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Thornton Tomasetti

Waste Not, Want Not – Reusing Onsite Water in New Buildings

South Point Conference Center, Las Vegas

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Image courtesy of Studio Gang Architects

Waste Not, Want Not

Reusing Onsite Water in New Buildings

Panel Moderator:

Lynn N. Simon, FAIA, LEED Fellow

Senior Vice President - Thornton Tomasetti



Panel Session Team:

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Senior Associate - Thornton Tomasetti



Ken Seibel

Owner's representative – Tishman Speyer



Mark Meredith

Product and Technical Sales Manager - Aquacell



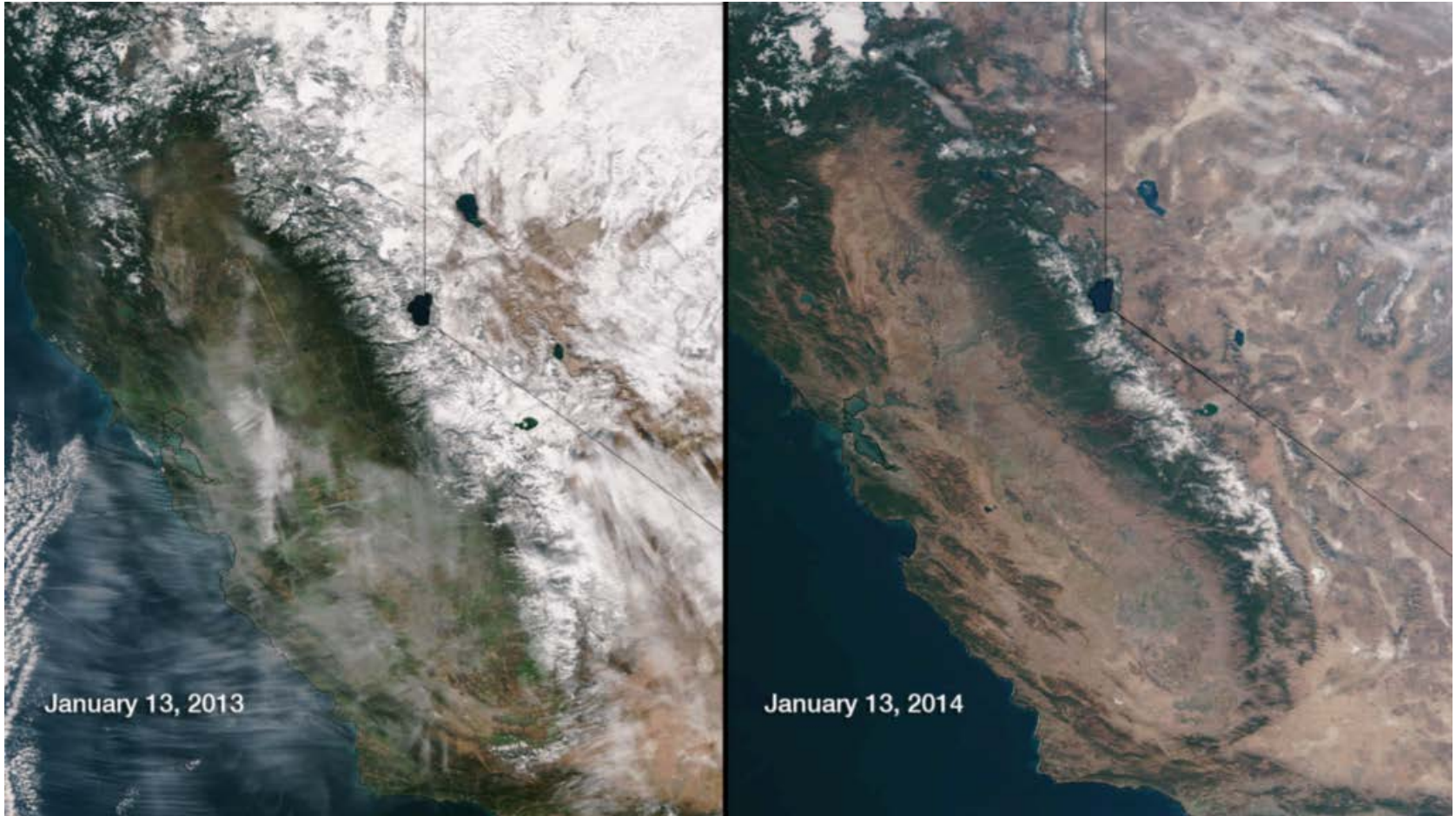
Introduction

Water

In New Buildings

Waste Not, Want Not – Why are we here?

