



SL1000 Portable Parallel Analyzer



Jeannie Radke-Hach Regional Sales Manager, Tennessee

Be Right™

SL1000 Portable Parallel Analyzer (PPA) Portable Colorimeter with USB

Applications

- Boiler Water
- Cooling Water
- Groundwater
- Membrane Protection
- Municipal Water
- Potable Water
- QA/QC Lab
- Source Water
- Surface Water



Chloramination Testing Can be Done 75% Faster

SL1000

Do you spend too much time on multi-parameter analysis in your distribution system or other clean water applications?

Complete more tests on site, get the results you need faster, allowing you to visit more sites in each shift. Perform up to four colorimetric and two probe-based measurements in parallel 75% faster than with other methods.

Do you struggle with consistency, repeatability, or inter-operator variability when performing colorimetric and probe-based analysis?

Automation and internal temperature control make the entire process consistent and repeatable, while applying the same processes as current Hach methods. Avoid manual steps that can introduce variability, even when performed by experienced testers.

Would you benefit from performing all your field testing on a single instrument with less hassle, fewer bulky accessories, and less clean-up?

A single instrument combines colorimetric and probe-based testing in a field kit that requires fewer bulky accessories. All chemicals and processes are entirely contained inside the Chemkey. There are no powder pillows or glass vials to handle.



Benefits

Perform multiple tests faster

- Complete more tests on site, get the results you need faster, allowing you to visit more sites in each shift. Perform up to four colorimetric and two probe based measurements in parallel 75% faster than with other methods.

Less Variability

- Automation and internal temperature control make the entire process consistent and repeatable, while applying the same processes as current Hach methods. Avoid manual steps that can introduce variability, even when performed by experienced testers.

Less Hassle

- A single instrument combines colorimetric and probe testing in a field kit that requires fewer bulky accessories. All chemicals and processes are entirely contained inside the Chemkey. There are no powder pillows or glass vials to handle.



Tests available with Chemkeys

Chemkey reagents instead of powder pillows. All chemicals and processes are entirely contained inside the Chemkey.

- Free Chlorine (0.04-4.00 mg/L Cl_2)
- Monochloramine (0.04-4.00 mg/L Cl_2)
- Total Ammonia (0.05-1.50 mg/L $\text{NH}_3\text{-N}$)
- Copper (0.06-5.00 mg/L Cu)
- Alkalinity LR (20-200 mg/L CaCO_3)
- Hardness LR (3-100 mg/L CaCO_3)
- Orthophosphate LR (0.20-4.00 mg/L PO_4)
- Peracetic Acid (0.04-50.0 mg/L PAA)
- Total Chlorine (0.04-10 mg/L Cl_2)
- Free Ammonia (0.05-0.50 mg/L $\text{NH}_3\text{-N}$)
- Nitrite (0.005-0.600 mg/L $\text{NO}_2\text{-N}$)
- Dissolved Iron (0.05-3.00 mg/L Fe)
- Alkalinity HR (90-750 mg/L CaCO_3)
- Hardness HR (90-750 mg/L CaCO_3)
- Orthophosphate HR (2.0-30.0 mg/L PO_4)
- pH (6.3-9.0)



