

# DECENTRALIZED REUSE OF ONSITE WASTEWATER IN CALIFORNIA



Nick Weigel, P.E.

COWA

NorthStar Engineering,

Decentralized Water Policy Council

# BACKGROUND

- ▶ Title 22 regulations for recycled water in California, focused on Municipal sources of recycled water.
  - ▶ California Plumbing Code Chapter 16, regulations for greywater
  - ▶ Regulation of Onsite recycled Water?
- 

# DRIVERS GOING FORWARD

- ▶ “Increase the use of recycled water over 2002 levels by at least one million acre feet per year by 2020 and by at least two million acre feet a year by 2030.
  - ▶ Increase the use of stormwater over use in 2007 by at least 500,000 acre feet a year by 2020 and by at least one million acre feet a year by 2030.”
- 

# DRIVERS GOING FORWARD

- ▶ “Increase the use of recycled water over 2002 levels by at least one million acre feet per year by 2020 and by at least two million acre feet a year by 2030.
  - ▶ Increase the use of stormwater over use in 2007 by at least 500,000 acre feet a year by 2020 and by at least one million acre feet a year by 2030.”
- 

# Non-Potable Water Program Mandatory in 2015

- San Francisco requires onsite water systems in new buildings over 250,000 square feet
- Assessment of water sources and non-potable end uses in buildings over 40,000 square feet
- Does not require reuse of Blackwater.



## San Francisco's Recycled Water Ordinance

- Requires ***dual plumbing*** for toilet/urinal flushing and cooling in new developments & major alterations over 40,000 SF
- Irrigated landscapes over 10,000 sf



# NSF 350 – EFFLUENT CRITERIA

Summary of effluent criteria for individual classifications

Measure	Class R		Class C	
	Test Average	Single Sample Maximum	Test Average	Single Sample Maximum
CBOD <sub>5</sub> (mg/L)	10	25	10	25
TSS (mg/L)	10	30	10	30
turbidity (NTU)	5	10	2	5
<i>E. coli</i> <sup>2</sup> (MPN/100 mL)	14	240	2.2	200
pH (SU)	6.0 – 9.0	NA <sup>1</sup>	6.0 – 9.0	NA
storage vessel disinfection (mg/L) <sup>3</sup>	≥ 0.5 – ≤ 2.5	NA	≥ 0.5 – ≤ 2.5	NA
color	MR <sup>4</sup>	NA	MR	NA
odor	Non-offensive	NA	Non-offensive	NA
oily film and foam	Non-detectable	Non-detectable	Non-detectable	Non-detectable
energy consumption	MR	NA	MR	NA
SAR	MR	MR	MR	MR
<sup>1</sup> NA: not applicable. <sup>2</sup> Calculated as geometric mean. <sup>3</sup> (See 8.6.2.6 or 8.6.3.6) <sup>4</sup> MR: measured and reported only.				

## 8.6.2 Class R systems (single family residential dwelling)

# CASE STUDY – AUDUBON EDUCATION CENTER LEED PLATINUM – JANUARY 2004



# CASE STUDY – LA KRETZ INNOVATION CENTER

LADWP – Greywater  
Installation Under Construction



## Features

- Collaborative Workspace
- Private Offices
- Conference Rooms
- Event Space
- Dedicated Fiber Connection
- Adjacent to the new Arts District Park

