

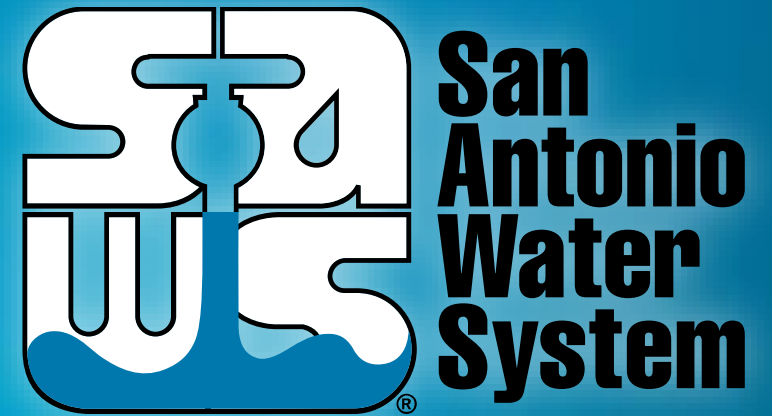
San Antonio Water System Recycled Water Customer Workshop

Pablo Martinez

Planner III – Water Resources

Recycled Water Customer Workshop

February 12, 2020



MAKING SAN ANTONIO
WATERFUL



Purpose of Workshop

Why are we here?

- Rules and Regulations
- Purpose of service agreement
- Best management practices
- Planned improvements
- Networking opportunity
- Answer any questions



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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



Recycled Water Quality

TAC Chapter 210 Standards		
Constituent	Regulatory Standard	SAWS 2019 Analytical Results
BOD 5	5 mg/l	2.11 mg/l
Turbidity	3 ntu	0.82 ntu
E-coli form	< 20 cfu/100 ml	1.29 cfu/100 ml

Additional Contractual Standards		
Constituent	Contractual Standard	SAWS 2019 Analytical Results
NH3-N	< 2.0 mg/l	0.31 mg/l
pH	6.0 to 9.0 su	6.6 to 8.2 su
Total Suspended Solids (TSS)	< 15 mg/l	1.47 mg/l
Total Dissolved Solids (TDS)	< 1500 mg/l	752 mg/l
Sodium Adsorption Ratio (SAR)	< 5 meq/l	2.96 meq/l
Residual Sodium Carbonate (RSC)	< 1.5 mg/l	0 meq/l

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

**SAN ANTONIO WATER SYSTEM
RECYCLED WATER SERVICE AGREEMENT**

Effective Date: _____ Contract No. _____

PROVIDER:
San Antonio Water System (SAWS)
2800 U.S. Hwy 281 North
P.O. Box 2449
San Antonio, Texas 78212-2449

USER:

For the consideration provided herein, SAWS agrees to supply and User agrees to accept, store and use recycled water service in accordance with the terms and conditions of this Recycled Water Service Agreement (the "Agreement"). This Agreement incorporates and is subject to all of the terms and conditions set out herein as well as all of the following: all applicable Attachments and Appendices attached hereto; the SAWS Recycled Water User's Handbook (the "User's Handbook"), as it may be amended from time to time; the SAWS Cross Connection Control and Backflow Prevention Program, as it may be amended from time to time; and all applicable local, state, and federal statutes, ordinances, and regulations, as they may be amended, now or hereafter in effect ("Applicable Laws"), including, without limitation, Chapter 210 of Title 30 of the Texas Administrative Code and Article VIII of Chapter 34 of the City of San Antonio Code (the "City Code").

This Agreement contains and is subject to the provisions of the Appendices indicated below. In the event of a conflict between this Agreement and any applicable Appendices, the provisions of the applicable Appendices shall control.

Appendix One - Conversion Benefits: Applicable? yes ☐ no ☐

Appendix Two - Exchange Documents: Applicable? yes ☐ no ☐

Appendix Three - Other: Applicable? yes ☐ no ☐

I. Use

a. General. User covenants and agrees to use the recycled water provided under this Agreement (the "Recycled Water") only as authorized by Applicable Laws, and in accordance with the User's Handbook and the SAWS Cross Connection Control and Backflow Prevention Program.

b. Specific. Notwithstanding other uses authorized under Chapter 210 of Title 30 of the Texas Administrative Code or Chapter 34 of the City Code, User agrees to use the Recycled Water only for construction, commercial, industrial, or irrigation purposes and in accordance with all the terms and conditions of this Agreement. User agrees to use the Recycled Water only for the purpose(s) and in the location(s) described in Attachment A hereto. User agrees to obtain SAWS' written consent prior to using the Recycled Water for a purpose or at a location not described in Attachment A. Any changes to the purpose and location of use of the Recycled Water must be reflected in a substitute Attachment A and attached hereto. User agrees to take steps to minimize the risk of inadvertent human exposure to the Recycled Water. SAWS may terminate this Agreement immediately, in its sole discretion, if SAWS determines that User has failed to use the Recycled Water in accordance with Applicable Laws, this Agreement, and/or Attachment A.

