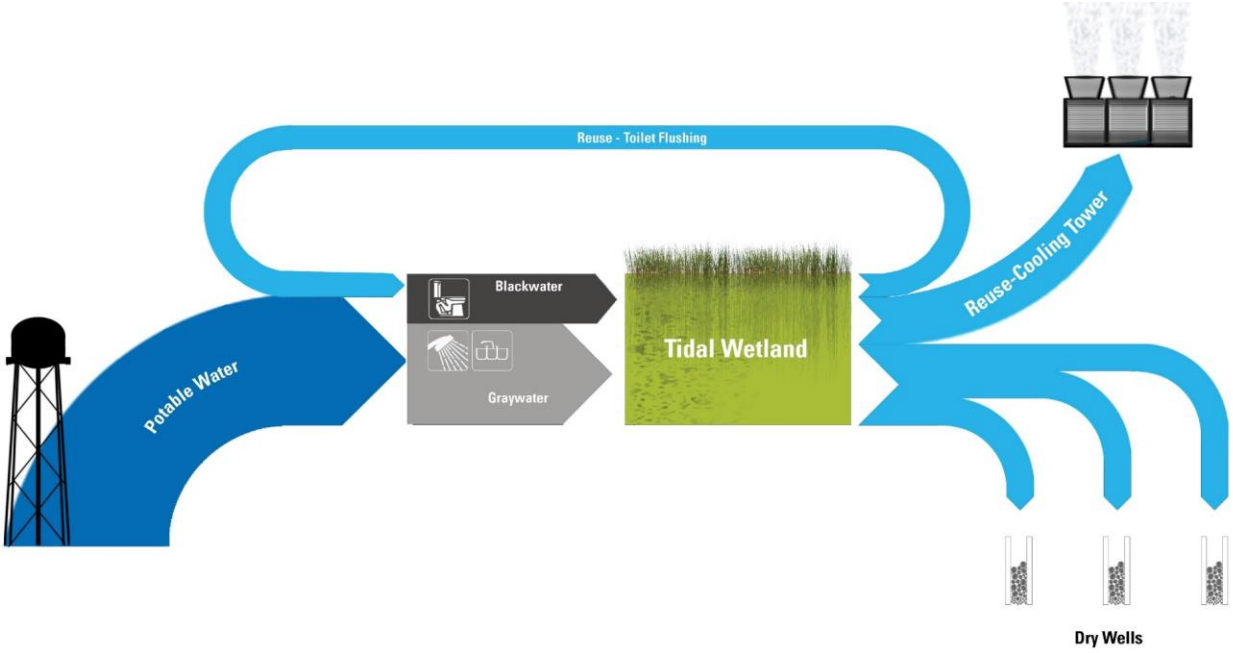
Nirvana



TYPICAL WATER USE



PROVEN WATER USE



NORM:

NATURAL ORGANIC RECYCLING MACHINE

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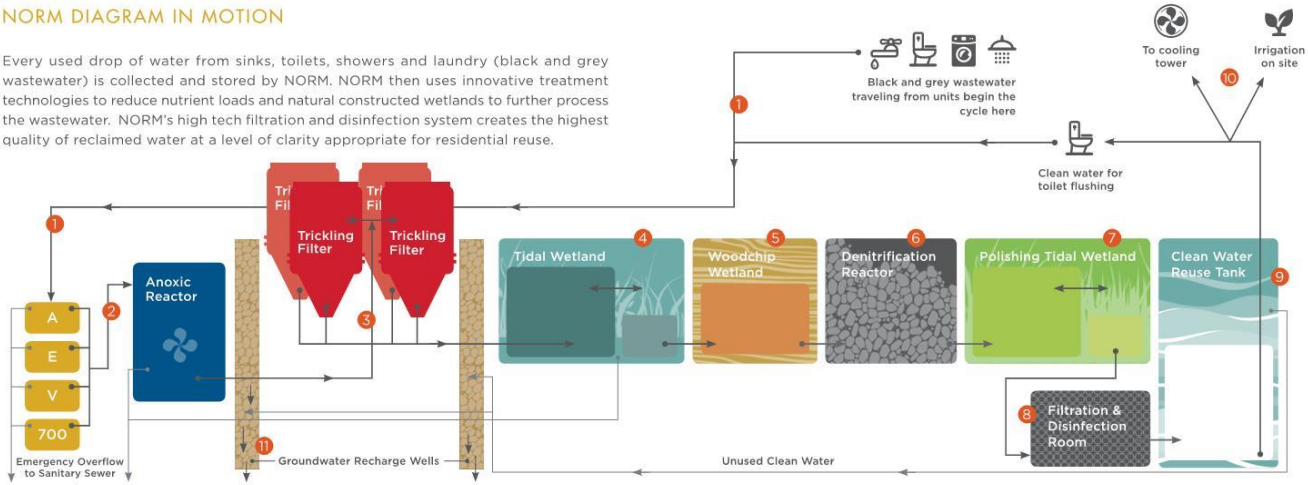
NATURAL ORGANIC RECYCLING MACHINE

