Tell Cee Vee - System Failure Restoration and Review

Board of Directors Meeting July 20, 2022

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Red River Authority of Texas

Presentation Summary

- System Overview
- What Were the Issues?
- What Was the Response?
- Challenges
- Results of Restoration
- Regulatory Component
- Customer Concerns
- Moving Forward

Tell Cee Vee Overview

- 187 Accounts (45% of District 14)
- Population served: 390
- Service Density: 2 connections/mile
- 98 miles of distribution lines
- 1 Booster Pump Station (Airport Booster)
- 2 Pump Stations (Airport, Cee Vee, 20K-gallon GST each)
- 1 Stand Pipe Storage Tank (Tell Tank, 32K gallons)
- Monthly Pumpage 2,658,000 gallons (5 year average)

- Planned CIP (in progress):
  - Airport Ground Storage Tank Renovation $150,330
  - Cee-Vee Pump Station pumps, piping, control, GST and Pressure Tank $204,525

What Were the Issues?

- Failure of Booster Pump at Airport Booster Station
- Failure of Inlet Outlet Valves at Airport Booster Station
- Telemetry Failure at Airport PS/Booster
- No Exact Replacement for pumps
- Two week Turn-Around for Pump Order
- Leaks in Airport/Tell System (initially)
- Airlock to Cee Vee Tank (after repairs)
- Leaks in Cee Vee System
- Inability to effectively communicate to customers the issues