## Training Center

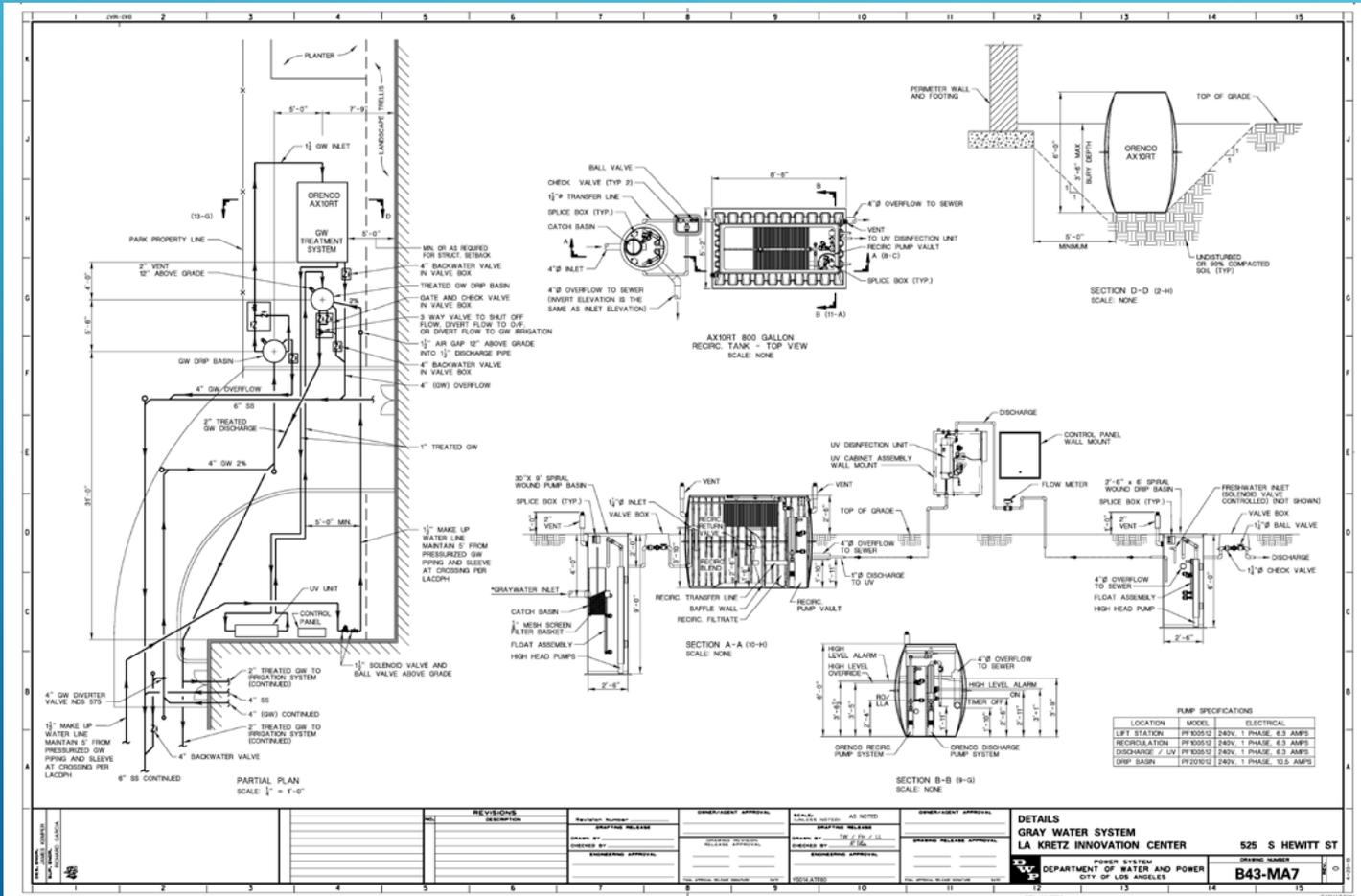
- 40-person Classroom
- 32-person Classroom
- 16-person Classroom
- HD Video streaming Capability
- Multiple Room Configurations

## Prototype Manufacturing Lab & Equipment

- Electronics Lab
- Wet Lab
- 3-D Printing Room
- Welding Room
- Laser Cutter / Water Jet / CNC Milling Machine
- Machine Shop Tools