SO HOW DOES THIS WORK?

NORM DIAGRAM IN MOTION

Every used drop of water from sinks, toilets, showers and laundry (black and grey wastewater) is collected and stored by NORM. NORM then uses innovative treatment technologies to reduce nutrient loads and natural constructed wetlands to further process the wastewater. NORM's high tech filtration and disinfection system creates the highest quality of reclaimed water at a level of clarity appropriate for residential reuse.



1. Primary Tanks collect and store wastewater from each building.

2. The Anoxic Reactor helps to reduce nutrient loads from the wastewater.

3. Trickling Filters further reduce nutrient loads and eliminate odor.

4, 5, 6 and 7. Natural Treatment Wetlands work using a tidal-flow (fill and drain) process to foster naturally occurring microbial organisms used to treat wastewater.

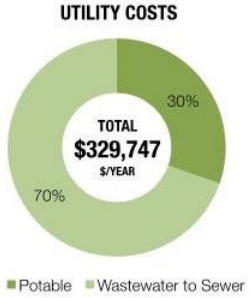
8. Mechanical filters screen out fine particles. Ultraviolet (UV) and ozone technology is used to kill pathogens and improve water clarity.

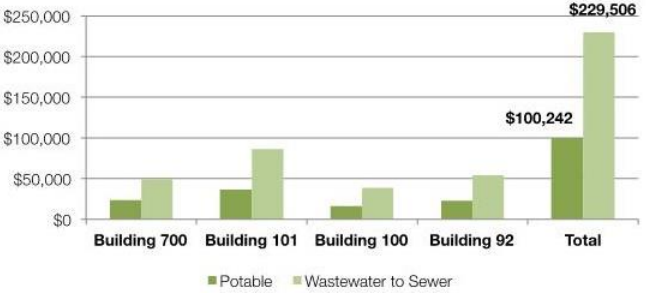
9. and 10. Clean water is stored and distributed for reuse.

11. Any unused treated water is infiltrated into the ground via groundwater recharge wells.

WATER & WASTEWATER COSTS

BUSINESS AS USUAL (WITHOUT WASTEWATER TREATMENT AND REUSE)

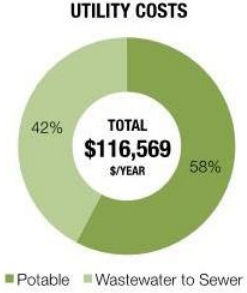


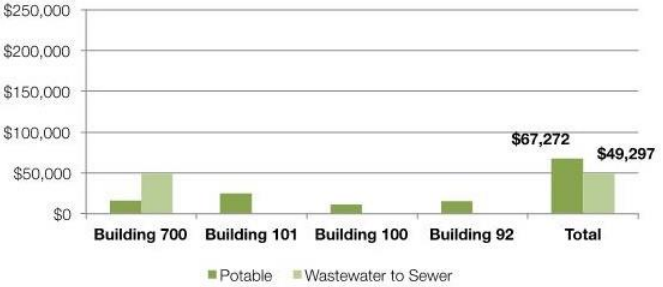


NOTES:

- BAU water utility costs assume conventional public water ($3.321/ccf) and sanitary sewer ($8.140/ccf) connections.
- Year 1 only estimate.