What Were the Issues? Continued

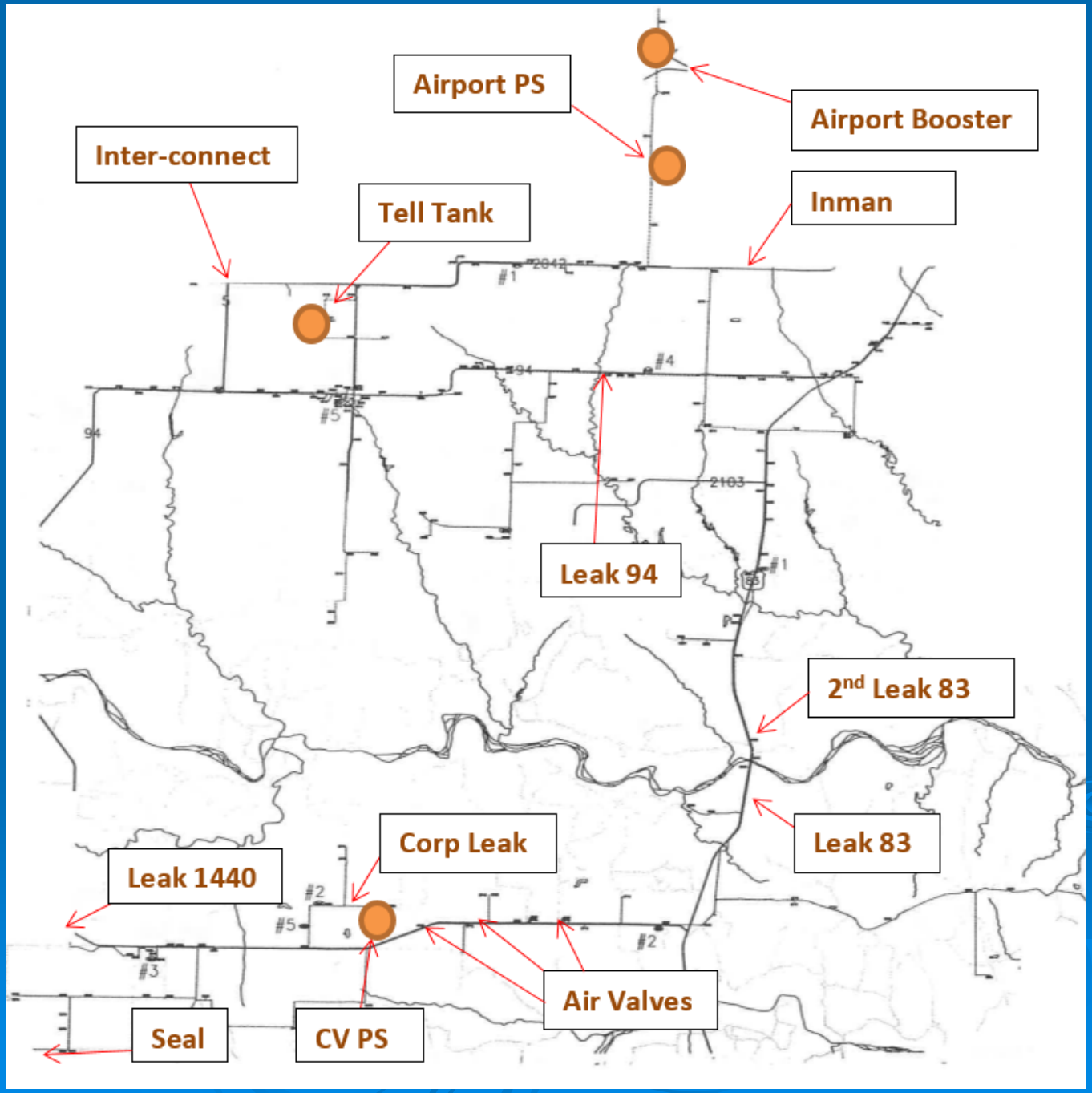
Leak at Hwy 83

Old Motors at Booster

Corp Leak CR 166

Leak near 1440

Map of Tell Cee Vee



What Was the Response?

- Investigation by DM determined motor/pump failed
- One smaller pump brought in from Box station temporarily
- Two new pumps were ordered, one pump repaired
- System pressures checked
- Valves were narrowed in areas to keep pressure up
- Airport PS was put in bypass mode periodically
- Interconnect with Carey system opened to provide water

What Was the Response? Continued

- Lines were checked for leaks using vehicles and ATV
- New 100 amp breaker box installed at Airport Booster
- Leak repair made at Highway 83
- Bottled water offered to customers
- Meters Checked for High Consumption

Timeline of Actions

Thursday May 12	➢Pump/motor at Airport Booster Station failed, pressure in distribution system drops with no water to Airport Pump Station ➢Leak repaired at Airport Booster Station
Friday May 13	➢McGee Electric brought in to test/fix motors & blown fuses ➢Boil Water Notice issued for Tell Cee Vee System ➢One smaller pump/motor brought in from Box station to keep system operational
Saturday May 14	➢Delivered water to customers ➢Installed new fill valve at Tell Tank
Monday May 16	➢Fuses Blown at Booster Station Replaced ➢Staff begins looking for leaks in system (24 Hour 15/16)
Wednesday May 18	➢Two new pumps ordered from Wagoner and Sons ➢Customer calls on low pressure
Thursday May 19	➢Leaks repaired on 4-inch and 3-inch lines in Airport/Tell area
Monday May 23	➢One failed pump/motor taken to Pump Equipment Co rebuild ➢Leak repaired on 2-1/2” line in Airport/Tell area

Timeline - Continued

Wednes. May 25	➢Staff met with High Tide Technology on Telemetry solution
Friday, May 27	➢Second Boil Water Issued for System when water outage occurs ➢Backhoe sent for repairs, rental picked up
Saturday May 28	➢Rebuilt pump installed at Airport Booster ➢Staff looking for leaks over the next 4 days ➢5-inch Line in Cee Vee repaired (Cee Vee had no issues before)
Monday May 30	➢Inter-connect with Carey Northfield System opened assist pressure
Tuesday May 31	➢Fill Valve reworked at Airport PS to ensure proper operation
Friday June 3	➢Boil Water Notice Rescinded, First use of Customer Notification
Monday June 6	➢Two new pumps installed, but only producing 47 gpm (24 Hour 6/7) ➢Boil Water Notice Issued when system lost pressure
Wednesday June 8	➢TCEQ inspects system and finds pressures ok in areas checked ➢Mike Mason of Pump Equipment tests pump curve of new pumps ok
Thursday, June 9	➢Leak found at Highway 83 ➢Meters reads in system to ensure no high consumption
Friday, June 10	➢Airport Booster Inlet and Outlet Valves found deteriorated, replaced restoring 110 GPM, 100 Amp Breaker Service Installed ➢4-inch line along Highway 83 repaired