# CASE STUDY – LA KRETZ INNOVATION CENTER

## TEST SITE FOR NSF 350-C COMMERCIAL AND MULTI-FAMILY



REVISIONS	DESIGNER	ENGINEER	DATE	DESCRIPTION
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

DESIGNED BY	CHECKED BY	DATE	APPROVAL
DRAWN BY	ENGINEER		
SCALE			

DESIGNED BY	CHECKED BY	DATE	APPROVAL
DRAWN BY	ENGINEER		
SCALE			

DESIGNED BY	CHECKED BY	DATE	APPROVAL
DRAWN BY	ENGINEER		
SCALE			

DESIGNED BY	CHECKED BY	DATE	APPROVAL
DRAWN BY	ENGINEER		
SCALE			

DESIGNED BY	CHECKED BY	DATE	APPROVAL
DRAWN BY	ENGINEER		
SCALE			

DESIGNED BY	CHECKED BY	DATE	APPROVAL
DRAWN BY	ENGINEER		
SCALE			

DESIGNED BY	CHECKED BY	DATE	APPROVAL
DRAWN BY	ENGINEER		
SCALE			

DESIGNED BY	CHECKED BY	DATE	APPROVAL
DRAWN BY	ENGINEER		
SCALE			

DESIGNED BY	CHECKED BY	DATE	APPROVAL
DRAWN BY	ENGINEER		
SCALE			

**DETAILS**  
**GRAY WATER SYSTEM**  
**LA KRETZ INNOVATION CENTER**  
**525 S HEWITT ST**  
**POWER SYSTEM**  
**DEPARTMENT OF WATER AND POWER**  
**CITY OF LOS ANGELES**  
**843-MA7**