PROPOSED (WITH WASTEWATER TREATMENT AND REUSE)

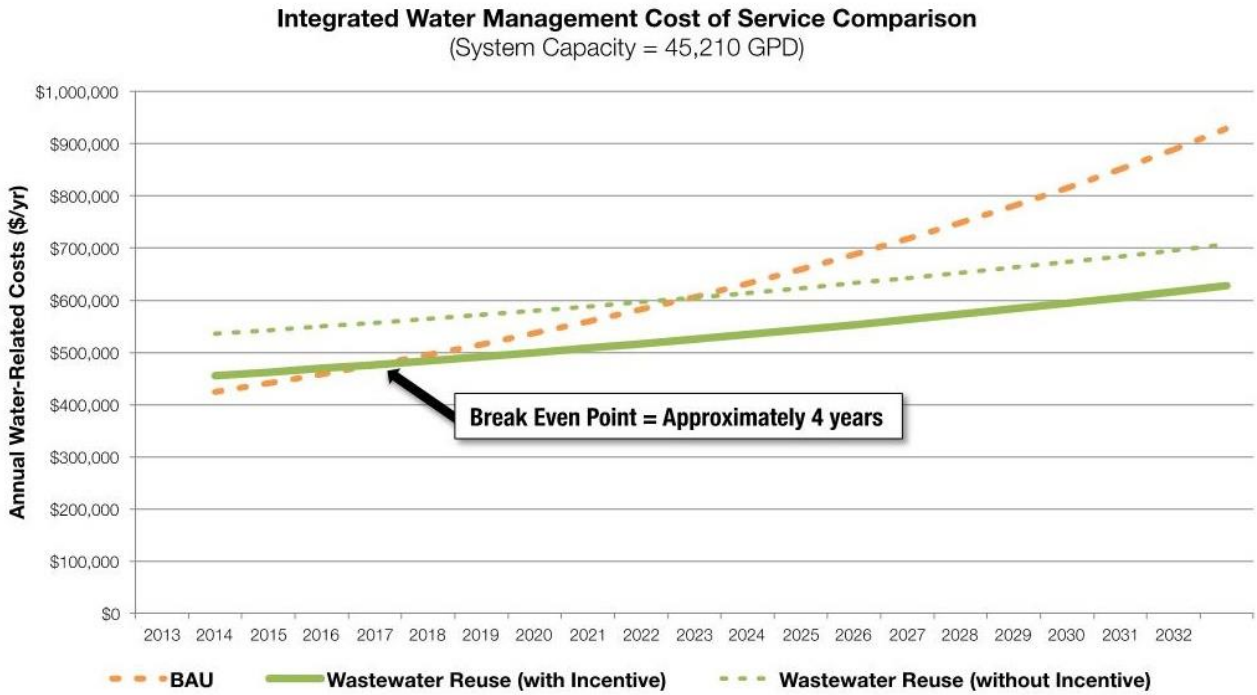




NOTES:

- Proposed water utility costs assume reclaimed non-potable water service to all four buildings and treatment, reuse and UIC disposal of unused treated water (except for Building 700 wastewater to public sewer).
- Year 1 only estimate.