1

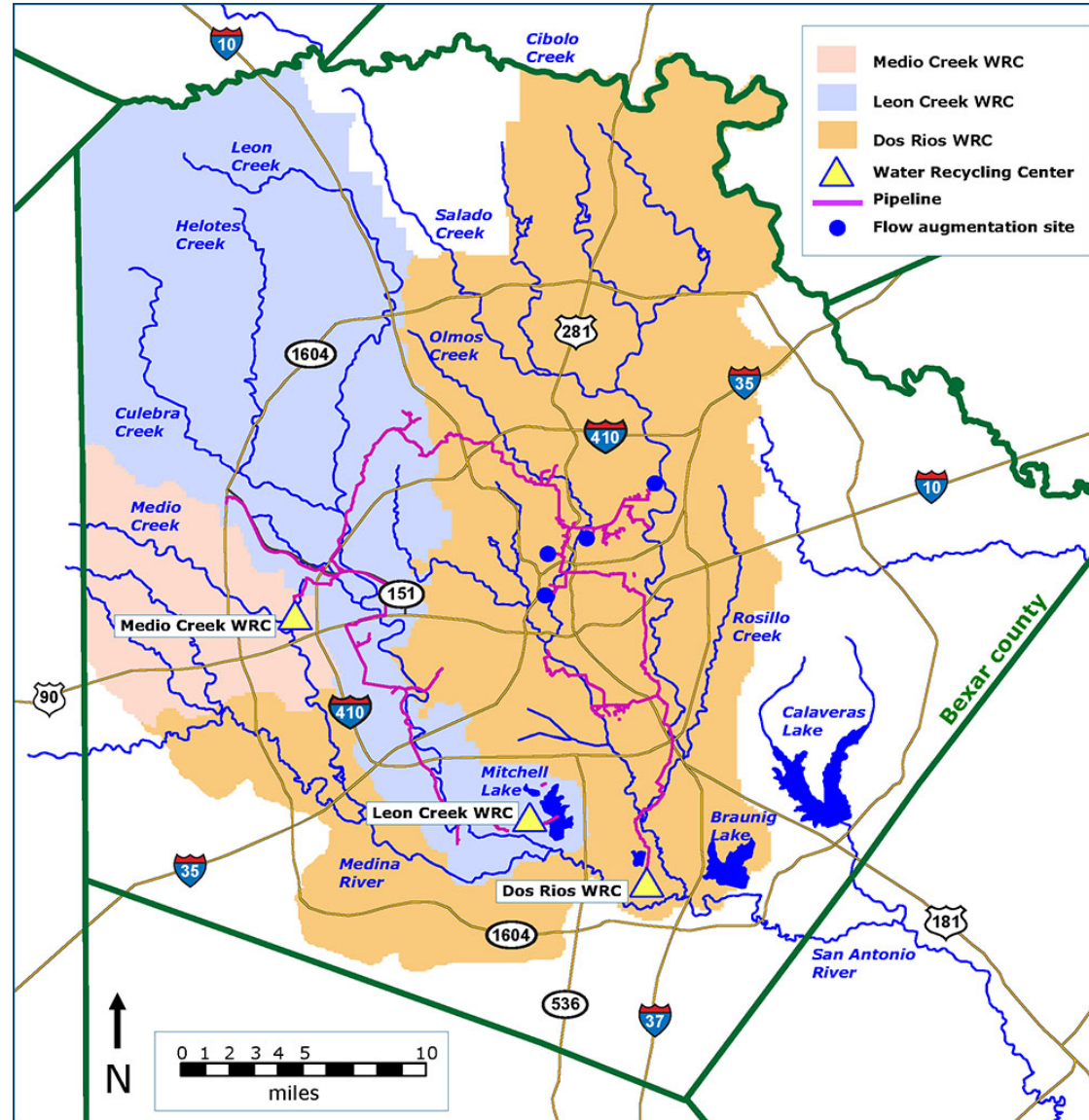
Master Planning

Technical Elements / Hydraulic Model

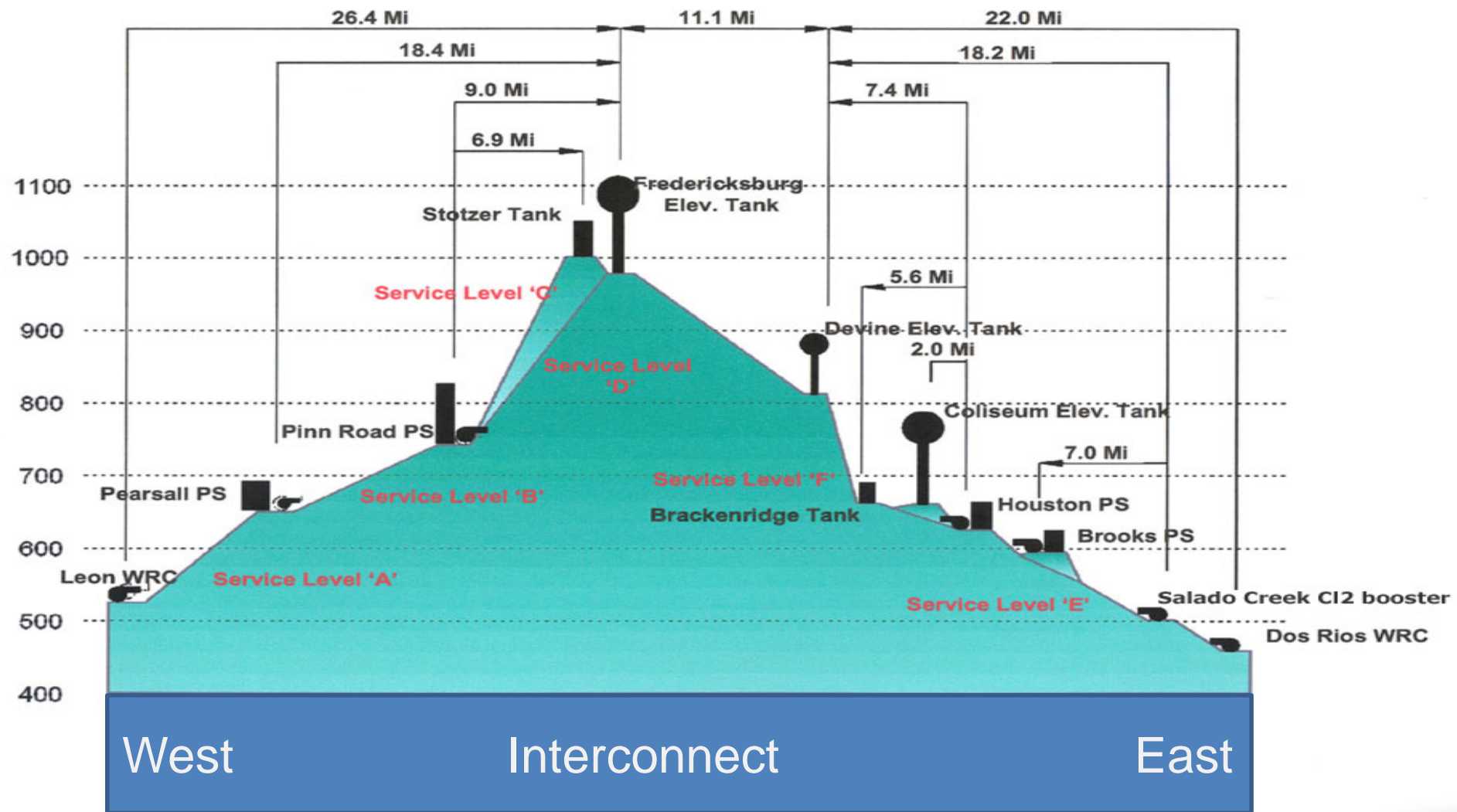
- Dynamics of the system
- User demands and peaks usage
- Infrastructure Needs



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 SAWWS
- 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



