Purpose of Workshop

Why are we here?

• Rules and Regulations
• Purpose of service agreement
• Best management practices
• Planned improvements
• Networking opportunity
• Answer any questions
Thought of the day:

“Human nature is like water. It takes the shape of its container.” — Wallace Stevens
Team Approach to Program

- Customer Development
- Master Planning
- Production & Treatment Engineering
- Backflow/Cross Connection Control
- Construction Inspections
- Recycle Operations
- Emergency / Operations Control Center

—call 704-SAWS
Definitions

Black Water - No! Nein! Niet! Ne! Não! Not!
- water from toilets and urinals

Grey Water - No! Nein! Niet! Ne! Não! Not!
- untreated water from showers, sinks, and clothes washers

Reclaimed (a.k.a. Reuse, Recycled Water) Yes!
- highly treated effluent that meets or exceeds stream standards
Customer Development

• A lot of things need to line up
• Location of customer(s) and pipelines
• Available capacity
• Recycled Water Quality
• Infrastructure costs
• Economic timing
Contract Trends Over Time

An acre-foot of water = 325,851 gallons

- 1999 – 2009 average contract 232 AFY
- 2010 – 2014 average contract 45 AFY
- 2015 – 2019 average contract 9 AFY
- In general customers use less water
- Take or pay

Don’t shoot me, I’m just the “Used Water Salesman”
Customer uses of Recycled Water

• Irrigation
• Cooling towers
• Manufacturing processes
• Dust suppression
• Stream augmentation

- landscaping
- golf courses
- cooling towers
- River Walk
## Recycled Water Quality

### TAC Chapter 210 Standards

<table>
<thead>
<tr>
<th>Constituent</th>
<th>Regulatory Standard</th>
<th>SAWS 2019 Analytical Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD 5</td>
<td>5 mg/l</td>
<td>2.11 mg/l</td>
</tr>
<tr>
<td>Turbidity</td>
<td>3 ntu</td>
<td>0.82 ntu</td>
</tr>
<tr>
<td>E-coliform</td>
<td>&lt; 20 cfu/100 ml</td>
<td>1.29 cfu/100 ml</td>
</tr>
</tbody>
</table>

### Additional Contractual Standards

<table>
<thead>
<tr>
<th>Constituent</th>
<th>Contractual Standard</th>
<th>SAWS 2019 Analytical Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>NH3-N</td>
<td>&lt; 2.0 mg/l</td>
<td>0.31 mg/l</td>
</tr>
<tr>
<td>pH</td>
<td>6.0 to 9.0 su</td>
<td>6.6 to 8.2 su</td>
</tr>
<tr>
<td>Total Suspended Solids (TSS)</td>
<td>&lt; 15 mg/l</td>
<td>1.47 mg/l</td>
</tr>
<tr>
<td>Total Dissolved Solids (TDS)</td>
<td>&lt; 1500 mg/l</td>
<td>752 mg/l</td>
</tr>
<tr>
<td>Sodium Adsorption Ratio (SAR)</td>
<td>&lt; 5 meq/l</td>
<td>2.96 meq/l</td>
</tr>
<tr>
<td>Residual Sodium Carbonate (RSC)</td>
<td>&lt; 1.5 mg/l</td>
<td>0 meq/l</td>
</tr>
</tbody>
</table>
User Agreement

- Standard language for all customers
- Obligation for User(s) & Provider
- CPS Energy priority
- Manage program supply
- Take or Pay rate structure
- 25% - 2 year review
- All contracts will move to Take or Pay
Master Planning

Technical Elements / Hydraulic Model

- Dynamics of the system
- User demands and peaks usage
- Infrastructure Needs
SAWS
Recycled Water System
System Schematic Profile
Recycled Water System

What is wrong with this picture?

• Contractor damaged pipe
• Pipe out of service for 6 months
Recycled Water System

Same pipe segment repaired

- SAWS fixed the pipeline
- Restored service before summer
Rules and Regulations

• Chapter 210 as State of Texas Requirements
• Additional requirements imposed by SAWS
• Shut down procedure part of backflow & cross connection control
• Compliance assurance with Regulatory guidelines
Chapter 210 Particulars

- Separation requirements
- Texas PE requirement for self compliance
- Cross connection control & backflow back flow (siphon)
- Customer service inspections
Chapter 210 Particulars

• Contract required for uses of recycled water
• Color coding for potable and recycled water
• Above and below grade
• Signage
Additional Requirements

• No hose bibs, faucets allowed off of irrigation system
• Keyed access only (quick-couplers are acceptable)
• **Spill notification**
  – call 704-SAWS
Annual Shutdown Test Procedure

• Contact customer
• Customer provides T&M reports BEFORE shutdown
• Schedule customer on-site personnel
• Install data loggers and take samples
• Perform two way shutdown on potable and recycled water services
Regulatory Guidelines

- Texas Administrative Code Chapter 210 for Reclaimed Water
- Texas Administrative Code Chapter 290 for Potable Water
- Texas Administrative Code 344 Irrigation Rules
- Local Chapter Code 34 and TAC 217
- SAWS Backflow and Cross-Connection Control Program
- AWWA Cal/Nevada Guidelines
- USEPA 2004 Guidelines for Reuse Water
- International Plumbing Code

“What, me worry?”
Regulatory Guidelines Test

Which Regulation is not applicable?