65% WATER UTILITY COST REDUCTION



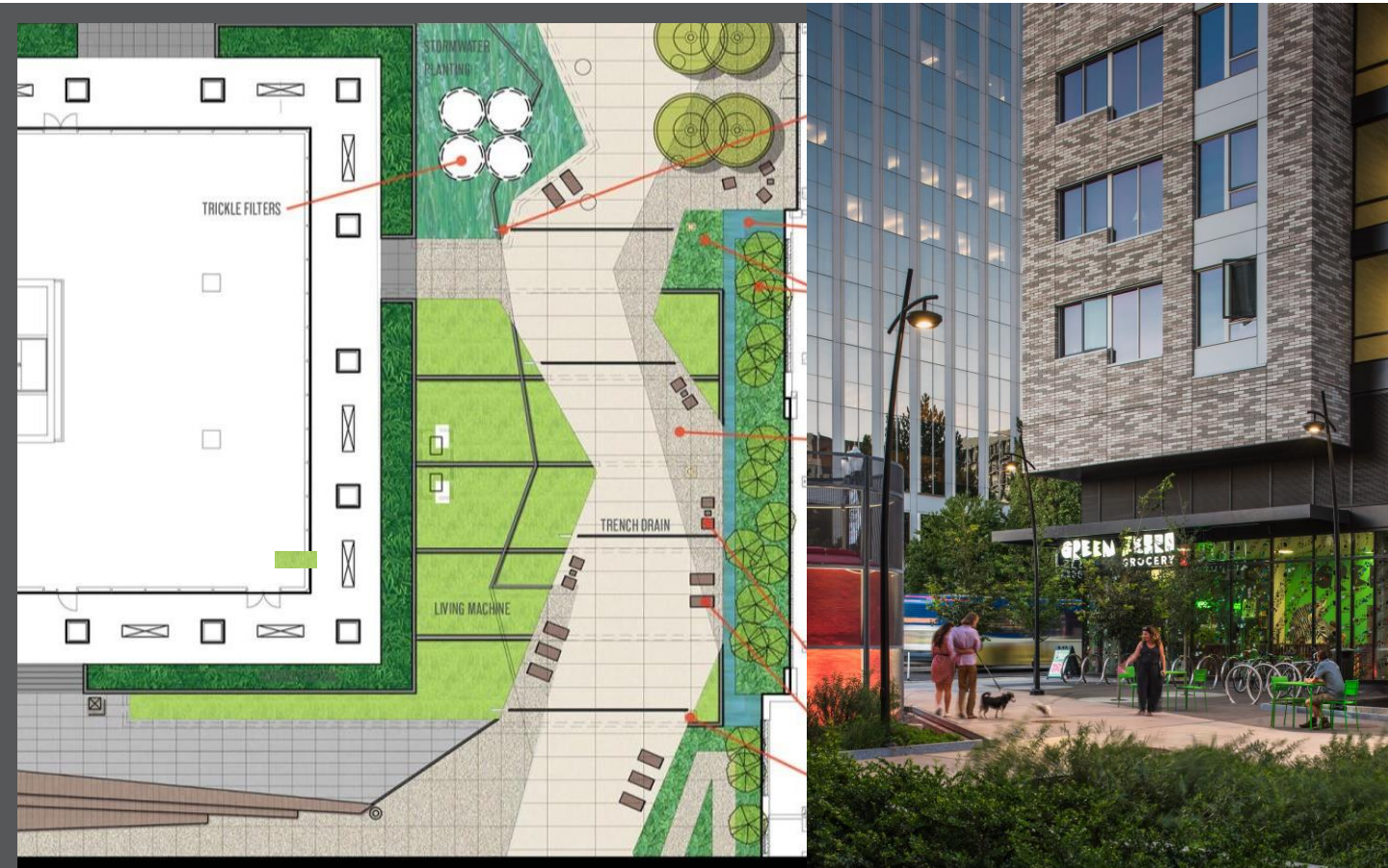
NOTES:

- COST OF SERVICE – Includes both CAPEX and OPEX.