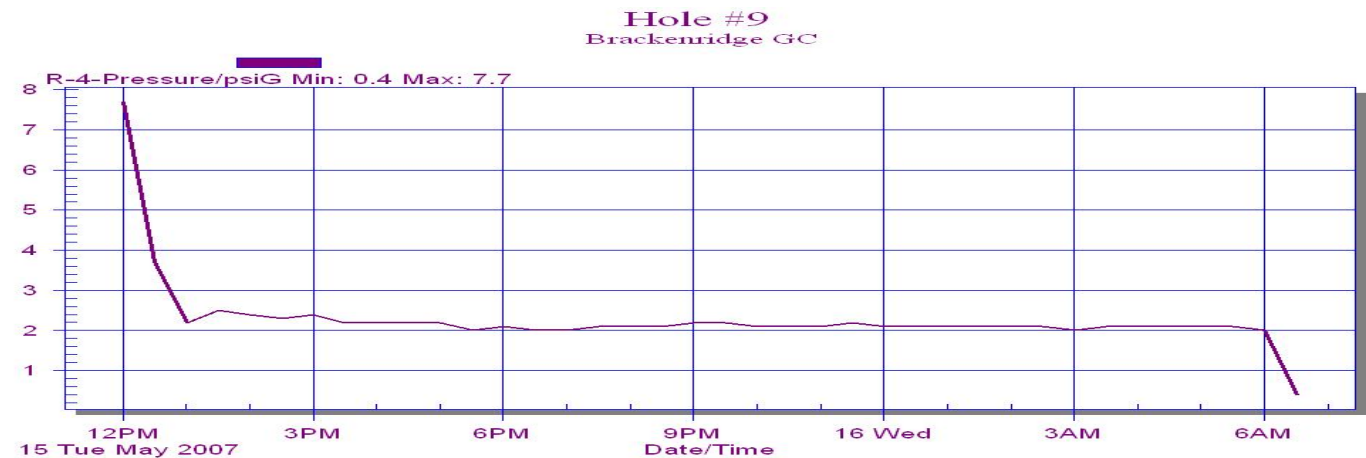
Additional Requirements

- 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 - SAWWS 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

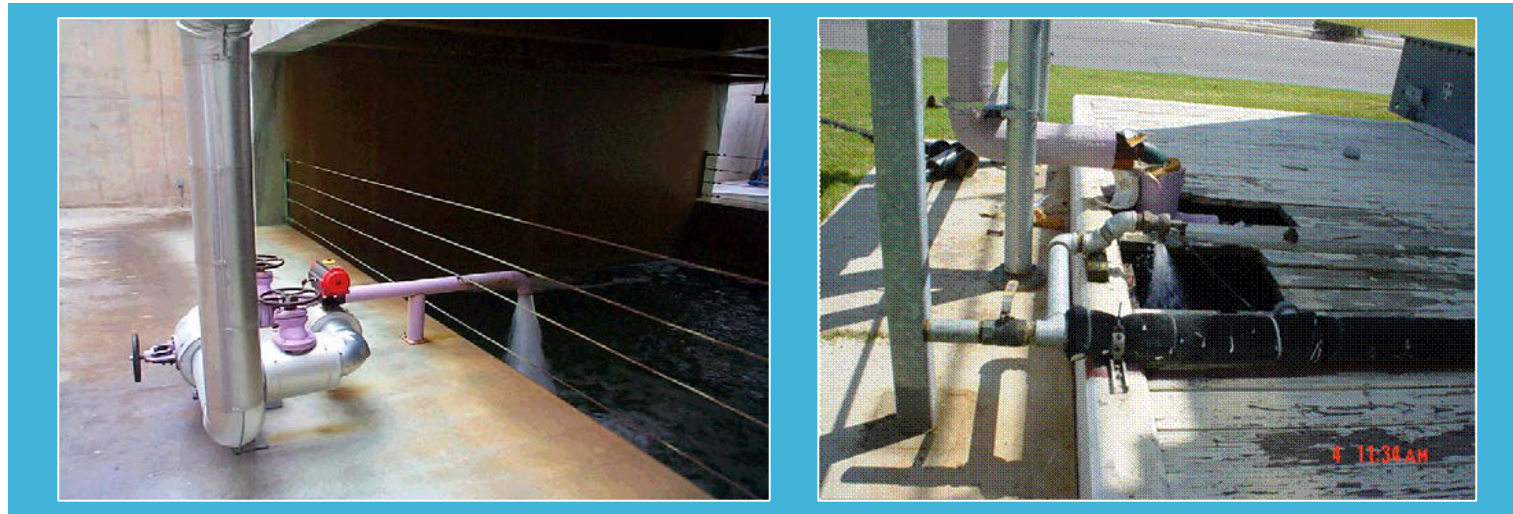
Must be in a location where the public can see them



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



Break Time



New Recycle Program Projects



Transforming Water Management

Water Pigeon

What is it?

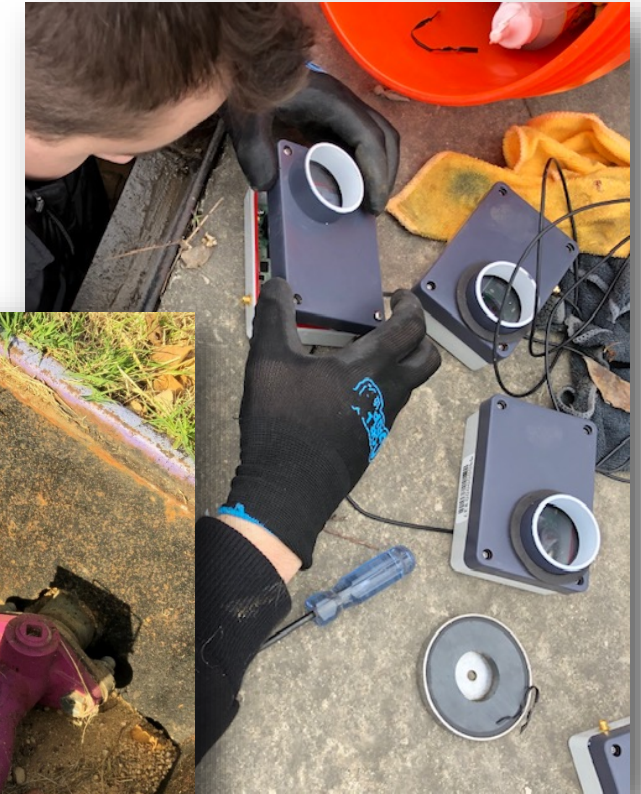
- OCR technology
- How does it work?
- Advantages in Implementation
 - Inexpensive
 - Quick installation w/o a meter change
 - Data collection through a cellular network that uploads onto a dashboard
 - 15-year battery (6 reads a day)