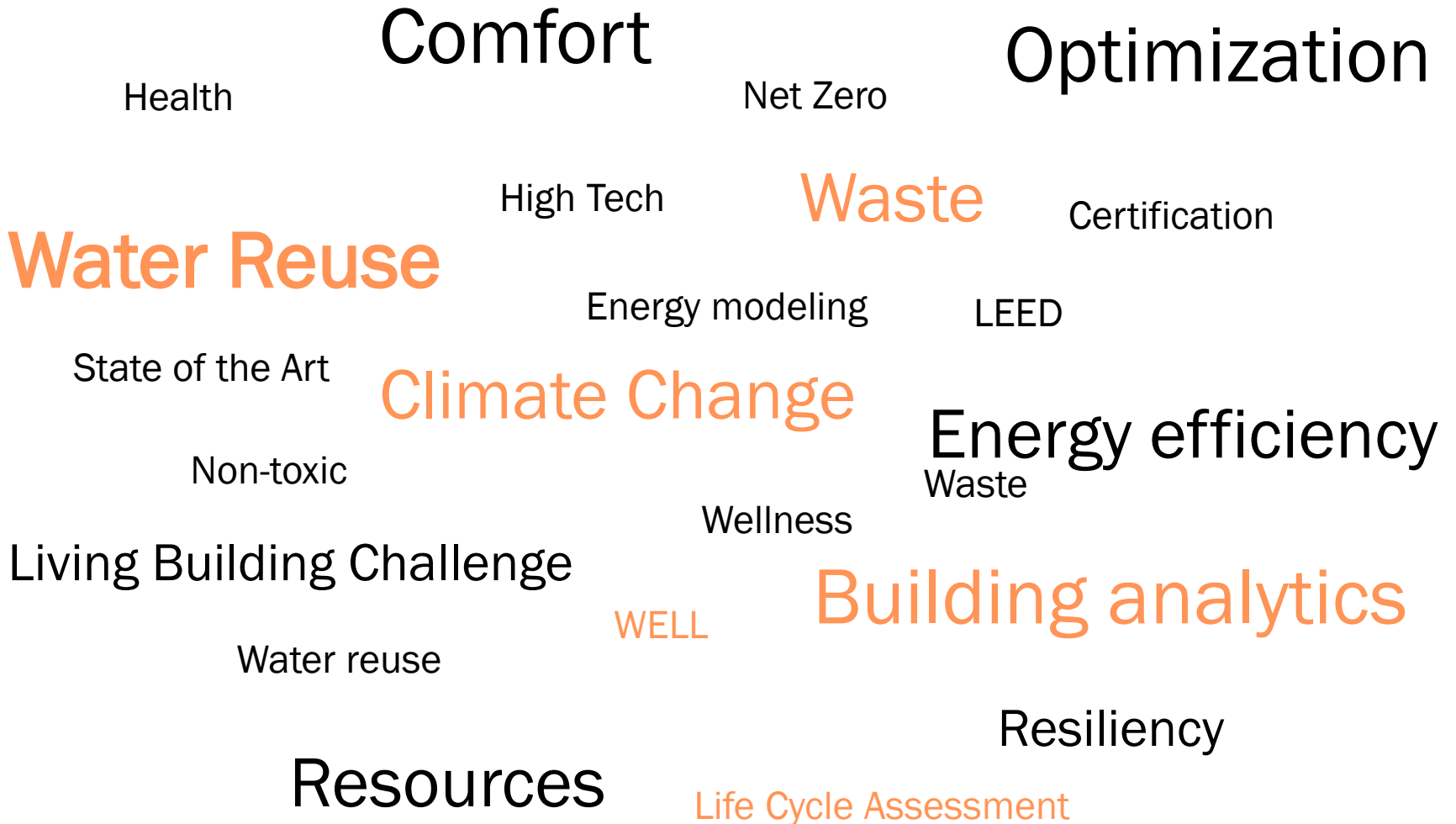
Reusing Onsite Water in New Buildings



The vanishing snow pack

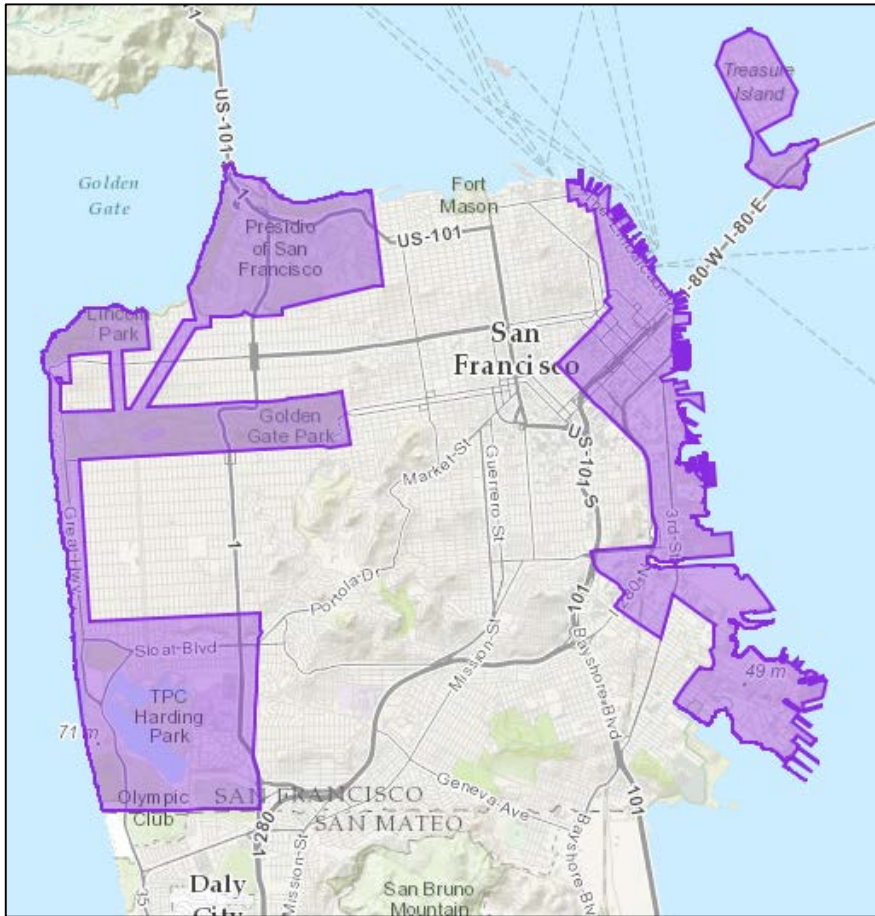
Waste Not, Want Not – Green Building

Reusing Onsite Water in New Buildings



Waste Not, Want Not – Municipal Leadership

Reusing Onsite Water in New Buildings