SL1000 Video



Questions



Be Right™



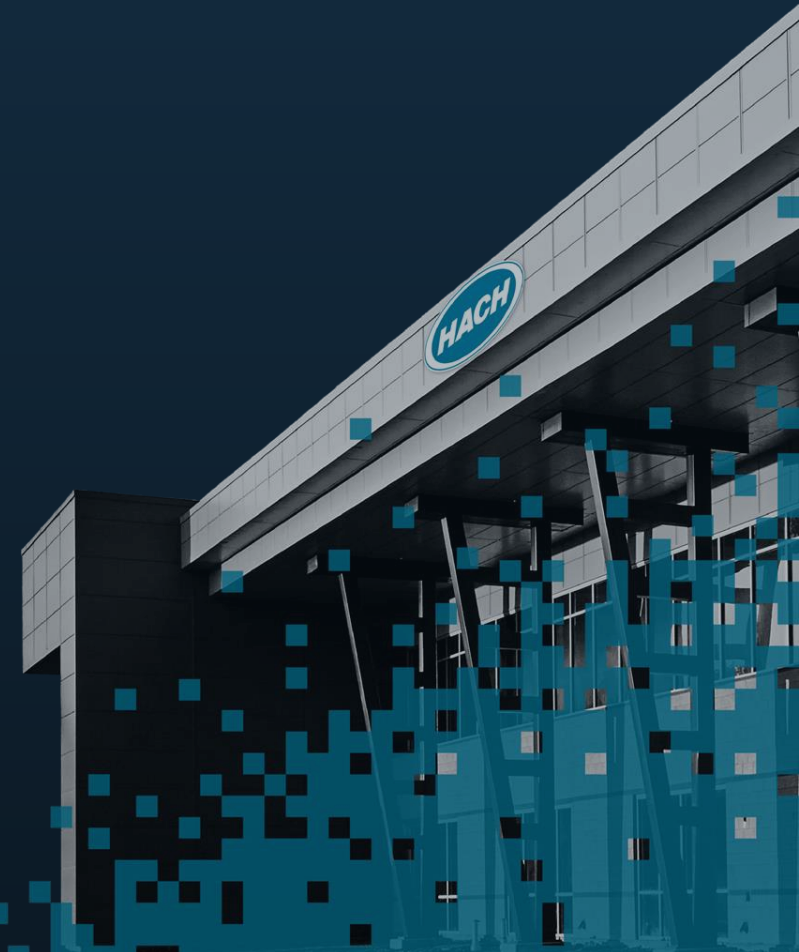
ARCHITECTS OF GROWTH

HACH ANNUAL SALES MEETING 2024

H2S Training

Sales Development Managers-Municipal

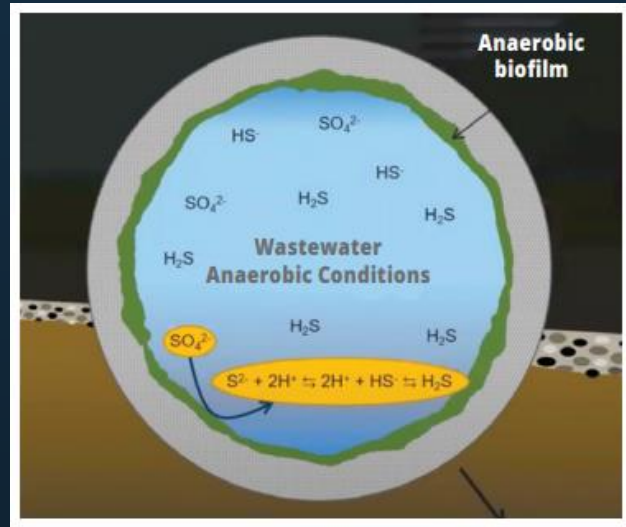
Lance Williams, PE, MBA



HACH®

Introduction : The H₂S problem in a Nutshell

H₂S
formation



