



Citywide Boil Water Notice After Action Report and Improvement Plan

October 19, 2021



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Incident Overview

Real-World Incident Name	Citywide Boil Water Notice
Response Dates	October 19, 2021 - October 29, 2021
Type	Real-World Incident
Scope	Anomalous readings from a quarterly water quality test resulted in the issuing of a Boil Water Notice to the entire City of Killeen. The Boil Water Notice lasted ten days and affected the entire Killeen community.
Mission Areas	Response, Recovery
Core Capabilities	Infrastructure Systems Operational Coordination Situational Assessment Public Information and Warning
Objectives	<ol style="list-style-type: none"> 1. Return water supply to within drinkable limits and lift Boil Water Notice. 2. Provide community with prompt, reliable information in a timely, clear, and concise manner. 3. Provide effective delivery of bottled water to individuals and households that were unable to boil water.
Threat or Hazard	Drinking water became non-potable
Participating Organizations	City of Killeen Bell County Water Control and Improvement District #1 (WCID1) Texas Commission on Environmental Quality (TCEQ)
Jurisdiction's Chief Elected Official	Jose L. Segarra City of Killeen Mayor 254-501-7700 jsegarra@killeentexas.gov
Point of Contact	<p>Peter C. Perez Director of Homeland Security & Emergency Management 254-501-7706 pcperez@killeentexas.gov</p> <p>Derek Marchio Senior Emergency Management Specialist 254-501-7706 dmarchio@killeentexas.gov</p>

Incident Summary

A quarterly water test sample, that was taken on October 18, 2021, showed the need to issue a boil water notice due to low chlorine residuals in the far reaches of the water system. Public Works immediately contacted and requested assistance from the Texas Commission on Environmental Quality and notified Bell County Water Control and Improvement District #1. With the assistance from TCEQ, City staff were able to identify the loss of monochloramines, through a natural nitrification process, in the water system leading to depleted chlorine levels and nitrification. TCEQ recommended that WCID1 perform a free chlorine conversion process, which neutralized the nitrates and showed the return of regulatory standard chlorine levels. The Boil Water Notice was in effect for the majority of the city until October 29, 2021.

Timeline Summary:

October 19th - Boil Water Notice issued to the entire City of Killeen.

October 20th - TCEQ recommends free chlorine conversion to WCID. Killeen Public Works begins flushing water system due to nitrification.

October 21st - TCEQ Team arrives in Killeen.

October 22nd - TCEQ conducts water system review with WCID, Killeen, and neighboring cities. Killeen Public Works expands flushing of water system. City begins distribution of water to individuals who do not have the ability to boil water.

October 23rd - Chlorine conversion began occurring in Killeen's water system.

October 24th - Public Works shifts focus to their elevated storage tanks.

October 25th - Public Works shifts focus to points further in the water system.

October 26th - Public Works and WCID provided City Council with update. Samples pulled from Lower Pressure Plane and sent to BioChem lab for testing.

October 27th - Public Works is notified by BioChem that the initial samples passed. Public Works forwarded test results to TCEQ for their review.

October 28th - TCEQ notifies Public Works of approval to lift Boil Water Notice in the Lower Pressure Plane (eastern portion of the City). Samples for the rest of the city were sent to BioChem lab.

October 29th - BioChem notifies Public Works that the remaining samples passed. TCEQ notifies Public Works of approval to lift citywide Boil Water Notice. Citywide Boil Water Notice was lifted.

Analysis of Core Capabilities

Aligning response objectives and core capabilities provides a standard for evaluation to support preparedness reporting and trend analysis. Table 1 includes the response objectives, aligned core capabilities, and performance ratings for each core capability as observed during the response and determined by the evaluation team.