A - Texas Administrative Code Chapter 210 Reclaimed Water
B - SAWS Backflow and Cross-Connection Control Program
C - AWWA Cal/Nevada Guidelines
D - USEPA 2004 Guidelines for Reuse Water
E - World Health Organization (WHO) Standards
F - International Plumbing Code
Regulatory Guidelines Test Question

Answer

World Health Organization (WHO) Standards
Best Management Practices

Water Quality

• Warm season grasses tolerant of salt residue
• Occasional leaf burn/species dependent – minimize spray arc
• No empirical evidence on salt build-up within soil in our ecosystem
• Small amount of nitrogen

Regulatory Agencies

• TAC 210 – Rules on Reclaimed Water – purple, purple, purple
• TAC 344 – Rules on Irrigation design & maintenance and on Irrigators
• City of San Antonio – Chapter 34 – Waste & Drought Rules
Best Management Practices

When can I water?

• 7 days a week
• Not from 11 am – 7 pm
• During Drought Stages
  – **Must** be 100% recycled water and have appropriate signage for 7 days a week
  – We will check…..

Can I still receive a citation?

• Yes, for the following…
  – Water running down the sidewalk, street and parking lot
  – Watering between 11 am and 7 pm
  – No signage
Best Management Practices

Getting the signage “just right”
Best Management Practices

Must be in a location where the public can see them
Best Management Practices

Cooling Towers

• Ortho-phosphates/nitrates
• Microbial control
• Misting concerns
• Nutrients
Best Management Practices

Irrigation

• Onsite storage ponds
• Onsite distribution system
• Chlorides and sodium
Remember!

More plants are killed by over-watering than by under-watering.

Live!
Darn you, Live!
Break Time
New Recycle Program Projects

Transforming Water Management
Water Pigeon

What is it?

• OCR technology
• How does it work?
• Advantages in Implementation
  – Inexpensive
  – Quick installation w/o a meter change
  – Data collection through a cellular network that uploads onto a dashboard
  – 15-year battery (6 reads a day)
Water Pigeon

What is it?

• Advantages as a tool in our toolbox
  – Reduced windshield time
  – Remote auditing with photo validation
  – High resolution water consumption data
    • Improved hydraulic model
  – Improved customer service
Water Pigeon

Evaluation Period and Goals

• Project time table
• How reliable is this technology?
  – Can we address issues in the field in a timely matter?
  – Can this technology handle a variety of meter box environments
  – Viewed on dashboard
• Can this information be used for billing?
• How can we get customers more involved?
Medio Recycled Water Redundant Pipeline

Temporary re-purposed RW main for sewer force main

- Out of service until 2023
- Mix of potable & recycled water
- Total reliance on Leon Creek WRC
Project Background

• In response to SSOs
• Emergency was declared
• Divert 8 MGD from existing 42-inch sewer to Medio Creek WRC
• Allows for inspection, cleaning and repair of existing pipeline downstream
Medio Sewer Diversion Location

30" CSC RW main

Diversion Suction Point:
Skid-mounted pumps
and above ground
HDPE pipe.
Up to 8 MGD.
Huebner Creek Project Phasing

• Phase I
  – Culebra to Ingram
  – Completed Fall 2012

• Phase II
  – Ingram to Leon Valley City Limits
  – Estimated Completion July 2015

• Phase III
  – Leon Valley City Limits to Bandera
  – Estimated Completion April 2018
Huebner Creek Project Phasing

• Phase III
  – Leon Valley City Limits to Bandera
  – Tie-in near Bandera Rd.
Recycled Water Users Handbook

- In process of being updated
- Reflect program requirements for use of recycled water
- Posted on web site for review and comments
Recycled Water Model

• Hydraulic analysis of customer connections
• System response
• Capacity
Recycled Water Customer Inspections

Evidence of current testing and maintenance (T&M) record of recycled water backflow devises. Tests, maintenance and repair of backflow prevention assemblies shall be made by a licensed Backflow prevention assembly tester. The customer shall maintain accurate records of tests and repairs to backflow prevention assemblies and provide SAWS with copies of such records via the Test and Maintenance report form.

Appropriate signage
Minimum size = 8” x 8” (TCEQ) and posted on site location where general public can view (CSA Ordinance)

Appropriate color for exposed pipe and/or appurtenances

Recycled water used on-site as specified in contract (Irrigation, cooling, industrial)

Condition of on-site system
Customer notifications

• Inform customers of outages or interruptions
• Mirror a “robo call” currently in place with water outages
• Concept meetings
• Strive to send out notifications in timely manner
• Importance of current customer information
Questions?