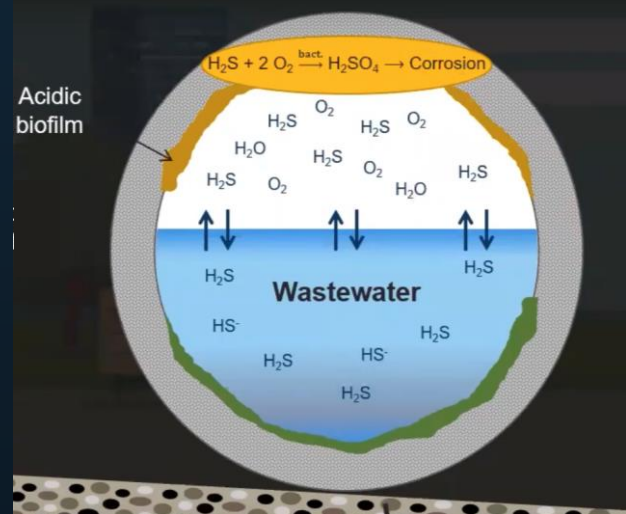
H₂S
risks



Odor nuisances



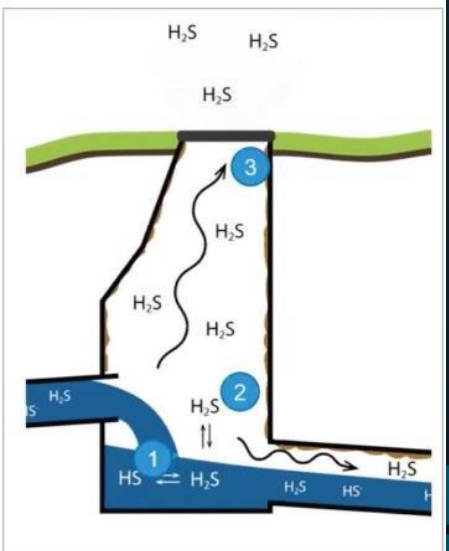
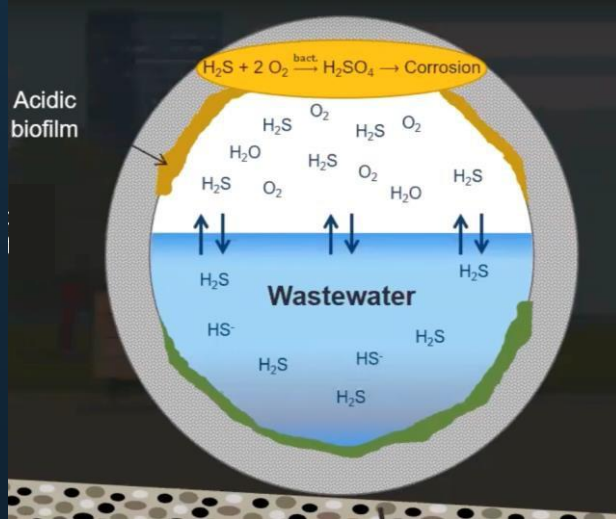
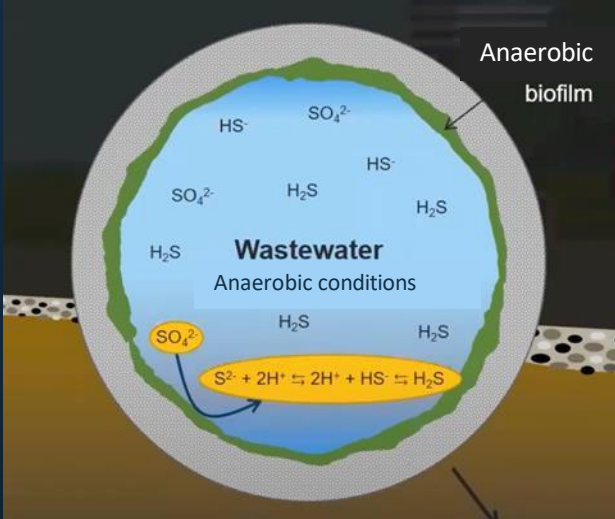
Asset corrosion



Operator safety

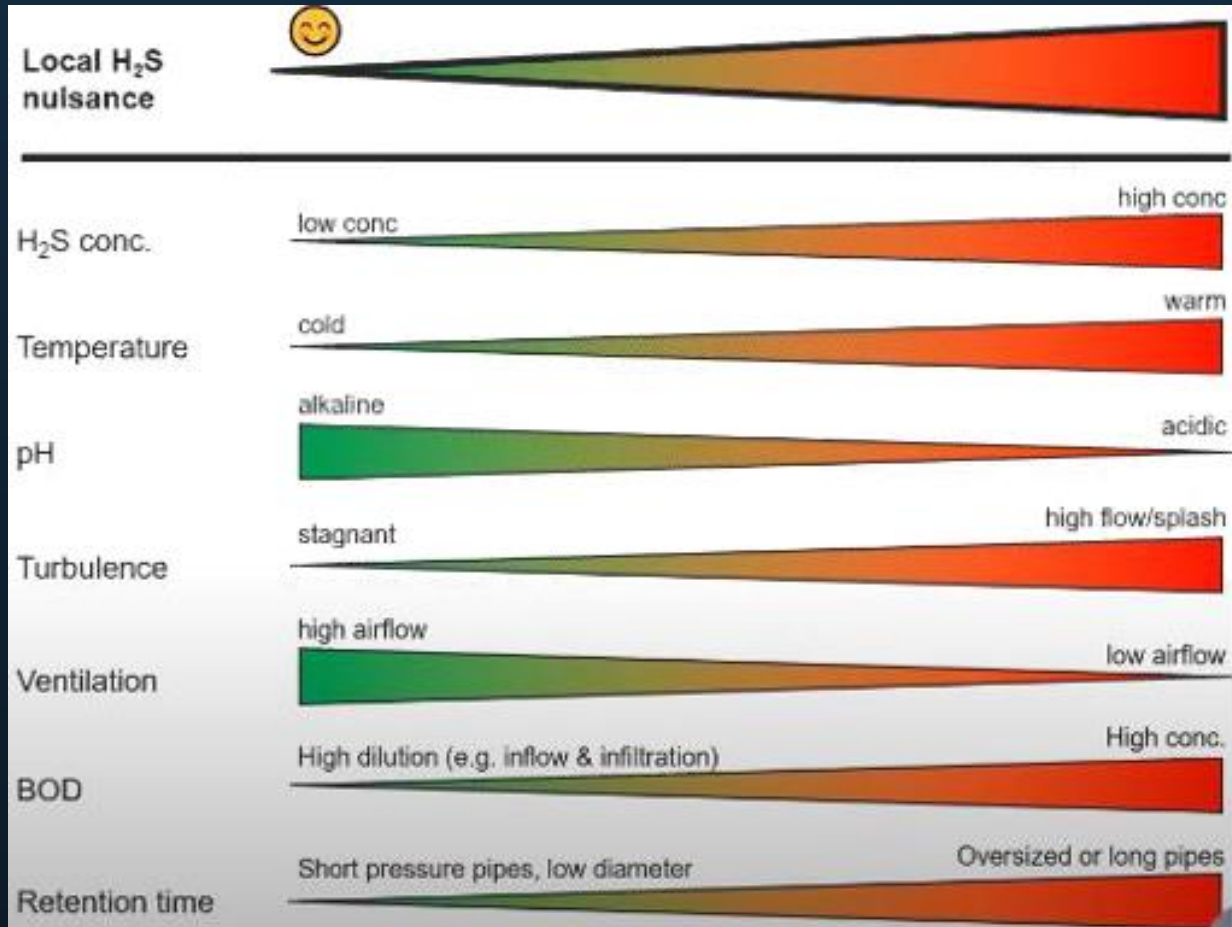
How Hydrogen Sulfide behaves in wastewater environments