Water Pigeon

What is it ?

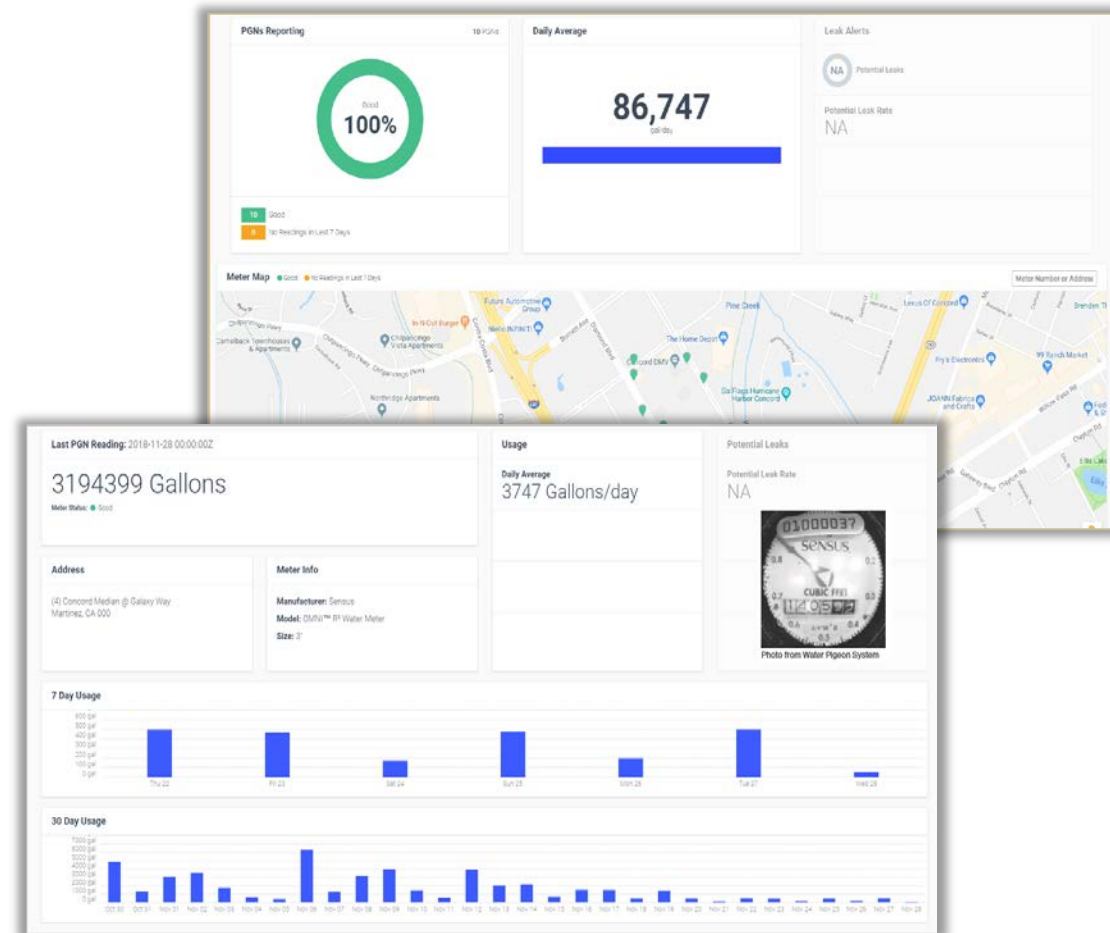
- Advantages as a tool in our toolbox
 - Reduced windshield time
 - Remote auditing with photo validation
 - High resolution water consumption data
 - Improved hydraulic model
 - Improved customer service



