



Winter Storm Report

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Water/Wastewater Utilities

April 5, 2021

Legistar ID PUB21-056

Agenda

Water

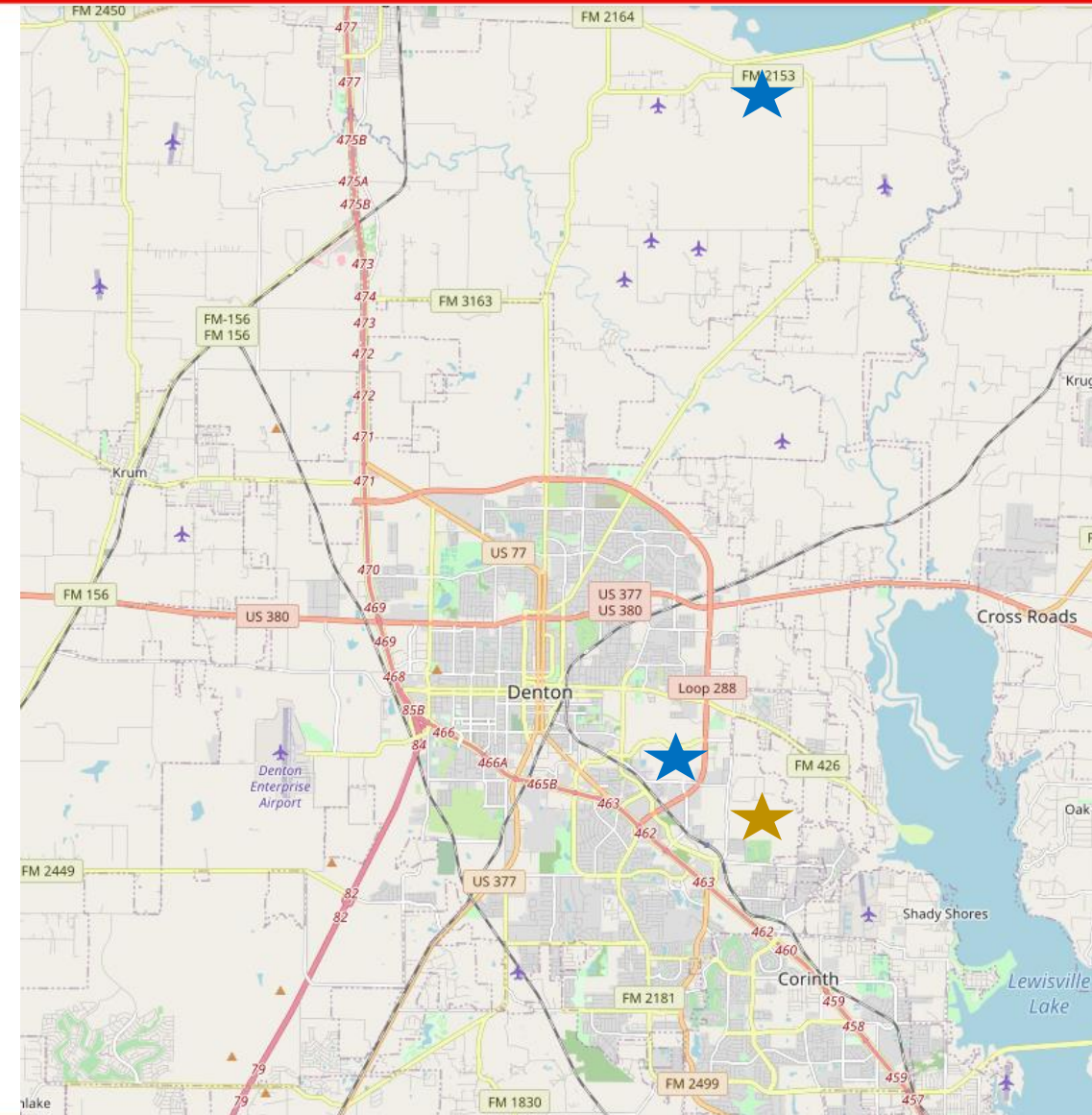
- Operations
- Impact
- Change in Operation
- Cause
- Lessons Learned/Improvements