- Under anaerobic conditions, sulfate is used as an oxidant by organisms to consume organic matter. These anaerobic conditions are present in force mains.
- This reaction reduces sulfate to dissolved hydrogen sulfide.
- Hydrogen sulfide is stripped further downstream under turbulences conditions and can lead to odor nuisances
- The oxygenation conditions of the downstream wells or gravity pipes allows also the transformation of H₂S into sulfuric acid which corrode assets



How Hydrogen Sulfide behaves in wastewater environments

The severity of H₂S concerns can be exacerbated by conditions in the water and surrounding environment:



Contexts particularly sensitive to H₂S:

- The increase inter-municipal groupings, significantly lengthening the transit time of effluents to a central treatment point
- The increase in average atmospheric air temperatures - temperature acting as an accelerator of biochemical reactions
- The creation of new towns/neighborhoods with sewage systems dimensioned for a future horizon
- Municipalities located in tourist areas where there is a significant variation in occupancy between winter and summer periods.
- Completely flat topography of the collection system

Why H₂S Monitoring?

Odor



- Distinct Rotten Egg Odor below **.01 ppm**
- Odor Complaints at the **plant** or in the **system**
- Unhappy residents calling the **mayors office?**

Corrosion



- H₂S creates **corrosive** sulfuric acid in moist sewer environments
- **Concrete pipes** are especially susceptible to corrosion
- Degrading pipes can **collapse** creating blockages or roadway sinkholes

*Safety



- Immediately **dangerous** to life and health (IDLH) at 100 ppm
- Personal **safety monitors** used in H₂S field conditions
- H₂S presence creates **toxic/hazardous** environments

Challenges of Traditional H₂S Monitoring

Safety detectors

- Specific personal safety device
- Monitors current conditions to protect life and health

Laboratory Testing

Liquid grab/composite sampling

- H₂S highly volatile
- Turbulence releases H₂S
- pH changes
- Inaccuracy to actual conditions

Air sampling

- Sampling procedures can be variable per analysis
- Sampling location can be unrepresentative of system H₂S
- Hydrogen Sulfide is heavier than air

Continuous Air Monitoring

- Monitoring can be variable per analysis due to erratic air flows
- Sampling location can be unrepresentative of system H₂S
- Hydrogen Sulfide is heavier than air
- Swapping out units frequently due to moist and/or high H₂S