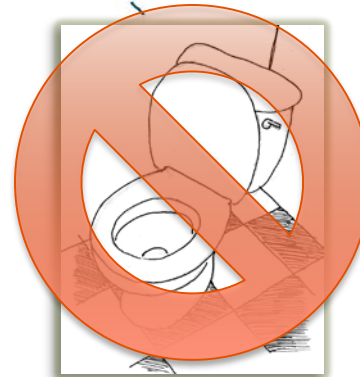
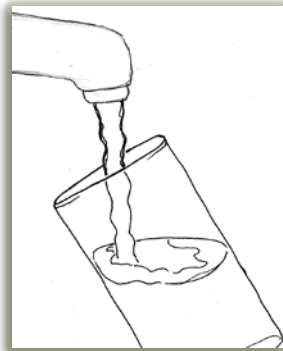
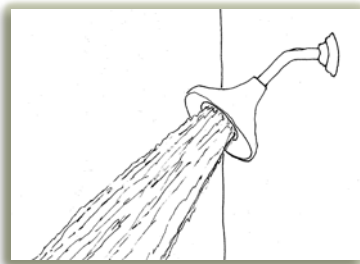
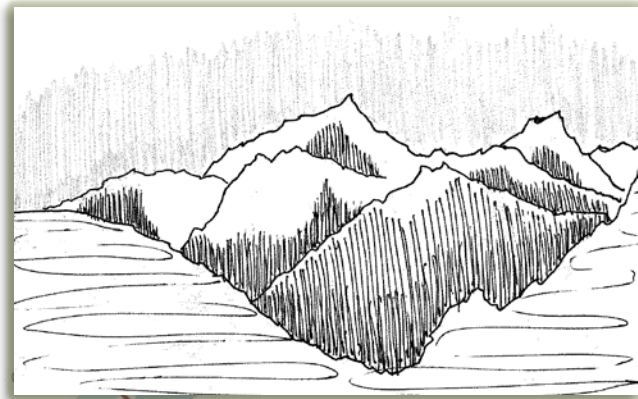


San Francisco map of purple pipe zones

- Recent policies
- “Purple pipe” zones
- Public utilities grants
- Utility fees expected to rise by 10-30% per year