View mid-block at Multnomah Street looking south

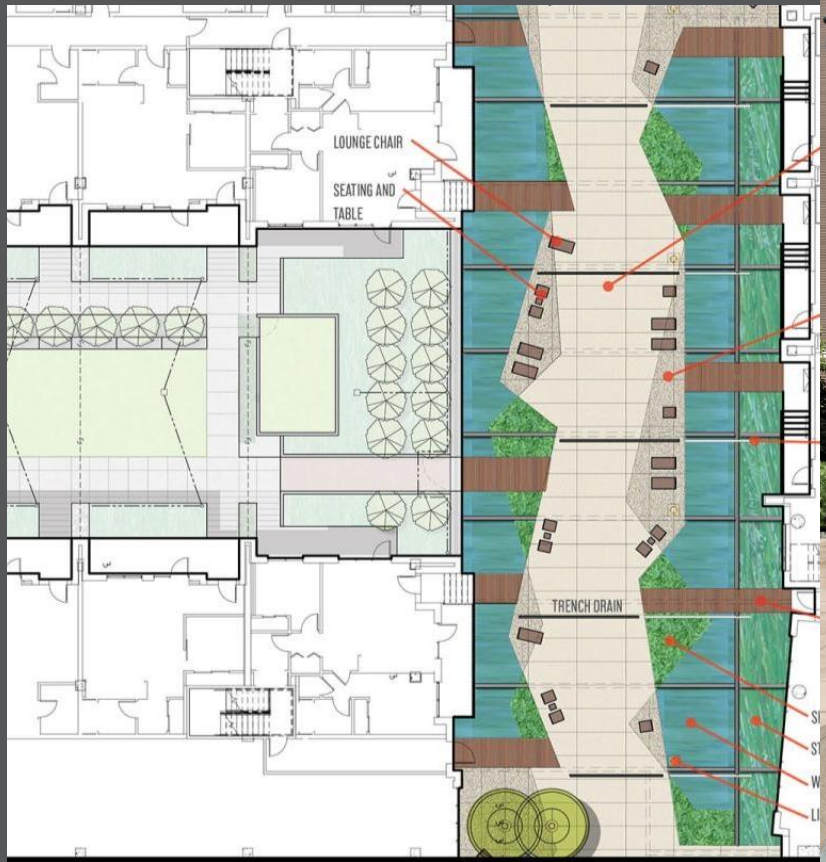
WATER STREET

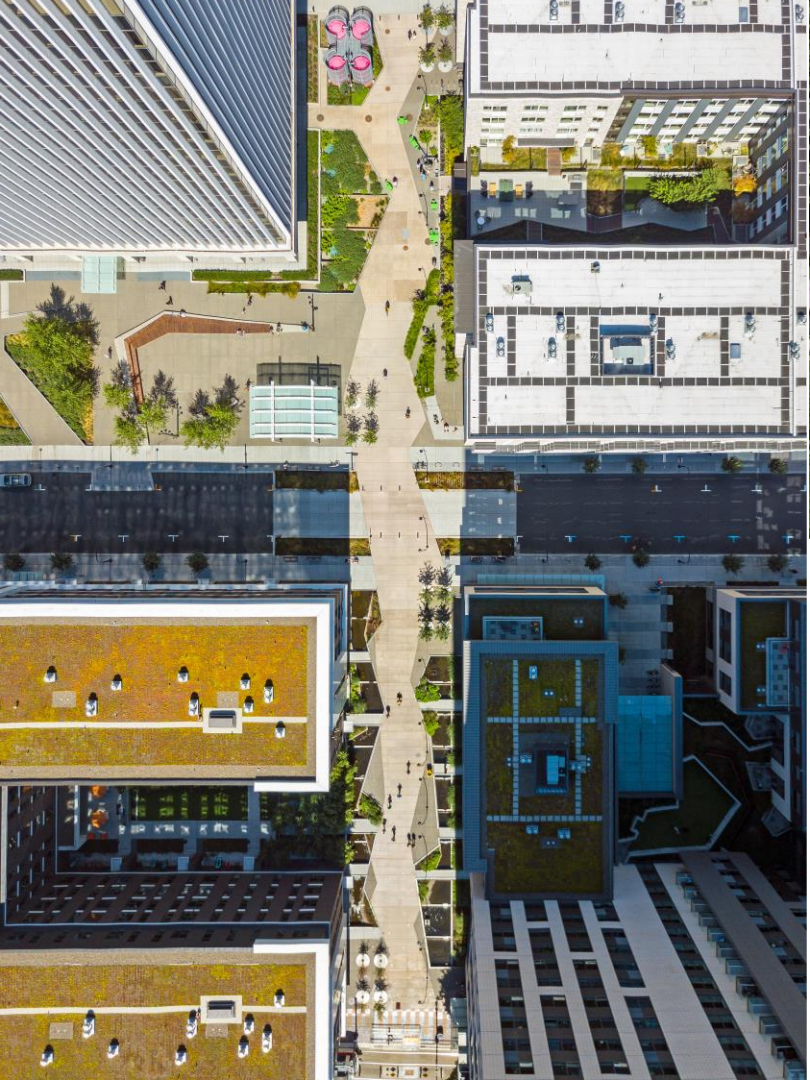
NORM


STORMWATER PLANTING
TRICKLE FILTERS
TRENCH DRAIN
LIVING MACHINE
GREEN ZERO GROCERY

WATER STREET (RAINWATER HARVESTING)