Continuous Liquid H₂S Monitoring

Liquid-phase H₂S measurements reveal new insights

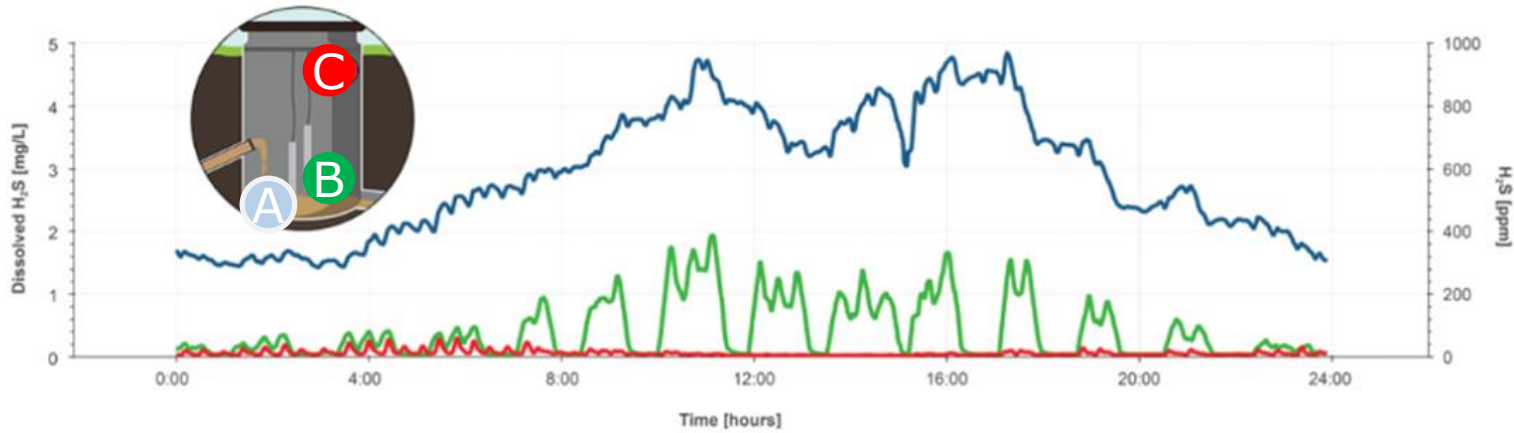
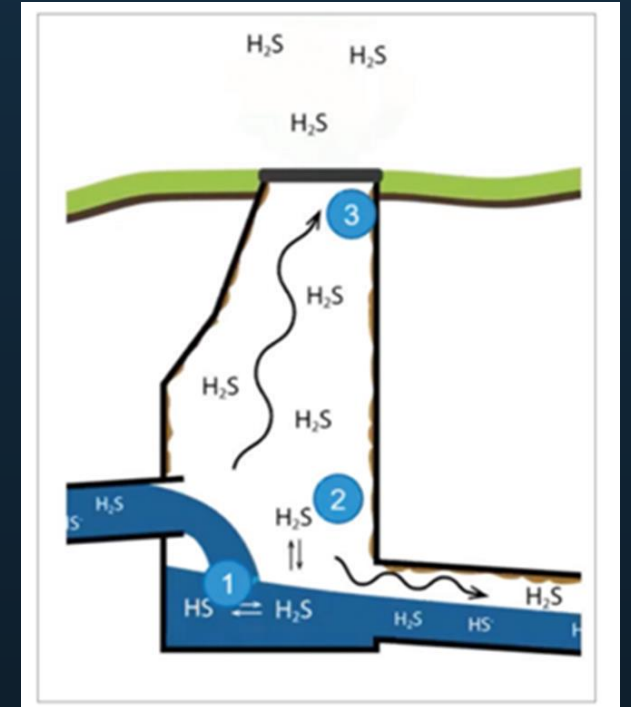


Figure 1. This figure shows differences in continuous readings from a liquid-phase sensor installed directly in the wastewater flow (blue) vs. gas-phase sensors installed just above the surface of the water (green) or near the top of a manhole (red).