Timeline - Continued

Saturday June 11	➢Calls of low pressure in Cee Vee area (no issues since 29th) ➢Staff looking for leaks and trying to charge tank
Sunday June 12	➢Staff checking Airport to ensure system ok ➢Staff checking pressure to find potential air lock to CV PS ➢24 hour monitoring of area began
Monday June 13	➢Pressure differential of 99 to 45 to 20 PSI found along FM 1440. Staff installs several air blow off valves along FM 1440 to remove airlock to CV PS. CV Tank only getting 18-25 GPM
Tuesday June 14	➢CV sectioned to 3 areas to fill 1 at a time. System still losing water
Wednesday June 15	➢Leak found at corp stop on CR 166 ➢System fill continued but airlock found along FM 1440 west end. ➢Meeting with Kerry Maroney P.E. to determine GPM at CV Tank
Saturday June 18	➢Leak found near FM 1440 west end ➢This location had to be repaired again on consecutive days. ➢24 hour monitoring ended
Monday June 20	➢All customers back in water
Wednesday June 22	➢Boil Water Notice Rescinded

Timeline - Continued

Thursday June 30	➢Calls of low pressure in Tell Area South of Highway 94 ➢Staff looking for leaks, in contact with customers who called
Saturday July 1	➢Staff checking Airport to ensure system ok ➢Staff checking meters to ensure no leaks, one meter closed ➢Staff installing valves to narrow potential leak location
Monday July 4	➢Staff replaced old regulators on meters to improve pressure ➢Continued to look install valves to narrow system and look for leaks ➢Wichita office in contact with customers (believed to be 5 affected)
Wednesday July 6	➢Low pressure calls came in from other areas of Tell, shorted wire on compressor repaired, Notification System first used for area. ➢Leak narrowed between CR 5 and CR 6 (more customers affected)
Thursday July 7	➢Leak found on 2” line at creek bottom along HWY 94, ➢Customer back to normal pressure
Saturday July 9	➢Calls of water outage in Cee Vee ➢Staff looking for leaks, new leak on HWY 83 repaired ➢Boil Water Notice Issued. Notification System used.
Sunday July 10	➢Air valves used overnight to improve flow, water restored
Wednes. July 13	➢Boil Water Notice rescinded

Cee Vee Outage Response

- Regional Manager and DM determined airlock to system
- Lines were checked for leaks using vehicles and ATV
- Nine Air Blow-off Valves installed along FM 1440
- Leak repairs CR 166 and FM 1440
- Customer Notification System used extensively
- Meters Checked for High Consumption
- Bottled Water Offered to Customers
- Site Glass Repaired at Station

Tell Cee Vee Challenges

- Terrain – Grade Changes, Leak Flow
- System Length – 98 miles of pipeline
- Infrastructure Beyond Useful Life
- No Redundancy in Distribution Lines
- Lack of Automation – SCADA, Meters
- Carey Project Running at same time
- Backhoe sent for repair on May 27
- Competing Leaks in other systems

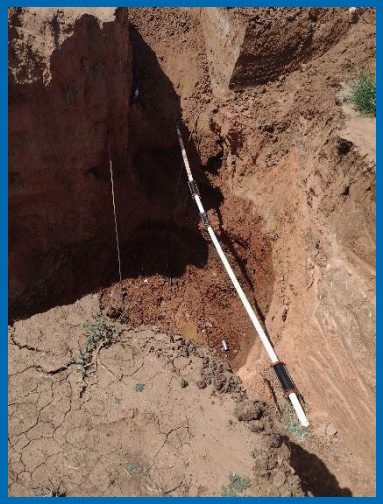
Authority Challenges

- Aging Infrastructure Beyond Useful Life
- Loss of Experienced Personnel (111 yrs exp.)
- Low Experience in New Personnel (13 yrs exp.)
- O&M and Capital Expenditure Constraints
- Response Time in Rural Systems
- Small Pool of Contractors to respond to technical issues
- Inability to Acquire Parts in Timely Manner
- Extreme Weather Conditions
- Inflated Cost of Materials
- Remote areas with rough terrain

Results of Restoration

- Two new valves, two new pump/motors, and 100 amp service installed at Airport Booster -reliability
- Seven Line Repairs
- Hightide to provide quote to install SCADA at Airport Booster/PS to provide telemetry control (7-7-2022)
- Customer Notification system now in place
- Scheduled CIP in staging at Cee Vee PS
- 2-inch line repair to be replaced at FM 1440 bore
- Air Blow-offs installed, but ARV needed at Hwy 83
- Total Staff Hours: May 478/265 OT June 1001/465 OT

