



MEMORANDUM

DATE: Jan 26, 2026
TO: Public Utility Board Members
FROM: Stephen D. Gay
SUBJECT: Incident Summary: Fire at Pecan Creek Water Reclamation Facility

Executive Summary

On December 28, a fire occurred at the Pecan Creek Water Reclamation facility involving compost curing piles and an unprocessed brush pile. The incident was caused by high winds and recent topographical changes in the area. Beneficial Reuse and Landfill staff successfully contained the fire over a 72-hour period with no injuries or equipment damage.

Report Status: Preliminary (Awaiting Technical Supplement from Jason Pelofske, Safety and Training Specialist)

1. Incident Origins and Environmental Factors

The incident resulted from a "perfect storm" of environmental conditions and necessary site modifications:

- **Environmental Triggers:** An intense cold front arrived on the afternoon of December 28, producing sustained high-velocity winds.
- **Topographical Impact:** In preparation for future landfill facility expansion, the "hilly area" situated north and west of the composting site had recently been excavated. Historically, this elevation served as a critical windbreak, shielding the curing piles from direct exposure.
- **Ignition Sequence:** With the protective hill removed, high winds blew directly into the curing piles. These piles, which were in the final stages of biological breakdown, were already naturally hot. The wind "oxygenated" the piles, acting like a bellows on a forge, causing the internal heat to transition into active embers.

2. Suspected Cause & Technical Analysis

Preliminary findings indicate that the main cause was aerobic thermal runaway triggered by extreme wind exposure.

- **Oxygen Injection:** High-velocity winds forced oxygen into the core of the organic material, causing "flash ignition" of the outer layers.
- **Ember Migration:** Once the curing piles began to smolder, the wind transported embers to the volatile, unprocessed brush pile, causing the fire to spread rapidly.

3. Response and Mitigation Efforts

- **Immediate Action:** Staff were notified of the blaze around 5:00 PM. While the Fire Department arrived quickly, they relied on the specialized knowledge of Beneficial Reuse and Landfill personnel.

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- **Strategic Suppression:** Since water can be ineffective on deep-seated compost fires, the team utilized smothering techniques. Five employees operated large loaders to break up hot spots and bury them with inert material.
- **Resource Utilization:** Water trucks from both Beneficial Reuse and the Landfill were deployed to extinguish the unprocessed brush pile and to saturate the organic piles post-smothering. In total, approximately 500,000 gallons of reuse water were utilized to ensure the site remained cool.

4. Formal Reporting & Coordination

We are currently working with Jason Pelofske, the City of Denton Safety and Training Specialist, who is finalizing a comprehensive technical report. This upcoming document will include:

- A thorough analysis of the thermal runaway incident.
- Specific wind speed data and meteorological information.
- An evaluation of the site's new topography to prevent future incidents.

Jason is confirming the finalization date, and his report will be provided as a formal supplement.

5. Special Commendation of Personnel

I would be remiss if I did not acknowledge the incredible efforts of our five-person Beneficial Reuse crew, along with six members of the Landfill team on-site. When the fire broke out, these seven individuals remained on the front lines for the next 72 hours. Working under harsh wind conditions, they operated heavy machinery with precision to execute the "smother and saturate" plan. Their expertise prevented the fire from reaching expensive municipal equipment or crossing the property line. Because of their grit, a potentially disastrous incident resulted in zero injuries and zero equipment loss. Their dedication to our city's assets and the environment warrants our highest praise.

Conclusion and Future Prevention

To mitigate future operational risks, the department is updating the facility's fire prevention framework. A formal After-Action Review (Hotwash) is scheduled for next week to assess the effectiveness of our response and pinpoint specific areas for improvement. This review will analyze the link between changes in site topography and fire risk—particularly the loss of natural windbreaks. Key operational improvements include specialized training in organic fire suppression and an immediate requirement for Standardized Temperature Monitoring. These daily diagnostic logs will enable staff to identify early signs of aerobic thermal runaway in its nascent stages, allowing for proactive moisture interventions and strategic pile rotation.