Wastewater

Public Communication/Boil Water Advisory

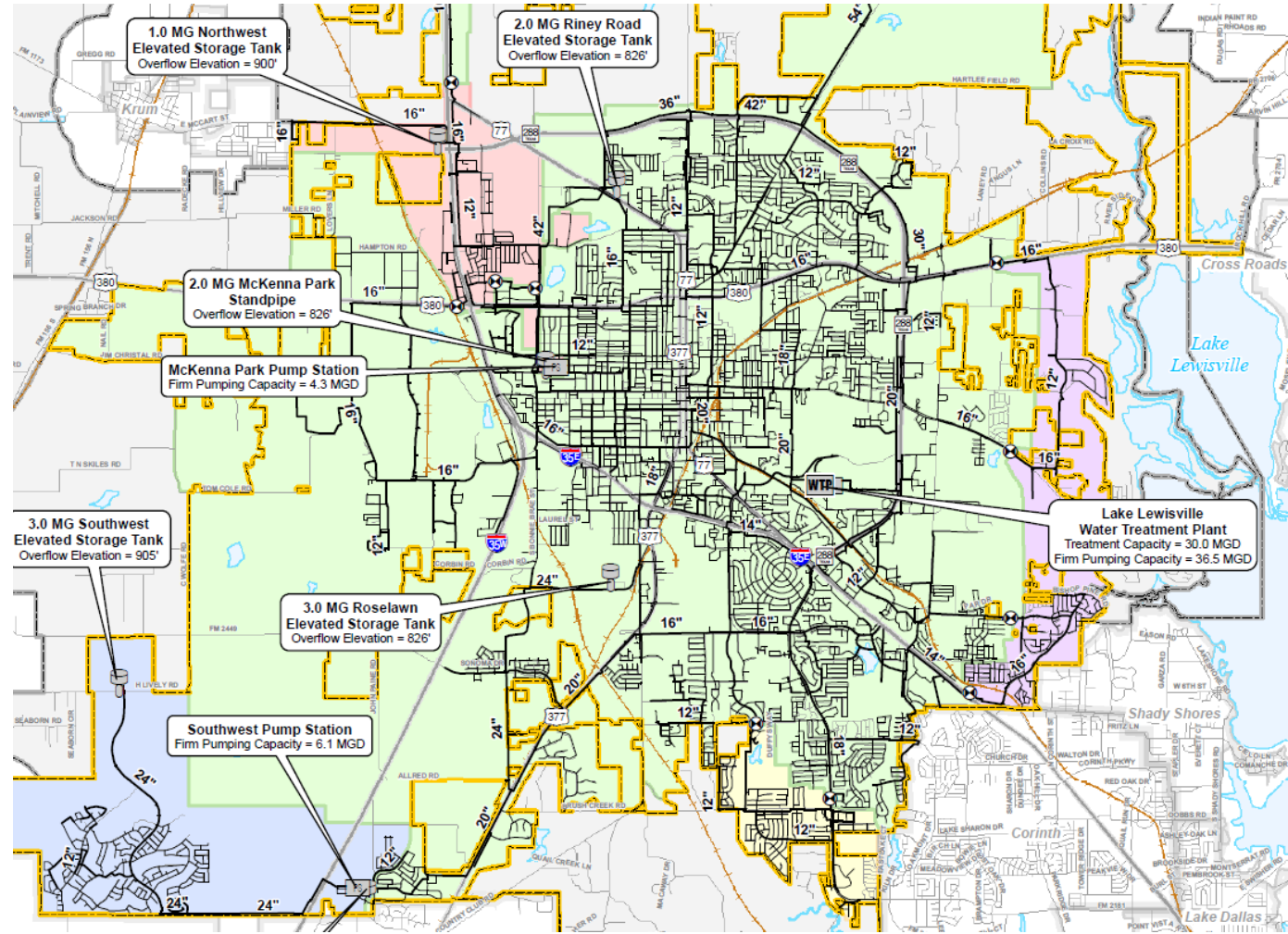
Lessons Learned and Improvement Opportunities

What Worked



Water Department Operations

- Treatment: Two water treatment plants function normally to produce a typical winter demand of 13-15 MGD
 - Ray Roberts: 3-5 MGD
 - Lake Lewisville: 10 MGD
- Storage Capacity (25 MG):
 - 5 Elevated (11 MG)
 - 3 Ground Storage Tanks (Clear wells 14MG)
- Distribution Pressure: between 50 to 80 psi.
- Metering: Approx. 39,000 residential meters