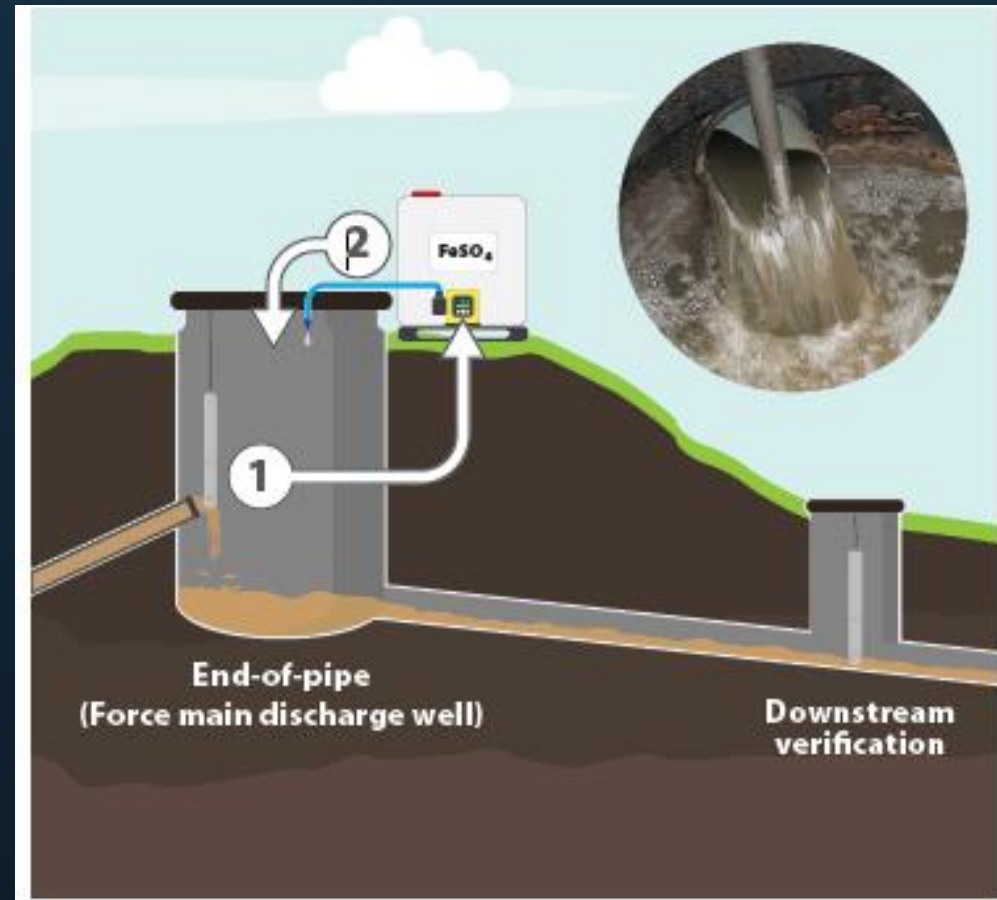
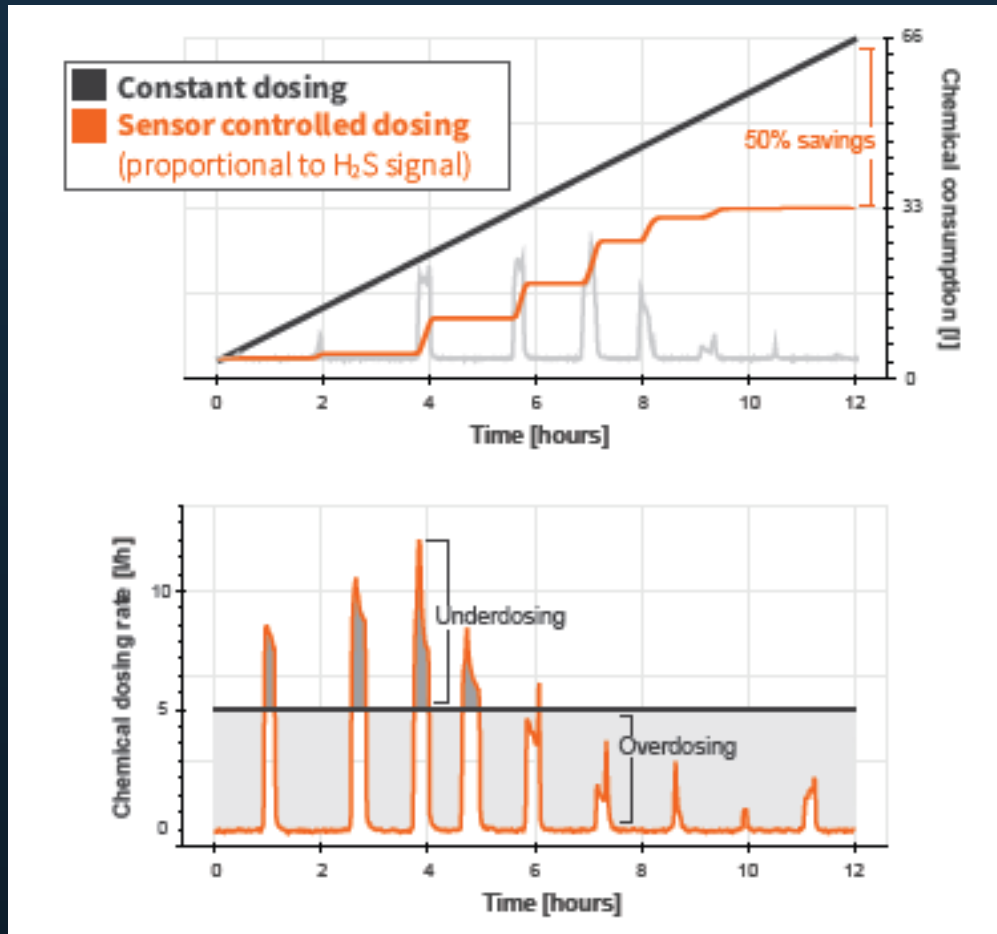
- Monitoring H₂S in liquid, in real-time gives a **more accurate** picture of system H₂S
- The Hach GS2440EX can monitor H₂S in real time in **liquid** or air
- Monitoring H₂S in liquid continuously increases accuracy and removes **erratic air** monitoring issues

Continuous Liquid H₂S Monitoring

- The Hach GS2440EX is certified for **C1D1 hazardous** environments
- The GS2440EX is designed for continuous **submergence in Collections systems** or at the plant
- Can be directly wired to a **PLC, Hach Controller**, or set up as a fully **remote battery-operated system**
- **Reduced maintenance compared to gas phase measurements**