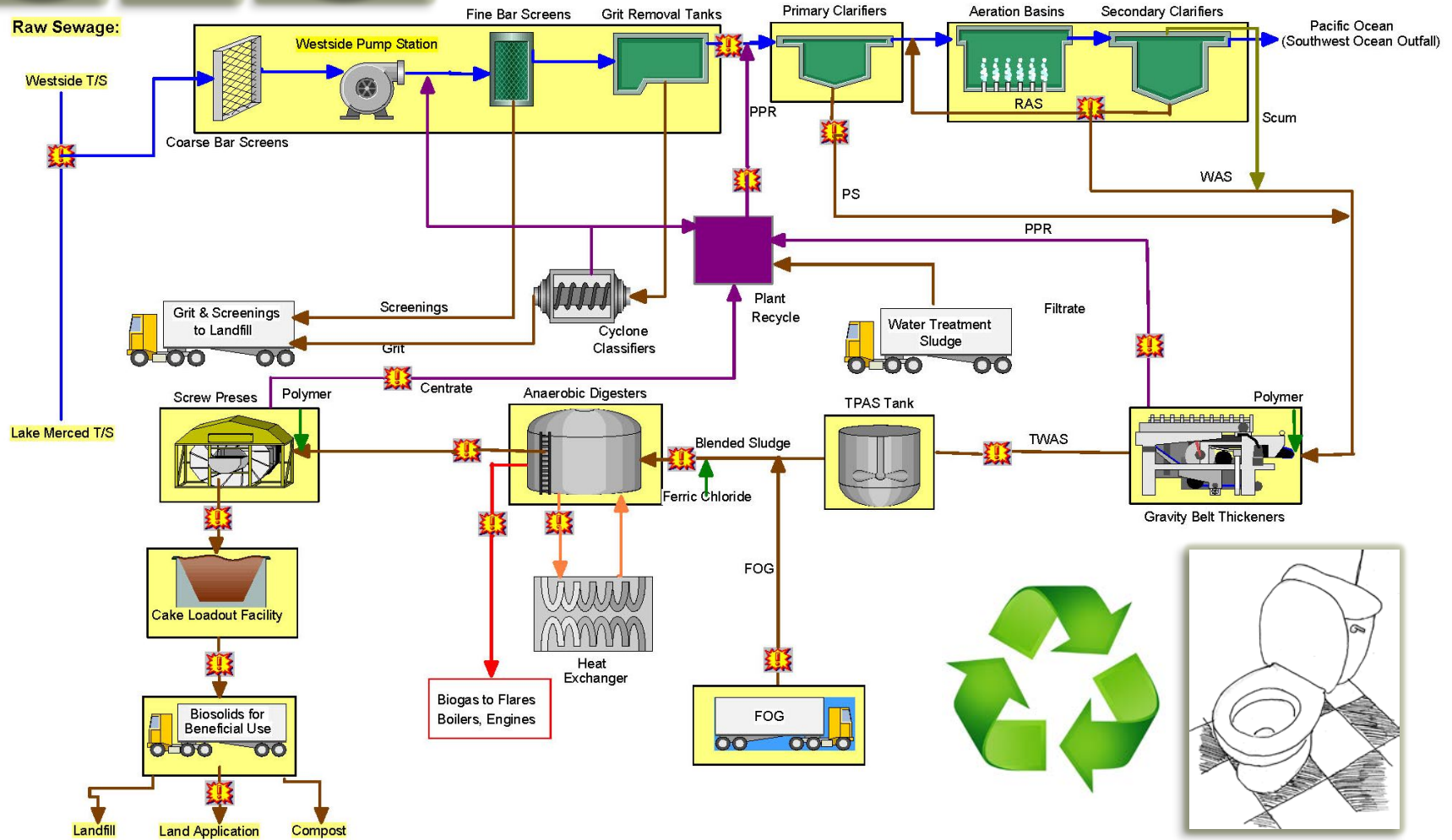
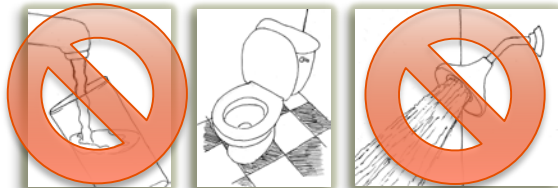
Waste Not, Want Not – Potable Water Sourcing

Reusing Onsite Water in New Buildings



Waste Not, Want Not – Waste Water Treatment

Reusing Onsite Water in New Buildings



160 Folsom Street
Water ReUse
Case Study



160 Folsom

San Francisco, CA

Owner	Tishman Speyer
Developer	Tishman Speyer
Architect	Studio Gang
Height	400 Feet
Area	700,000 sq.ft
Building	Residential
Units	399
Water Reuse	Greywater, Storm/Rainwater
Vendor	Aquacell
% Saved	45% of Potable Water