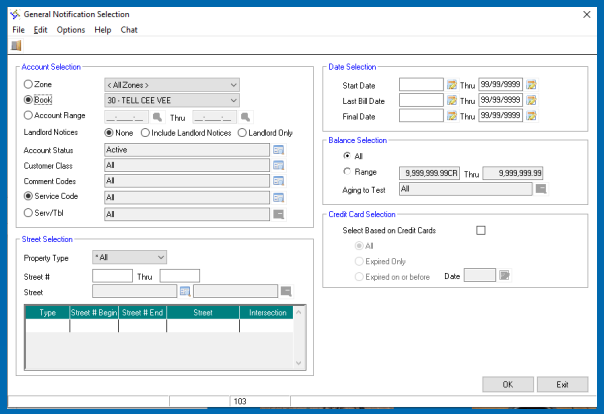
Results of Restoration - Continued



Repair near 1440

New Pump/Motors
Airport Booster

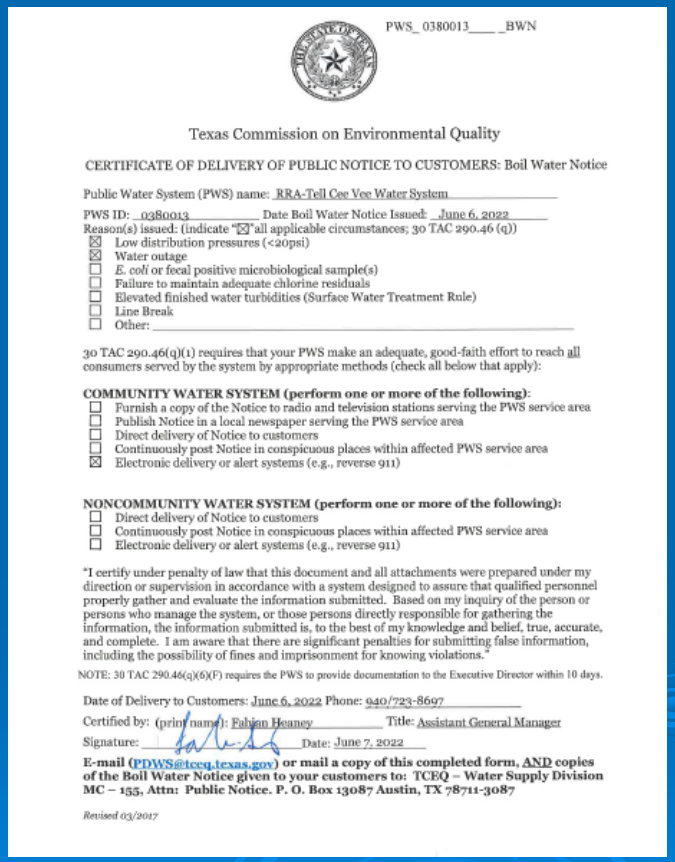
Air Blow Off



Notification System

Regulatory Component

- Meeting with TCEQ Inspectors to Review System
- 3 Boil Water Notices Issued
- Bacteriological Sampling, pressure readings, & chlorine residuals taken to remove BWN
- Follow-up of requested information to TCEQ (MORs, system connections, complaints, and the pump curve for Airport Booster)



PWS_ 0380013____ _BWN

Texas Commission on Environmental Quality

CERTIFICATE OF DELIVERY OF PUBLIC NOTICE TO CUSTOMERS: Boil Water Notice

Public Water System (PWS) name: RRA-Tell Cee Vee Water System

PWS ID: 0380013 Date Boil Water Notice Issued: June 6, 2022

Reason(s) issued: (indicate "☒"all applicable circumstances; 30 TAC 290.46 (q))

- ☒ Low distribution pressures (<20psi)
- ☒ Water outage
- ☐ *E. coli* or fecal positive microbiological sample(s)
- ☐ Failure to maintain adequate chlorine residuals
- ☐ Elevated finished water turbidities (Surface Water Treatment Rule)
- ☐ Line Break
- ☐ Other: _____

30 TAC 290.46(q)(1) requires that your PWS make an adequate, good-faith effort to reach all consumers served by the system by appropriate methods (check all below that apply):

COMMUNITY WATER SYSTEM (perform one or more of the following):

- ☐ Furnish a copy of the Notice to radio and television stations serving the PWS service area
- ☐ Publish Notice in a local newspaper serving the PWS service area
- ☐ Direct delivery of Notice to customers
- ☐ Continuously post Notice in conspicuous places within affected PWS service area
- ☒ Electronic delivery or alert systems (e.g., reverse 911)

NONCOMMUNITY WATER SYSTEM (perform one or more of the following):

- ☐ Direct delivery of Notice to customers
- ☐ Continuously post Notice in conspicuous places within affected PWS service area
- ☐ Electronic delivery or alert systems (e.g., reverse 911)

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."