What Happened and Why

WHAT HAPPENED

Not able to maintain constant treatment plant output

- Rolling Power Outages and Freezing

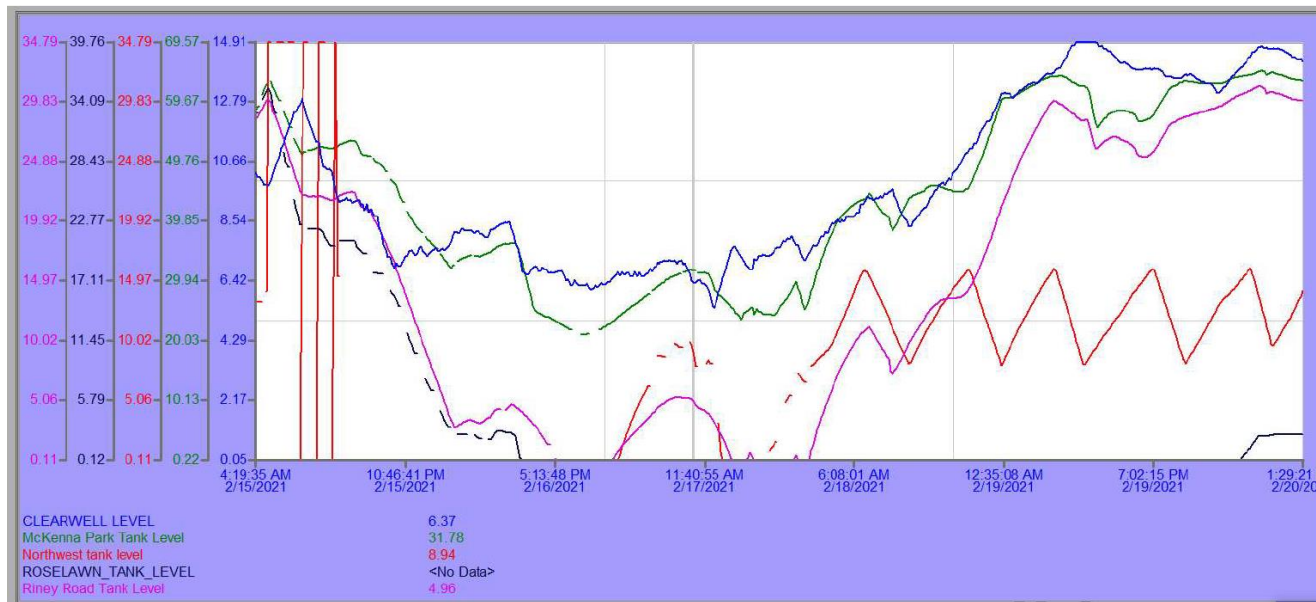
Peak water demand 100% higher than normal (30 MGD) due to 'dripping faucets' despite conservation requests

Why

- Treatment:
 - Ray Roberts treatment facility had severe impacts due to rolling outages
 - 5 outages in 6 hours on Monday (2/15)
 - Ozone Generator failure
 - Failure of Backup Generators
 - Frozen chlorine feed lines
 - Lake Lewisville treatment facility
 - Intake pump issues (Electrical Phase Imbalance)
 - Limited water production capacity
- Resulted in water production capacity that could not match demand for three days (Mon - Wed)



What Happened and Why



- Storage: Significant drop in water levels at all storage facilities (10 to 15% full)
- Distribution: Higher than normal main breaks due to freezing temperatures
 - Avg 3 breaks/week
 - Feb 13 to Feb 20 had 16 water main breaks
- Metering: Significant increase in calls from residents primarily to turn water off or report leak
 - Avg 90 tickets/week
 - Feb 13 to Feb 20 had 740 tickets
- Other:
 - Staffing
 - Unreliable Communication
 - Transportation

Mitigation - Change in Operation

- Issued notice requesting residents to conserve water
- Treatment:
 - Ray Roberts treatment facility
 - Monday (2/15) afternoon switched to Generators
 - Continuous power supply restored.
 - Replaced damaged electronic components for the Ozone Generator
 - Changed the chlorination process - began using bleach to chlorinate
 - Lake Lewisville treatment facility
 - Electric Supply Phase Imbalance - Water and DME staff worked tirelessly for three days trouble shooting and implementing interim solutions until they found and fixed the issue.
 - Focused on stabilizing plant operations and increasing water production capacity to meet the demand - 30 MGD