Image courtesy of Studio Gang Architects

Waste Not, Want Not – 160 Folsom Site Plan

Reusing Onsite Water in New Buildings



Image courtesy of Interstice Architects

Waste Not, Want Not – 160 Folsom Basement Plan

Reusing Onsite Water in New Buildings

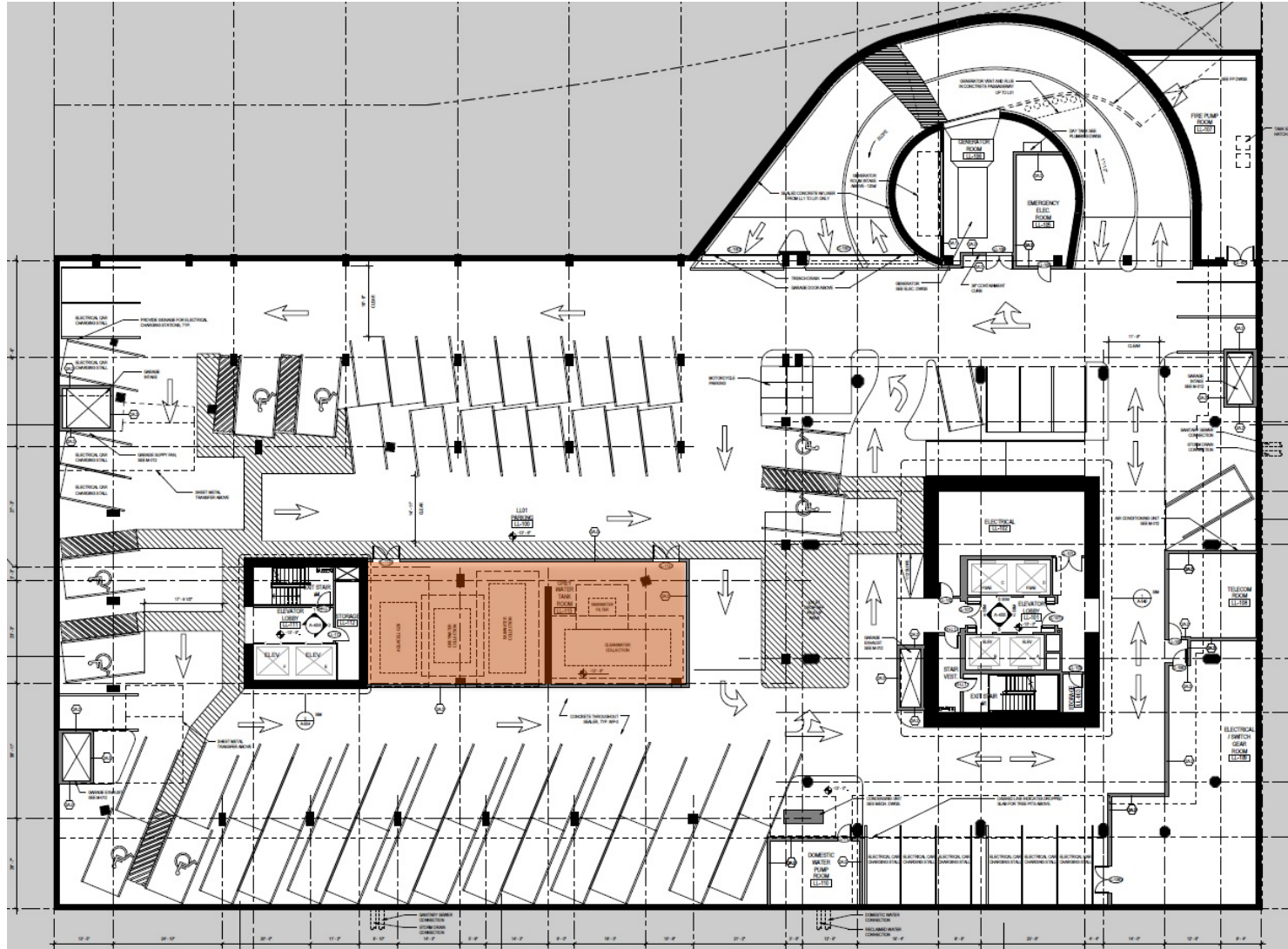
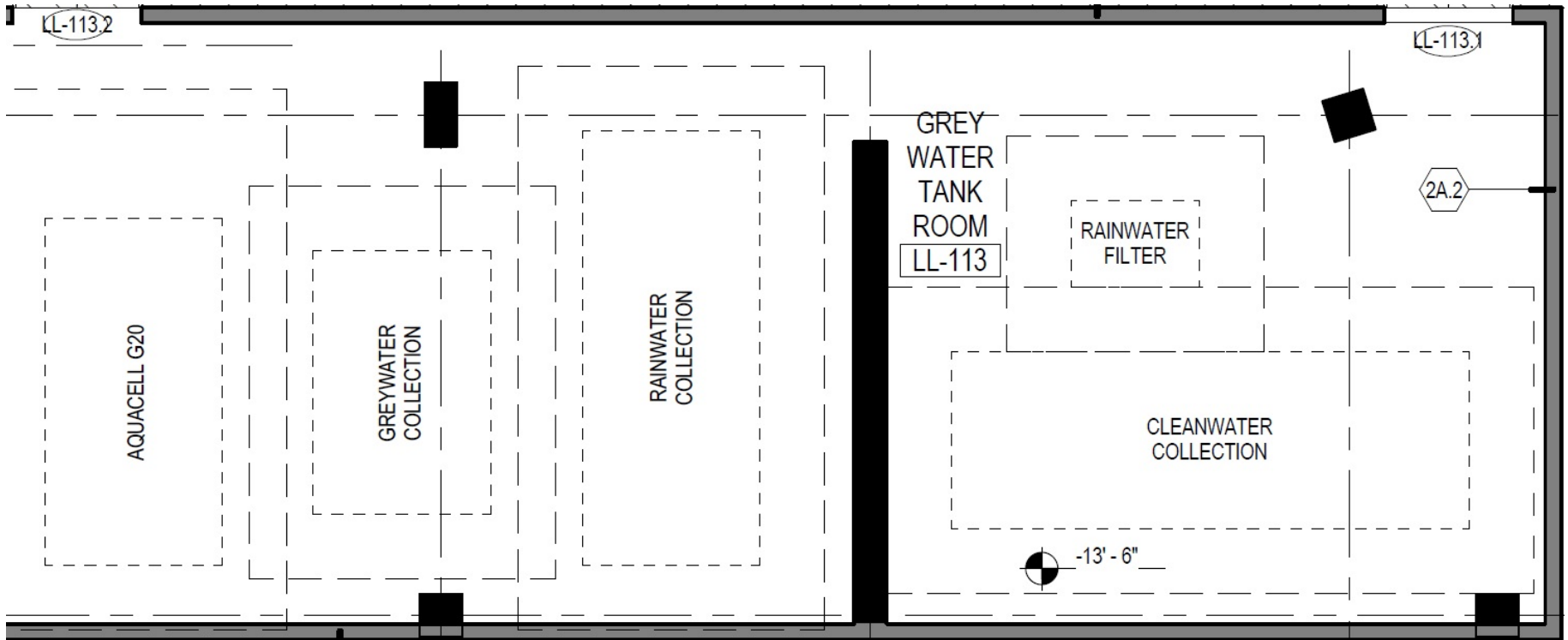