Optimize Chemical Dosing



Example of a fully automated dosing system. The FeSO₄ dosing rate is dynamically adjusted in real-time in proportion to the continuous measurements of a liquid-phase H₂S sensor. Using this approach, a utility managed to cut dosing costs by 50% when compared with a constant dosing strategy, while also improving mitigation effectiveness

H₂S measurement applications

Collections system

WWTP



- Headworks influent
- Primary Clarifiers
- Aeration Tanks
- Odor Scrubbers

Pump/Lift Station



Manhole

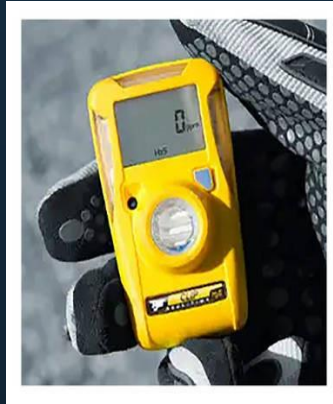


Traditional H₂S Monitoring for Wastewater

Do Nothing



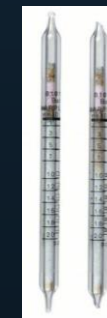
Safety detectors



Laboratory Testing

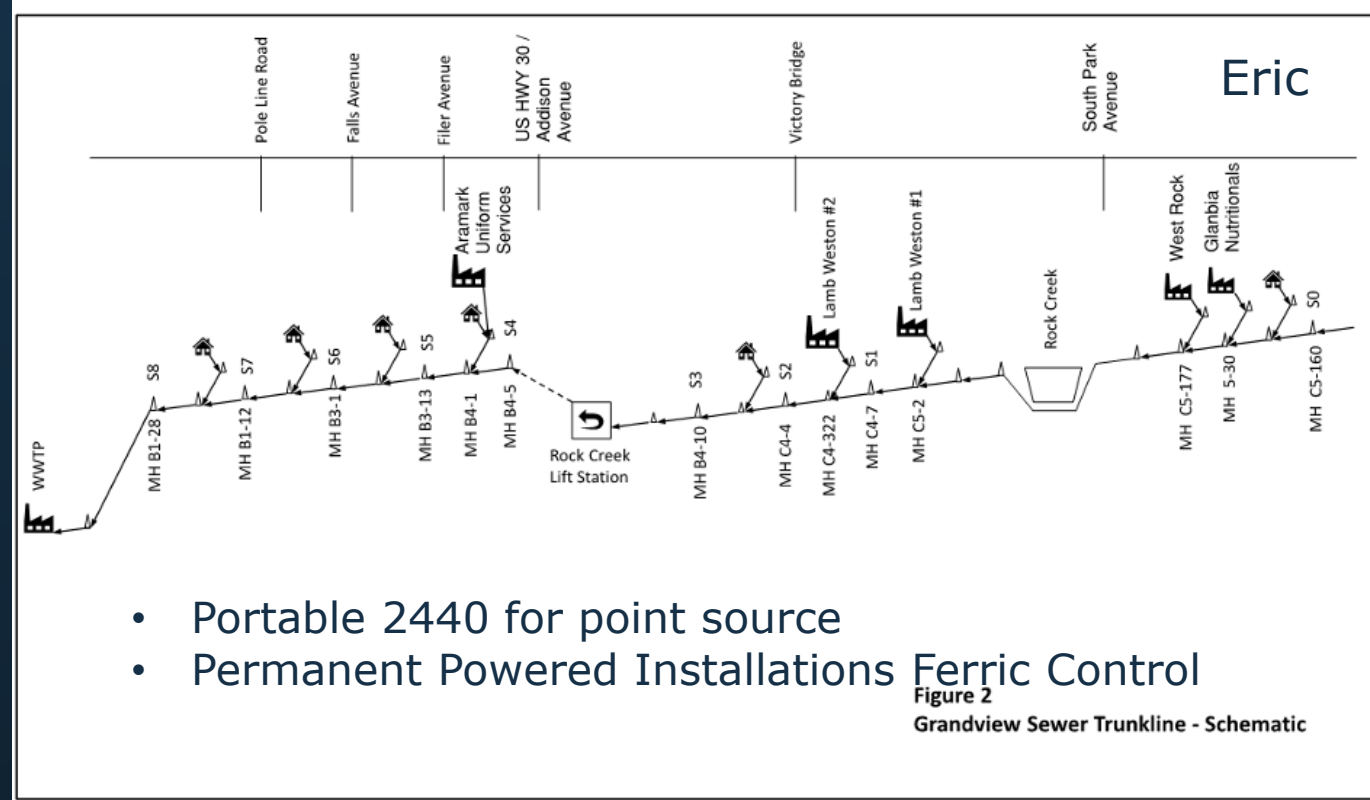


Continuous Air Monitoring



City of Twin Falls ID-\$65.6K Booked

- Large Volume of odor Complaints
- 5 miles of gravity fed collections
- Slow velocities and large pipes
- Corrosion already degrading all of the 103 manholes.
- Feedback control loop w/SC4500 to Ferric control
- UV issues if over- dosing chemical.
- pH Monitoring for T Dissolved Sulfide



City of Northglenn CO-\$14k Order.