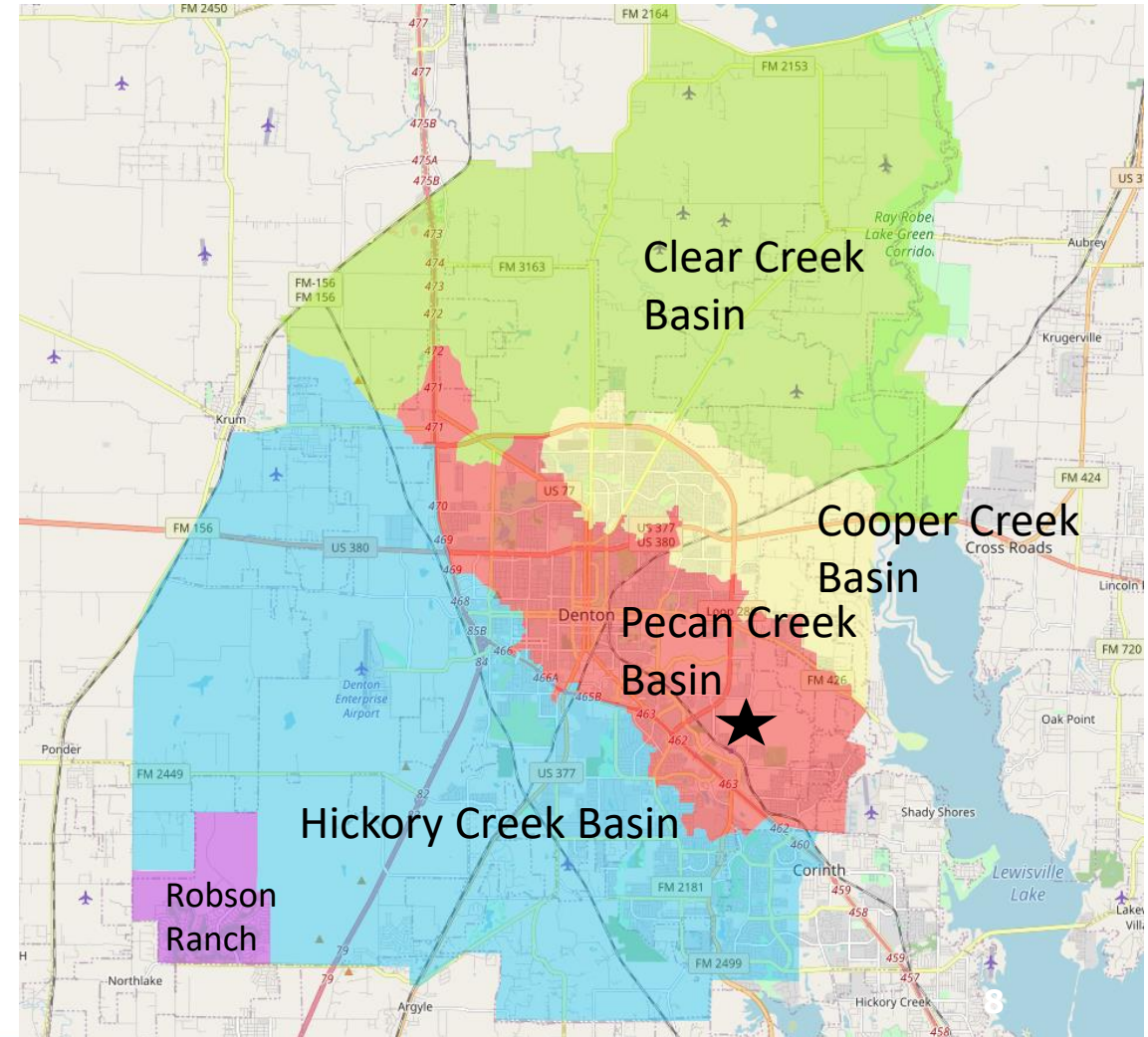


Mitigation - Change in Operation

- Storage: Constantly tracked water levels at all storage facilities and isolated/removed the Roselawn tank from the system.
- Distribution: Deployed wastewater crews to help with the considerable high number of main breaks
- Metering: Significant increase in calls from residents
 - Significant overtime to address shut off water (280 hrs OT) (maintain/improve tank levels)
 - Customer service staff helped with the increase call volume (80 hrs OT)
 - Wastewater staff helped with the considerably high number of resident concerns

Wastewater Department Operations

- Weather Impacts
 - PCWRP saw 45% increase in flows as compared to normal Feb week
 - Sludge line freeze up at PCWRP
 - Filter backwash system freeze up at Robson Ranch reclamation plant
 - Bio-diesel and diesel fuel thickening impacted generators used for lift stations impacted by rolling outages.
- All issues were handled without incident
- Staff provided assistance to Water Production