Image courtesy of Studio Gang Architects

Waste Not, Want Not – 160 Folsom Equipment Room Plan

Reusing Onsite Water in New Buildings



160 Folsom Street
Owner's View
Case Study

Waste Not, Want Not – Owners View

Reusing Onsite Water in New Buildings



- Initial Cost (separated plumbing stacks)
- Operating & Maintenance Cost
- Health Department
- Market Acceptance
- Equipment Space vs. Parking Space
- Below Market Rate/Market Rate Units
- Payback

Waste Not, Want Not – Owners View

Reusing Onsite Water in New Buildings



So why would the developer go ahead?

- Anticipate policy change
- Community & city support
- Height increase
- Positive marketing tool

160 Folsom Street
Water Solution
Case Study

Waste Not, Want Not – Water Solution

Reusing Onsite Water in New Buildings



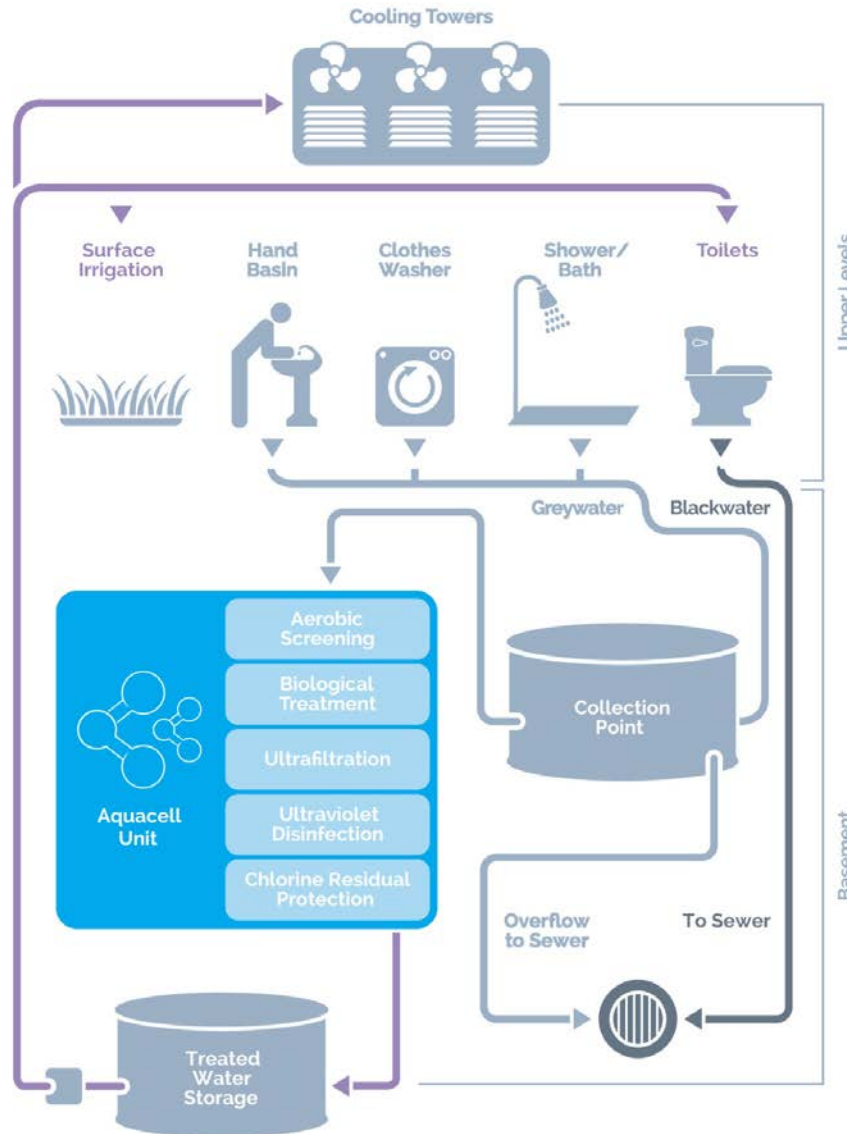
Inputs

- Conservation Objectives
- Occupancy
- Alternative Source(s)
- End Use(s)
- Local Regulations / Code
- First Cost
- O&M Costs
- Space
- LEED Goals

Analysis 

Waste Not, Want Not – Water Solution

Reusing Onsite Water in New Buildings

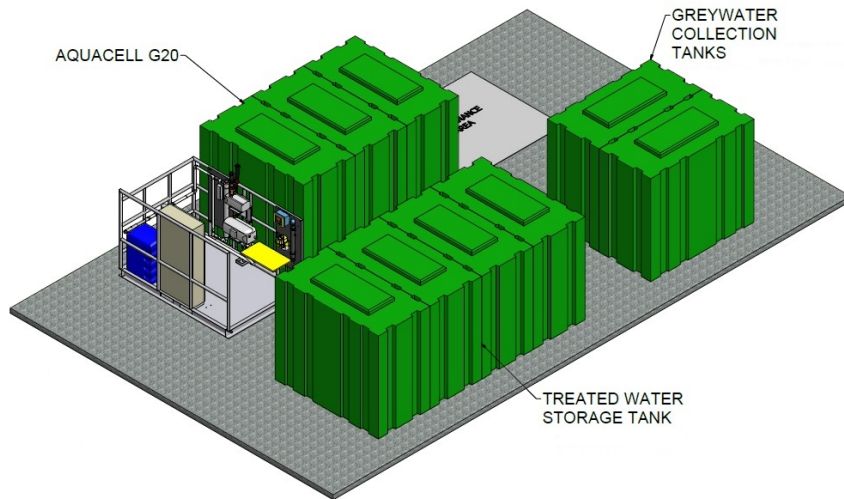


Outputs

- Water Balance
- Scope / Design Options
- Conservation Projections
- Space Allocation
- Life Cycle Cost Analysis (LCCA)
- LEED Implications

Waste Not, Want Not – Water Solution

Reusing Onsite Water in New Buildings



Key Design Influences

- LEED
- San Francisco Stormwater Code
- Building Occupancy / System Sizing
- First Cost & LCCA
- Space Requirements
- San Francisco Water Recycling Mandate
- Proven technology