# CASE STUDY – LA KRETZ INNOVATION CENTER

TEST SITE FOR  
NSF 350-R RESIDENTIAL AND NSF 350-C COMMERCIAL AND MULTI-FAMILY  
SCALABLE – 200 GPD – 10,000 GPD



# CASE STUDY – CEDAR SPRINGS APARTMENTS

LA VERNE, CA - MULTI-FAMILY EXAMPLE –UNDER CONSTRUCTION



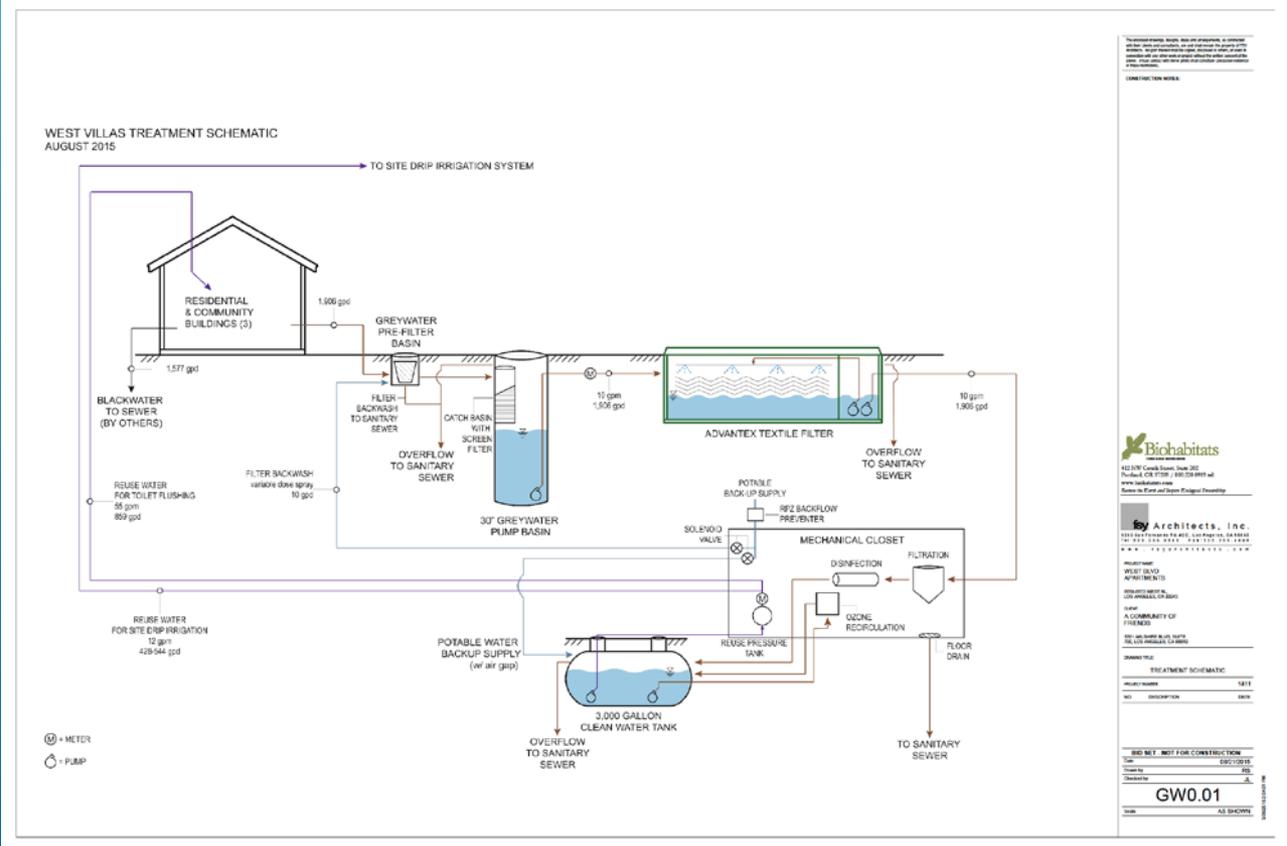


# CASE STUDY – SILVER STAR APARTMENTS

LOS ANGELES, CA - MULTI-FAMILY EXAMPLE



# CASE STUDY – SILVER STAR APARTMENTS LOS ANGELES, CA - MULTI-FAMILY EXAMPLE



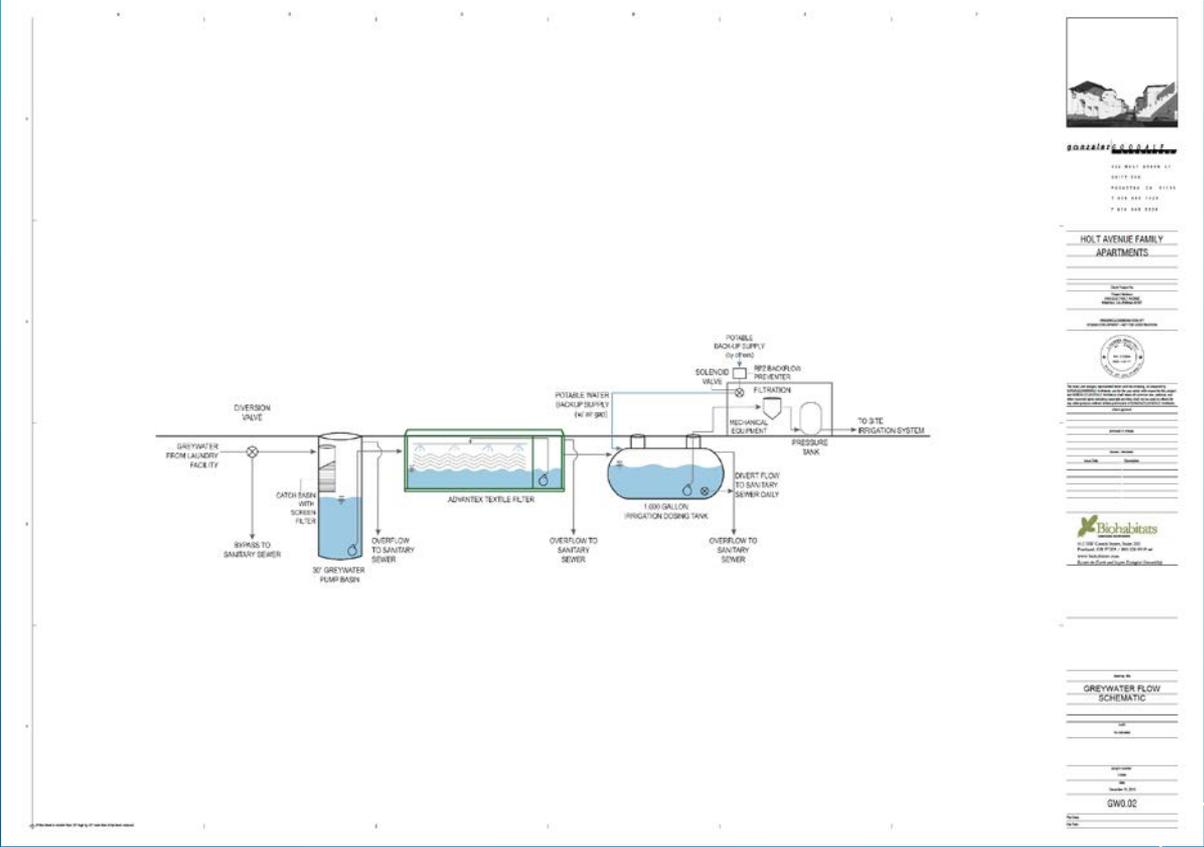
# CASE STUDY – HOLT FAMILY APARTMENTS

POMONA, CA - MULTI-FAMILY EXAMPLE – IRRIGATION ONLY