Timeline – Public Communication

Date and Time	Water System Status	Public Notification
02-16-21 6:49pm	Water Levels in Storage Tanks begin dropping below acceptable levels	Conserve water notice
02-17-21 3:09pm	Water Levels in Storage Tanks improving (at 20%)	Conserve water notice
02-17-21 5:38pm	Pressure drop below 20 psi	Boil water notice
02-19-21 1:21pm	Pressure stabilized and Levels in Storage Tanks steadily increasing (at 65%). Sampling and Analysis	Boil water notice update
02-20-21 7:49am	Water Quality Results received Saturday (2/20) morning	Boil Water Notice Cancelled

#1 02-16-2021 at 6:49pm

CITY OF DENTON WATER ALERT: Do not run your water continuously to avoid frozen pipes bursting as pressure and water supply will drop citywide. Unacceptable low pressure may result in a boil water notice.

#2 02-17-2021 at 3:09pm

CITY OF DENTON WATER ALERT: Due to your water conservation efforts, we have been able to increase our water supply to 20% capacity. To allow our elevated tanks to refill, and to avoid a boil water notice and public health emergency, continued conservation will be critical throughout the day. At this time, we also request that faucets be kept closed and not permitted to drip or run continuously.

#3 02-17-21 at 5:38pm

The City of Denton has issued a Boil Water Notice on Feb. 17, 2021, for all the customers of City of Denton water utilities due to low water pressure. Boiling kills bacteria and other organisms in the water. Residents in the affected area should not drink water without boiling it first.

Customers should bring all water to a boil, let it boil for two minutes, and let it cool before using, or use bottled water. Boiled or bottled water should be used for drinking, making ice, brushing teeth, washing dishes, and food preparation until further notice.

#4 02-19-2021 at 1:21pm

BOIL WATER NOTICE UPDATE: Continue to boil water. Staff is working diligently to restore the depleted systemwide water capacity. The water levels in the storage tanks and the overall system are now at 65% and the water production operation at both the treatment facilities has stabilized. The water production capacity is slowly improving and pressures in the system have been operating at normal levels in the last 24 hours. Consistent with the TCEQ requirements, staff is collecting samples throughout the City for water quality testing. At this point staff anticipates lifting the advisory on Sunday if the test results are within acceptable range. Please visit www.cityofdenton.com and City of Denton social media channels for information.

#5 02-20-2021 at 7:49am

BOIL WATER NOTICE CANCELLED. The boil water notice for the City of Denton has been cancelled. Boiling water is no longer necessary for any human consumption or any other use. For more information please visit www.cityofdenton.com.

Action Items and Improvement Opportunities

Issue	Description	Options/Solutions
Public Communication	Messaging Clarity	Pre-determined messages
	Timing of Notices	Improved SOP/Emergency Plans
	Social Media Response	Policy Issues (PIO)
Weatherization	RR Chlorine System	Redesign/Weatherize (RR Regulatory Upgrade)
	Tank Level Instruments	Weatherize/Power Supply
	WW Sludge Line	Solids Handling Project
	Robson Ranch Backwash	Decommissioning in 2022
	Flushing Truck Bay	Backup Generator for heating the storage bays
Power Supply	RR Back-up Generators	Upgrade Generator Controls (RR Regulatory Upgrade SOW)
	Critical Load Designation	Verify critical load designation annually
	LL Intake Pumps	Resolved
Boil Water Advisory	Conflicting Information	New Communication Protocols for loss of pressure vs. Main Break
	Ability to Boil Water without Electricity	Bottled Water/In-house capabilities
Other	Chemical Inventory	Set new Winter Inventory Levels
	Emergency Planning and Management	Develop and Implement Incident Command System (NIMS)
	Staffing- I&C Personnel	Review Staff Levels/Cross Training
	Locating Facilities (meters, waterlines, etc.)	Geocode water/wastewater infrastructure, update GIS database
	Diesel Fuel gelling	Additives

What Worked

- Our Amazing Staff and their dedication
- Teamwork
- Our in-house lab helped us quickly turnaround the results and remove the boil water advisory
- Staff from several departments came together for helping the water department staff to address the issues
- Strong Leadership Team (CMO) that Constantly Supported Staff
- Constant and clear lines of communication among City staff
- Constant communication with residents



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Questions