Waste Not, Want Not

Reusing Onsite Water in New Buildings

Integrated Greywater & Rainwater Recycling System

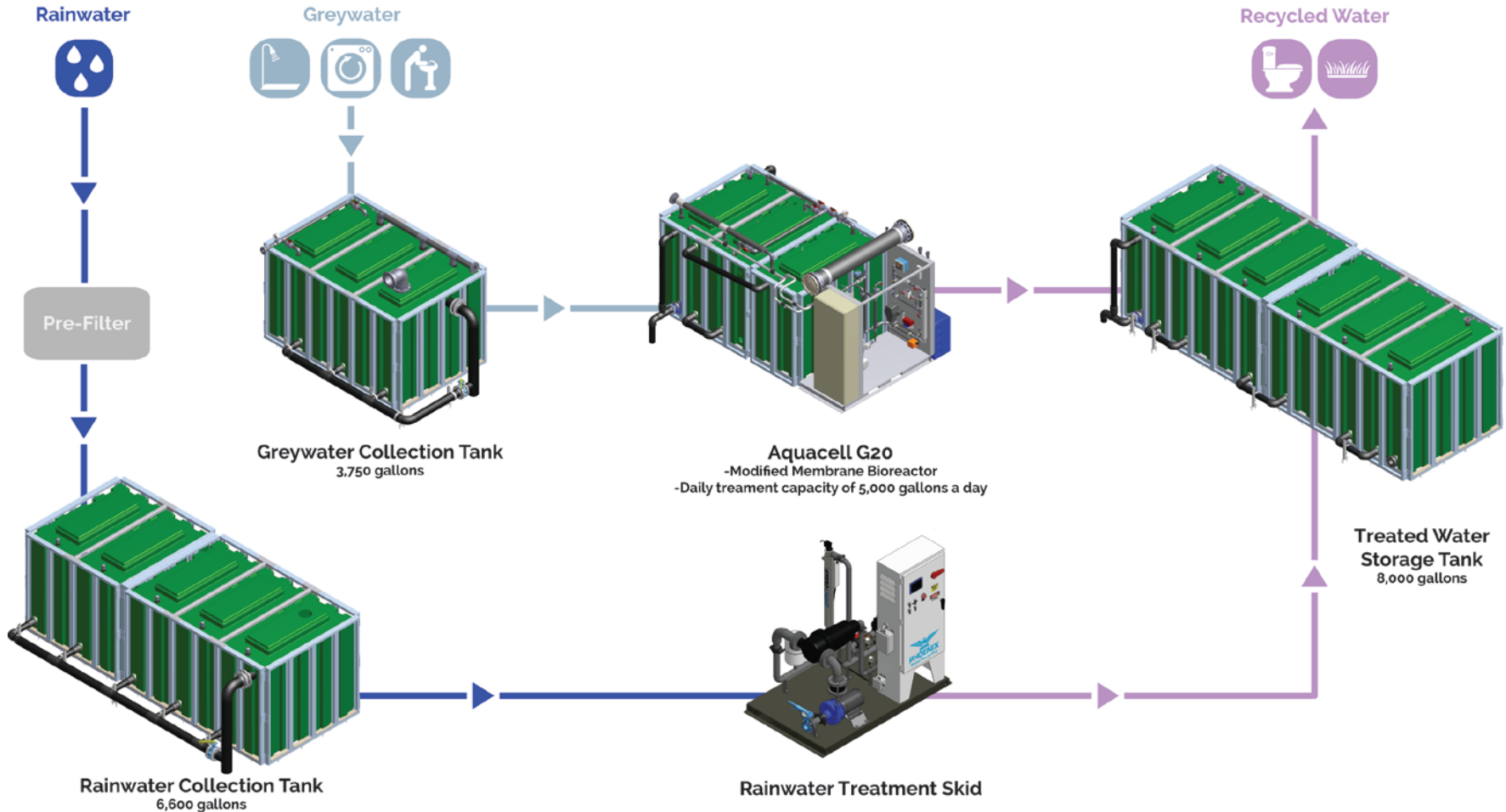


Image courtesy of Aquacell

Project Examples

More Water

Case Studies

Waste Not, Want Not – Project Examples

Reusing Onsite Water in New Buildings

Project	Building Type	System	Uses
525 Golden Gate (Completed)	Government	Blackwater/Rainwater/ stormwater/cooling tower	100% Landscape irrigation, 100% toilet & urinal flushing
SF Public Safety (Completed)	Government	Rainwater/stormwater & greywater	100% Landscape Irrigation & Cooling Tower make-up
270 Brannan (Under construction)	Commercial	Rainwater/stormwater & condensate	100% Landscape Irrigation & toilet flushing
160 Folsom (Early CD)	Residential	Rainwater/stormwater & greywater	100% Irrigation, toilet flushing
Oceanwide Center (Early DD)	Mixed Use	Rainwater/stormwater & greywater	100% Irrigation, toilet & urinal flushing
3rd St Hotel (Early DD)	Lodging	Rainwater/stormwater & greywater	100% Irrigation, toilet & urinal flushing
Living Lab (100% CD)	Educational	Rainwater/stormwater & greywater	Partial Irrigation, toilet & urinal flushing



525 Golden Gate San Francisco, CA

Owner	San Francisco Public Utilities Commission (SFPUC)
Architect	KMD Architects
Height	150 feet
Area	277,500 sq.ft
Building	Institutional
Occupants	900 employees
Water Reuse	Blackwater, Storm/Rainwater
Vendor	Living Machine
% Saved	85% of Potable Water

Image Courtesy of SFPUC



Image Courtesy of SFPUC



270 Brannan

San Francisco, CA

Developer	SKS
Tenant	Splunk
Architect	Pfau Long Architects
Height	75 feet
Area	190,000 sq.ft
Building	Commercial
Water Reuse	Storm/Rainwater & Condensate
Vendor	Wahaso
% Saved	68% of Potable Water

Image Courtesy of Pfau Long Architects



Image Courtesy of Pfau Long Architects



270 Brannan courtyard, courtesy of Meyer + Silberberg Land Architects

Waste Not, Want Not – Audience Exercise

Reusing Onsite Water in New Buildings



OVERVIEW

- Handout – project scenario
- Small groups – 10 min. to brainstorm
- Teams – report out ideas



Blue Glacier in Olympic National Park has shrunk 325 feet in 10 years.

Image Courtesy of Karl Wakelin



Image Courtesy of Karl Wakelin

Thornton Tomasetti

www.ThorntonTomasetti.com