# CASE STUDY – HOLT FAMILY APARTMENTS

## POMONA, CA - MULTI-FAMILY EXAMPLE – IRRIGATION ONLY



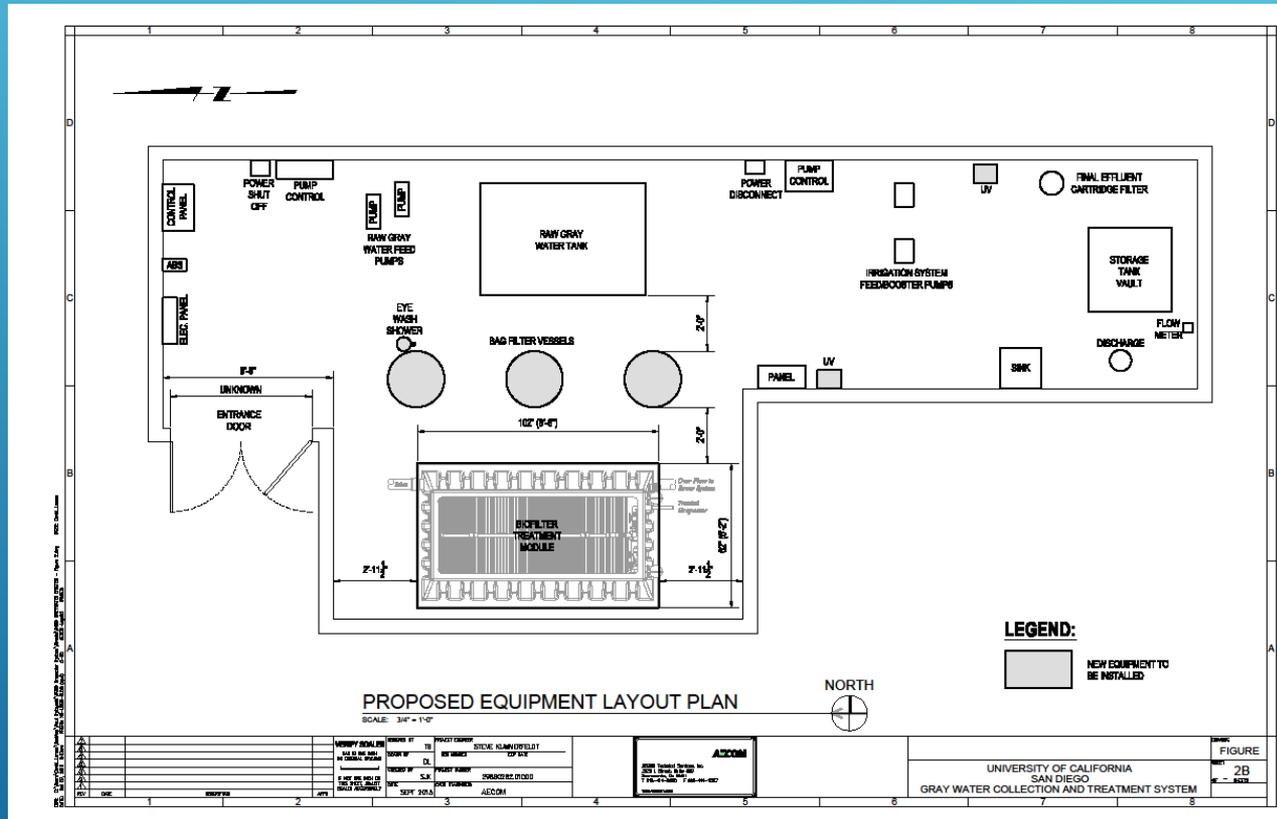
# CASE STUDY – KELLING APARTMENTS

UC SAN DIEGO- EXISTING GREYWATER SYSTEM – RETROFIT



# CASE STUDY – KELLING APARTMENTS

## UC SAN DIEGO- MULTI-FAMILY EXAMPLE – RETROFIT



**SOLUTION**  
**AX25RT UNIT ASSEMBLED IN THE GREYWATER ROOM**

# FUTURE

- ▶ AB 1463 – Provide Clarity for Onsite Recycled Water
  - ▶ Potential Updates to Title 22 on the horizon?
- 

QUESTIONS?

A series of several parallel white lines of varying lengths, all slanted upwards from left to right, located in the bottom right quadrant of the slide.