

Sensors, Inc.



PINPOINTING AND QUANTIFYING METHANE LEAKS WITH THE BAR HOLE SAMPLER

Background

While subsurface methane releases are more commonly associated with oil and gas operations (e.g., wells), geothermal systems can also provide pathways for methane migration.

In late summer 2025, a methane leak was identified in a geothermal well field located near a school. Given the site's proximity to nearby facilities, it was important to use a device like the [Bar Hole Sampler](#) to efficiently pinpoint the source, quantify the leak rate, and purge accumulated gas as part of a structured remediation effort.

The Challenge

Operational Urgency: Methane accumulation required timely identification and management to support site operations and remediation planning.

Source Attribution: The origin and concentration profile of methane within the geothermal system were initially unclear, complicating targeted intervention.

Quantification Requirements: Effective mitigation required reliable measurement of leak rate and concentration to prioritize corrective actions and validate remediation progress.

The Solution

The Well Done Foundation (WDF) deployed the [Bar Hole Sampler](#), an advanced 3-in-1 tool designed to pinpoint, quantify, and purge methane leaks from underground sources. This methodical approach allowed WDF to identify the leak source and assess the scale of migration with high precision.

"The new Bar Hole Sampler is an exceptional piece of technology that allows us to pinpoint and quantify leaks quickly—truly game-changing for natural gas field operations."
Curtis Shuck, Chairman, Well Done Foundation

Actions Taken

- 1. Rapid Site Assessment:** WDF teams quickly surveyed the geothermal field to identify potential leak locations.
- 2. Precision Sampling:** The [Bar Hole Sampler](#) collected gas samples directly above suspected methane pathways.
- 3. Leak Quantification:** Sampler data measured methane concentrations and determined the rate of gas migration.

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4. **Targeted Mitigation:** Accurate measurements allowed WDF to focus excavation and sealing efforts on critical areas only.

5. **Long-Term Monitoring:** Baseline data from the sampler established a framework for ongoing monitoring and verification.

Additional technologies supporting this project included Heath's RMLD-CS, SEMTECH® HI-FLOW 2, and DeNova natural gas detectors for indoor monitoring.

The Results

Accurate Leak Identification: Methane sources within the geothermal well field were precisely located.

Quantified Risk: Concentration data informed mitigation strategies and safety protocols.

Real-Time Data: Leak locations and concentrations were tracked continuously for rapid response and downloaded for reporting.

Efficient Remediation: Targeted interventions reduced unnecessary excavation and effective locations for repair.

Enhanced Safety: The field was secured, mitigating potential hazards for public safety and surrounding areas.

Key Takeaways

Advanced tools like the [Bar Hole Sampler](#) are essential for precise leak detection and quantification.

Accurate measurements enable data-driven decision-making, improving safety, efficiency, and cost-effectiveness.

Collaboration between nonprofits, industry experts, and regulators ensures successful mitigation of environmental hazards.

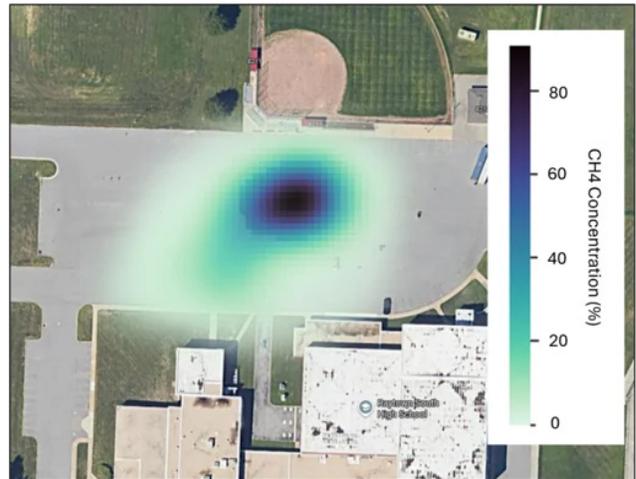


Figure 1 - Heat map of methane concentration, image courtesy of Sensors, Inc.

About Well Done Foundation

The [Well Done Foundation](#) (WDF) is a U.S.-based nonprofit organization dedicated to addressing the environmental hazards posed by orphaned and abandoned oil and gas wells.

Founded in 2019 by former oil executive Curtis Shuck, the foundation aims to mitigate climate change by preventing methane emissions through the plugging of these wells.

Source: [Heath](#)

For more information:

In the US: Contact [Heath](#)

Outside the US: Contact [Sensors](#)

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Sensors, Inc. was founded in 1969 and has gone on to become an innovative leader in the supply of gas analysis and particle measurement instrumentation. Powered by employee-owners, the company has built a reputation for engineering excellence, robust manufacturing, and strong customer support.

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