Objective	Core Capability	Performed without Challenges (P)	Performed with Some Challenges (S)	Performed with Major Challenges (M)	Unable to be Performed (U)
Return water supply to within drinkable limits and lift Boil Water Notice	Infrastructure Systems, Operational Coordination		(S)		
Provide internal stakeholders and community partners with prompt, reliable information in a timely, clear, and concise manner.	Situational Assessment		(S)		
Provide community with prompt, reliable information in a timely, clear, and concise manner.	Public Information and Warning		(S)		
Provide effective delivery of bottled water to individuals and households that were unable to boil water due to accessibility needs	Operational Coordination		(S)		
Ratings Definitions: <ul style="list-style-type: none"> Performed without Challenges (P): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities. Performance of this activity did not contribute to additional health and/or safety risks for the public or for emergency workers, and it was conducted in accordance with applicable plans, policies, procedures, regulations, and laws. Performed with Some Challenges (S): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s) and did not negatively impact the performance of other activities. Performance of this activity did not contribute to additional health and/or safety risks for the public or for emergency workers, and it was conducted in accordance with applicable plans, policies, procedures, regulations, and laws. However, opportunities to enhance effectiveness and/or efficiency were identified. Performed with Major Challenges (M): The targets and critical tasks associated with the core capability were completed in a manner that achieved the objective(s), but some or all of the following were observed: demonstrated performance had a negative impact on the performance of other activities; contributed to additional health and/or safety risks for the public or for emergency workers; and/or was not conducted in accordance with applicable plans, policies, procedures, regulations, and laws. Unable to be Performed (U): The targets and critical tasks associated with the core capability were not performed in a manner that achieved the objective(s). 					

Table 1. Summary of Core Capability Performance

The following sections provide an overview of the performance related to each response objective and associated core capability, highlighting strengths and areas for improvement

Infrastructure Systems

Mission Area: Response and Recovery

Objective: Return water supply to within drinkable limits and lift Boil Water Notice.

Strengths:

1. Quarterly water testing confirmed nitrification in the system and Public Works issued Boil Water Notice immediately.
2. City of Killeen performs daily test to fulfill either a local, state, or federal requirement. These tests ensure that staff are consistently aware of the water system quality.
3. Public Works quickly activated plans to rectify issues with water system.
4. Public Works began flushing system as soon as WCID1 implemented the free chlorine conversion.

Areas for Improvement:

1. Use free chlorine conversion as a preventative maintenance.
2. Ensure recommended chlorine booster sites are operable.
3. Limited subject matter experts for a long period response created a bottle neck of information.

Recommended Improvement Action:

1. Work with WCID1 to establish a plan of regular free chlorine conversions to meet best practices in the industry.
2. Identify equipment needed for chlorine booster systems and replace or upgrade them to working order.
3. Hire or train additional staff to assist water management in times of need.

Operational Coordination

Mission Area: Response

Objective: Return water supply to within drinkable limits and lift Boil Water Notice

Strengths:

1. Request for assistance from TCEQ was immediate to ensure that State standards were being upheld.
2. Public Works reacted quickly to begin flushing system.
3. Public Works transitioned to 24-hour operations to expedite process of flushing water system and operated their own Departmental Operations Center (DOC).
4. Coordination and information sharing with WCID1 and TCEQ started immediately and was effective.

Areas for Improvement:

1. Public Works Staff with expert knowledge about complex water systems is limited. Those who have the knowledge, were pushed to their limits with minimal to no down time.
2. Other departments, such as OHSEM, can manage some aspects of the workload for Public Works if involved and brought in.

Recommended Improvement Action:

1. Hire or train additional staff to assist water management in times of need.
2. Conduct trainings and exercises to improve coordination during all events.

Objective: Provide effective delivery of bottled water to individuals and households that were unable to boil water due to accessibility needs.

Strengths:

1. Bottled water was quickly procured.
2. Program for water distribution established quickly.
3. Delivery was coordinated with Killeen Fire Department.

Areas for Improvement:

1. Large orders of bottled water supplies, while adhering to purchasing policies, have long lead time for delivery.
2. A call center was needed to provide timely, effective, and unified answers to the community.
3. City has no facilities for large semi-trailers to dock and unload quickly. These large trailers must be unloaded with methods that take longer.

Recommended Improvement Action:

1. Pre-identify suppliers who can fulfill these orders.
2. Incorporate call centers into emergency management planning. when incidents increase call volume to the city.
3. Consider including a proper loading dock in a future CIP project for Public Works or Fleet facilities.

Situational Assessment

Mission Areas: Response

Objective: Provide internal stakeholders and community partners with prompt, reliable information in a timely, clear, and concise manner.

Strengths:

1. Public Works leadership kept City Management appraised of situation.
2. Cadence of press releases and interviews kept community partners appraised of the situation.