NOTE: 30 TAC 290.46(q)(6)(F) requires the PWS to provide documentation to the Executive Director within 10 days.

Date of Delivery to Customers: June 6, 2022 Phone: 940/723-8697

Certified by: (print name): Fabian Heaney Title: Assistant General Manager

Signature: Date: June 7, 2022

E-mail (PDWS@tceq.texas.gov) or mail a copy of this completed form, AND copies of the Boil Water Notice given to your customers to: TCEQ – Water Supply Division MC – 155, Attn: Public Notice. P. O. Box 13087 Austin, TX 78711-3087

Revised 03/2017

Customer Concerns

- No Water!
- Lack of Communication on Issues
- Perceived Lack of Staff Working on Issues
- Length of Time Out of Water/Low Pressure
- Repetitive Outages
- Loss of Confidence Issue Would be Solved
- Technical Ability of Staff

Moving Forward

- Continue to Improve Communication with customers and Use of Notification System
- Improve Interior Staff Communication
- Develop an SOP for Outage Response
- Develop Preparedness Plan – Employee Training, Parts on Hand
- Digitize Existing Maps, Develop GIS System
- Continual Review of System Reliability
- Continual Review CIP Prioritization

Moving Forward - Continued

- Increase Frequency of Employee Training Sessions (currently once per year)
- Emphasis on Employee Continuing Education and Professional Organization Participation to increase Skill Sets (TRWA and TWUA)
- Review On-hand Supplies and Truck Equipment to be better prepared for incidents
- Research TRWA assistance on emergencies
- Consider authorizing ad-hoc emergency contracts with retired employees

Moving Forward – Implementation

- Establish protocols and SOPs for responding/reporting outages 1hr, 2hr, BWN etc. In place July 2022 (not needed before due to the experience of DMs/staff)
- Better documentation of efforts to retain and share what is learned during events. In place July 2022
- Use of the pothole machine to expedite line location and taps and meter swaps. Machine purchased in May 2022, placed in for shop for rehab June 2022 expect receipt late July early August 2022
- Utilize second backhoe for work and construction projects. Backhoe was received July 1st.

Moving Forward – Implementation

- Utilize new association with TRWA and their programs for assistance in meter calibration, training, rate analysis, leak detection, emergency power, drone, and GIS services. Joined association July 2022
- Airport Tank and Cee Vee Pump Station was on FY 2021-22 CIP already awarded to the contractor, contractor staging now to begin work on Cee Vee per our instruction. The Notice to Proceed on this project was July 12, 2021.
- Telemetry for Airport is awaiting contractor's quote.

Moving Forward – Potential Budget

- Add person at supervisory level with required water license and experience to assist Western RM
- Research salaries and determine if RRA is competitive enough to fill positions and retain good employees. Begin providing On-Call pay differential.
- Hire Construction Crew Leader to begin to address hotspots, lines with multiple repairs.
- Install AMI meters in entire system to free up DM's so they have time to actively address projects
- Install Air Release Valves strategically to replace manual blow-off taps operated taps

Moving Forward – Potential Budget

- Expand onsite inventory to include larger valves and motors.
- Expand tools on the trucks to make sure all employees have adequate resources
- Purchase smartphones to increase communication with the field staff, while also allowing for data entry, sharing of media, GPS locating, and monitoring of vehicle use

Conclusion

- The biggest problems are aging infrastructure and inexperienced employees. As our crews gain knowledge and experience, and become better equipped, the recovery and response times will shorten.
- As in Lockett and Truscott, once the initial problem is identified and repaired, peripheral problems were created by the stresses of an old system. Often it is subsequent leaks and airlock that extend the loss of water or pressure. To the customer, it appears the system needs to be completely replaced. Once the repairs are made, the system returns to normal of service. Strategic use of capital replacements and upgrades will reduce frequency of outages.

Questions?