Water Pigeon

Evaluation Period and Goals

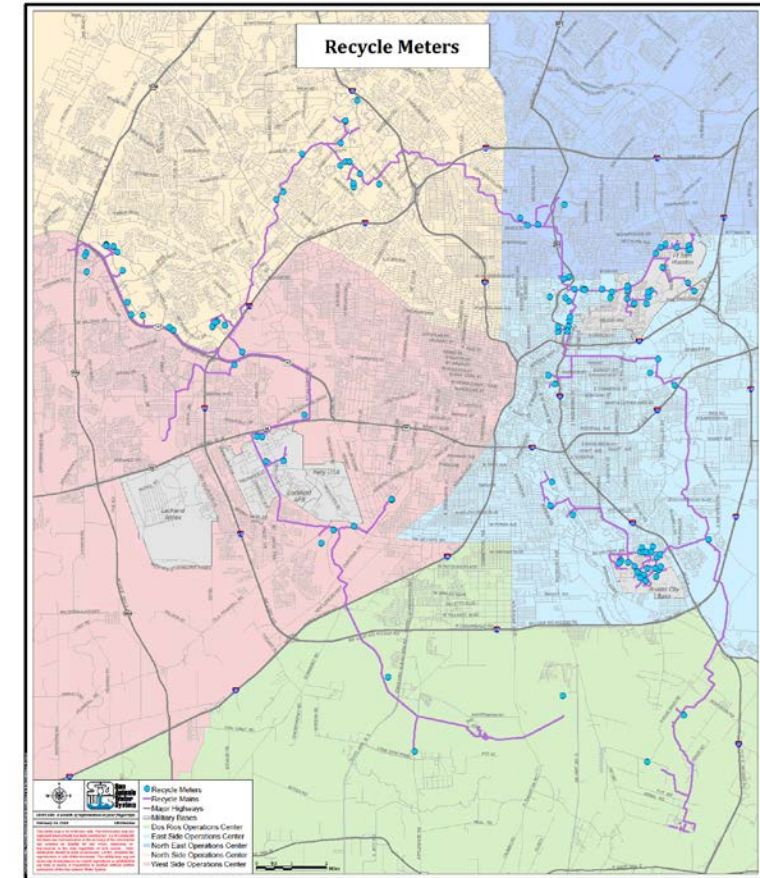
- Project time table
- How reliable is this technology?
 - Can we address issues in the field in a timely matter?
 - Can this technology handle a variety of meter box environments
 - Viewed on dashboard
- Can this information be used for billing?
- How can we get customers more involved?



Medio Recycled Water Redundant Pipeline

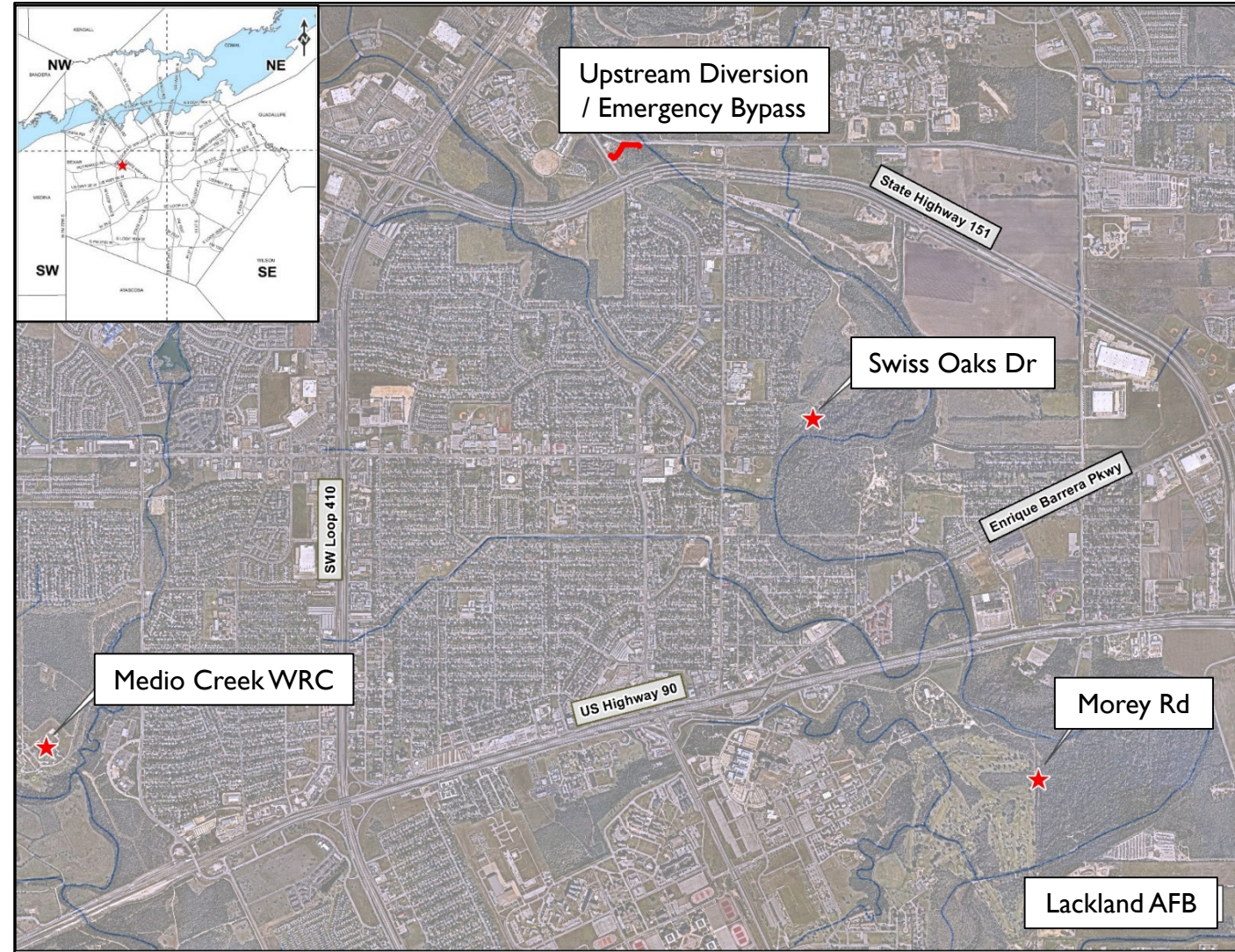
Temporary re-purposed RW main for sewer force main