Areas for Improvement:

1. Emergency Management needs to be kept in the loop to create and document the situation.
2. Internal communications of situation were not consistent or timely, especially to assist with answering the public with a unified message on the actions they should take at home.
3. All city employees were not kept in the loop on the correct contacts for the incident, leading to miscommunication with the public.

Recommended Improvement Action:

1. Emergency Management develop an online all hazards situation report submission form for city departments and community partners to give information.
2. Conduct situation awareness meetings during incidents with all the key stakeholders to create horizontal and diagonal information flows.
3. In case of events of this nature, initial communications should be sent to all employees via email.

Public Information and Warning

Mission Area: Response

Objective: Provide community with prompt, reliable information in a timely, clear, and concise manner.

Strengths:

1. Quick notification of media and external stakeholders (e.g., hospitals, schools).
2. Messaging was concise, timely, and unified.
3. Messaging was abundant and in multiple forms (video, graphic, text)



Areas for Improvement:

1. Few staff can message on social media sometimes causing a bottleneck.
2. Clear directions to the community on actions they need to take were not present.
3. Citywide alert messaging (CodeRED and Civic Alerts) is reliant upon voluntary participation.
4. Multi-lingual and ADA messaging is currently not provided.



Recommended Improvement Action:

1. Revisit social media posting policies to ensure messaging is just as timely as press releases.
2. Draft clear graphics and directions on what community members should do during a boil water notice. Then have them translated ahead of time.
3. Pursue other avenues of pushing information about signing up for Civic Alerts and CodeRED (e.g., Senior Center Events, flyers, NextDoor, etc.).
4. Identify employees who speak multiple languages and define emergency event responsibilities.

Appendix A: Improvement Plan

Core Capability	Issue/Area for Improvement	Corrective Action	Primary Responsible Organization	Start Date	Estimated Completion Date
Infrastructure Systems 	Use free chlorine conversion as a preventative maintenance.	Work with WCID1 to establish regular free chlorine conversion plan.	Public Works	November 2021	August 2022
	Ensure recommended chlorine booster sites are operable.	Hire contract and install remaining 3 booster sites.	Public Works	October 2021	March 2022
	Limited subject matter experts for a long period response created a bottle neck of information.	Hire or train additional staff to relieve leadership in times of need.	Public Works	February 2022	TBD (Funding Dependent)
Operational Coordination 	Other departments can manage some aspects of the workload.	Conduct trainings and exercises to increase coordination.	OHSEM	March 2022	∞
	There is a long lead time for large supply orders.	Pre-identify suppliers who can fulfill these orders.	OHSEM Finance	February 2022	August 2022
	Call centers are needed during increased call loads.	Incorporate call centers into emergency management planning.	OHSEM	January 2022	December 2022
	Unloading semi-trailers is tedious at current city facilities.	Incorporate proper loading docks in future facility CIP projects.	Public Works Finance	February 2022	TBD (Funding Dependent)

Appendix A: Improvement Plan (Continued)

Core Capability	Issue/Area for Improvement	Corrective Action	Primary Responsible Organization	Start Date	Estimated Completion Date
Situational Assessment 	OHSEM needs to be kept in the loop to maintain documentation & situational awareness.	Create an online situational awareness assessment form to report for situational awareness.	OHSEM	February 2022	August 2022
	Internal communications were not consistent or timely to all employees.	Conduct SA meetings during incidents with all key stakeholders and send info to all city employees.	OHSEM Communications	November 2021	∞
Public Information and Warning 	Few staff can message on social media creating a bottleneck.	Revisit social media posting policies to ensure messaging is just as timely as press releases.	Communications	November 2021	March 2022
	Important actionable directions should be clear and consistent.	Draft graphics and directions ahead of time for these types of situations.	OHSEM Communications	December 2021	March 2022
	Citywide alert messaging is reliant upon voluntary participation.	Pursue multiple avenues of informing the community about signing up for alerts from the city.	OHSEM Communications	November 2021	March 2022
	Multi-lingual and ADA messaging not provided.	Identify employees who speak other languages and define emergency responsibilities	OHSEM HR	November 2021	August 2022

Appendix B: Water Pressure Plane Map