- 9 miles of force main
- Odor complaints was the primary driver
- Headworks/Influent channel corrosion already effecting infrastructure
- PID loop w/SC4500 to Ferric dose
- UV issues overdosing Ferric
- Best tool to optimize chemical dosing.
- Evaluating next installation point



City of Wichita Falls – Demo 2021

- 2 Employees Died due to H₂S - 2018
- Odor complaints
- Headworks/Influent channel corrosion already effecting infrastructure
- Equipment Maintenance

- 20 MGD
- 54 Lift Stations in the Collection System
- 17 miles of pipeline



Show me a sign of H2S



What's in the Box



After 6 Weeks



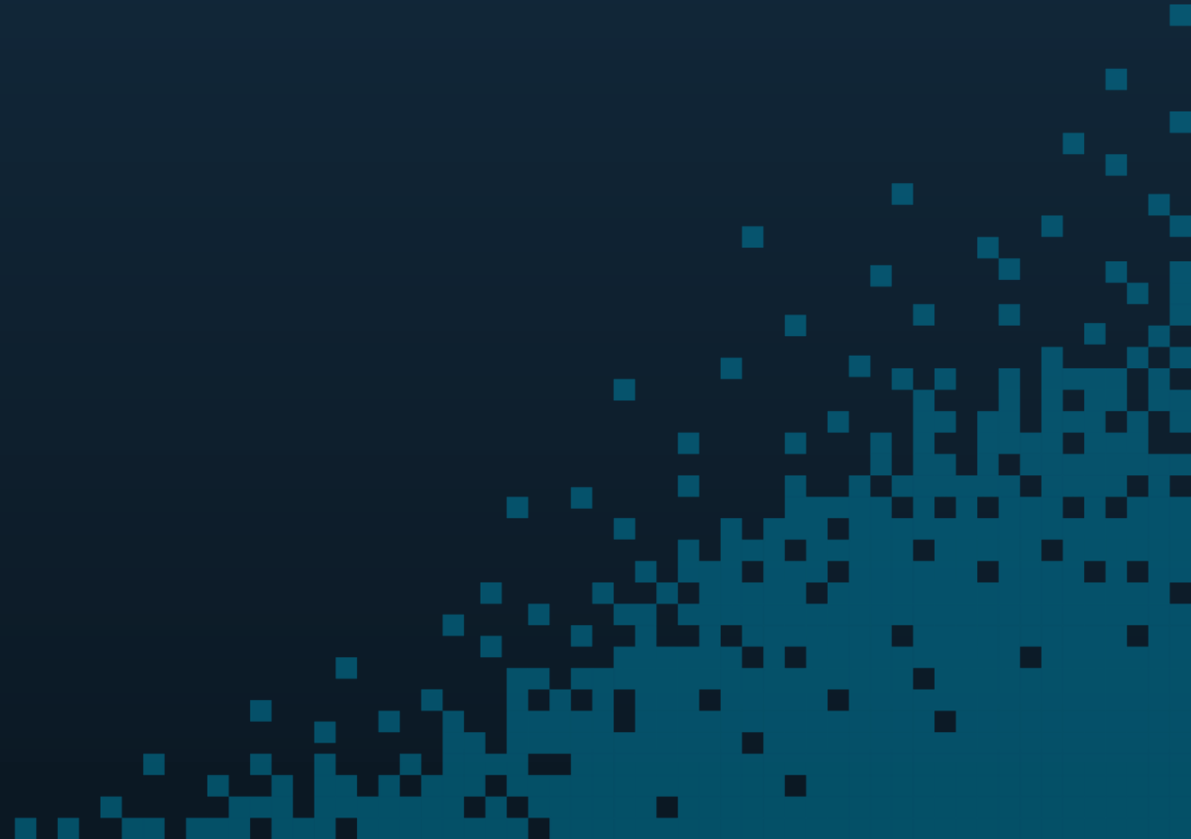
- No calibration during the 6 weeks
- Lock was completely corroded / had to use bolt cutters to remove
- Galvanized chain was about to fail



ARCHITECTS OF GROWTH

HACH ANNUAL SALES MEETING 2024

Q&A





**ARCHITECTS
OF GROWTH**

HACH ANNUAL SALES MEETING 2024

Thank-you!