WATER STREET





MANAGEMENT TEAM

HASSALO on EIGHTH

Water Infrastructure

AMERICAN ASSETS TRUST

MANAGEMENT
Wade Lange
Emily Mandic
Stephanie Shaffer
Dana Gross

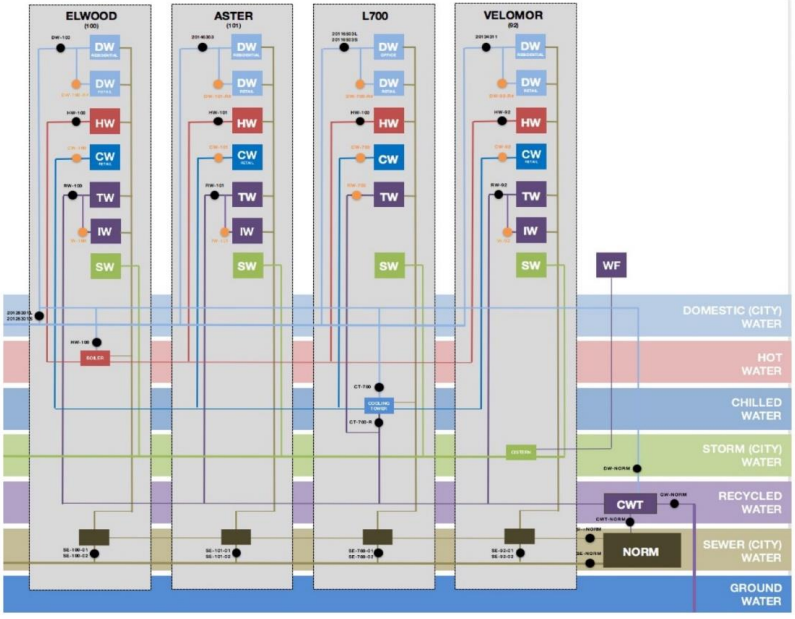
OPERATIONS
Mike Shadley
Chet Bowlsby
Dean Hackney
Jarrett Schranz

PUTTMAN INFRASTRUCTURE

MANAGEMENT
Tom Puttman
Joe Payne

OPERATIONS
Ken Johannes
Jarod Re
Dustin Thorson

NEW “UTILITY”



The Utility Management System provides:

- 24/7 monitoring of 7 major systems, including 36 separate meters
- Regulatory compliance reporting
- Monthly revenue and expense management, including cost allocations per building
- Tenant rate setting and billing
- Dashboard infographics

COMMUNITY EDUCATION

WE HAVEN'T REALLY RE-INVENTED THE WHEEL, IT JUST SEEMS LIKE IT

MEET NORM - NATURAL ORGANIC RECYCLING MACHINE

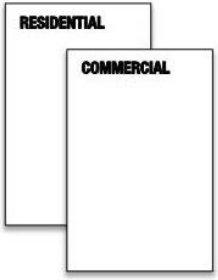
CONSERVATION NORM helps to reduce water use by over 50%—that's 7,000,000 gallons annually—by treating 100% of the wastewater generated from Hassalo on 8th to create clean reclaimed water used to flush toilets, irrigate landscaping and to supply cooling water for interior climate control. Biosolids generated from NORM are reused offsite to make fertilizer and generate energy.

SAFETY, QUALITY AND RELIABILITY Designed with state-of-the-art technology and controls, NORM meets the highest standards for wastewater treatment and reuse and is monitored 24/7 by certified wastewater operators to ensure optimal system performance, water quality and tenant safety.

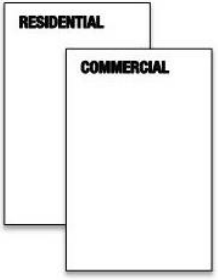
VALUE NORM reduces water and wastewater utility costs which translate into lower cost of living and smaller environmental footprint for building tenants. NORM also reduces strain on an over-capacity city sewer system.

NORM IS THE FUTURE NOW As the largest, natural urban wastewater reuse system in North America, we're proud to provide this benchmark for sustainable living both locally and globally.

COMMUNITY EDUCATION



TENANT EDUCATION MANUAL



TENANT LEASE AGREEMENTS

SIGNAGE

DASHBOARD

TOURS

Q&A:

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