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

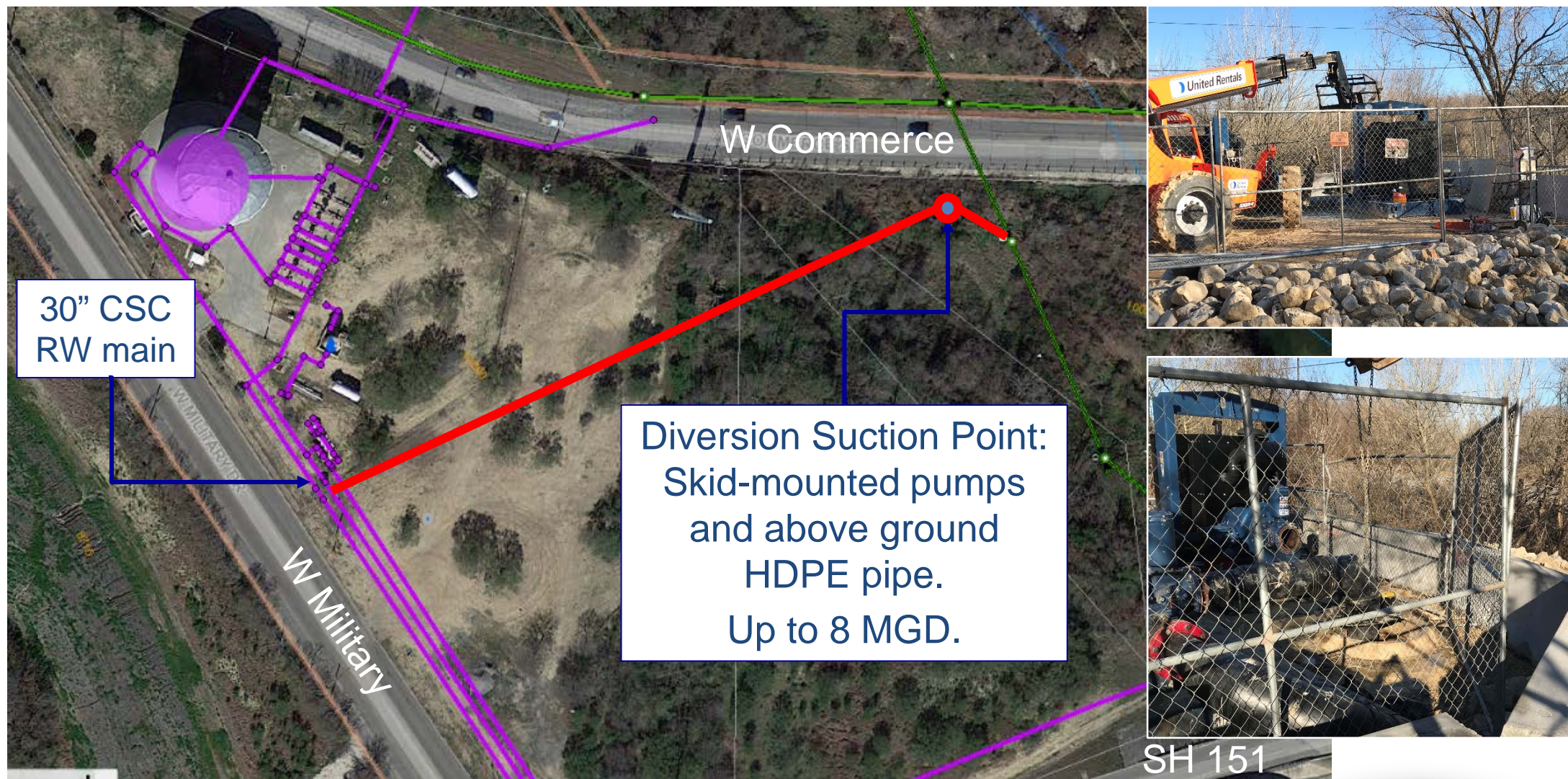


Project Background

- 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

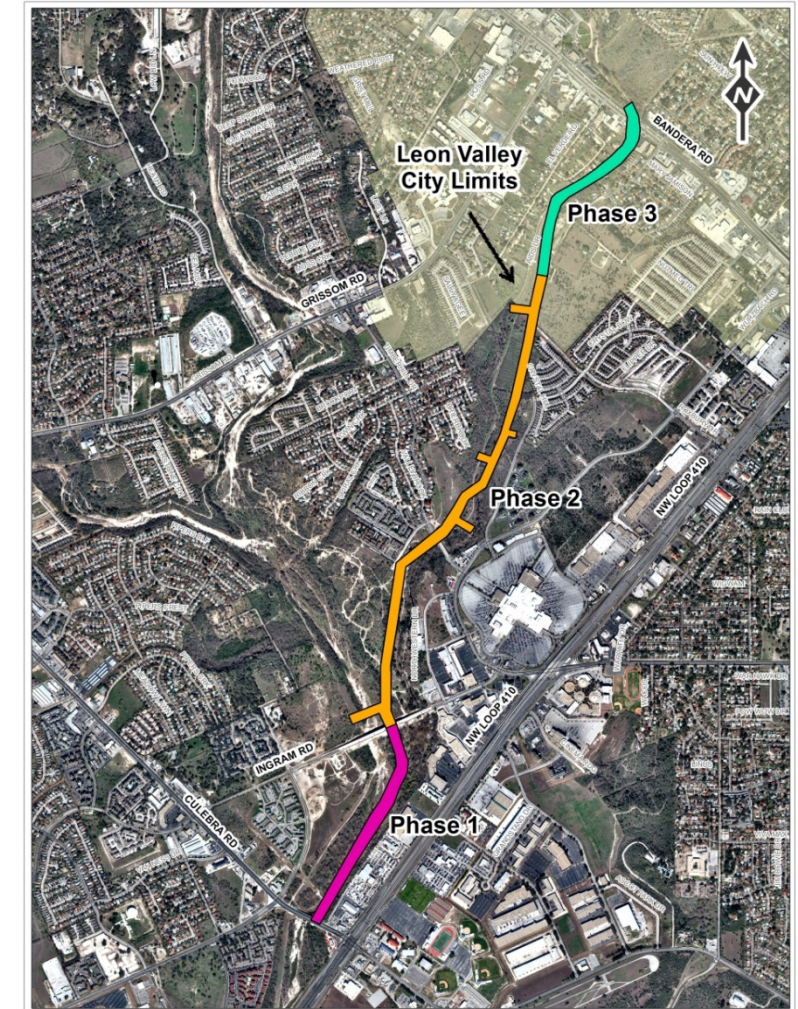


Medio Sewer Diversion Location



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 devices. 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?



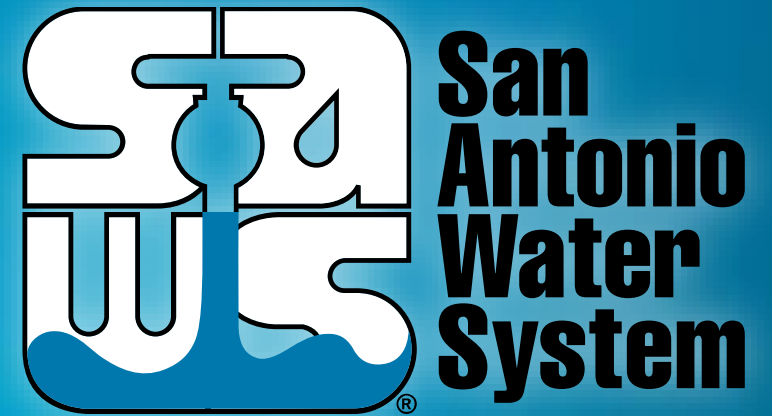
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