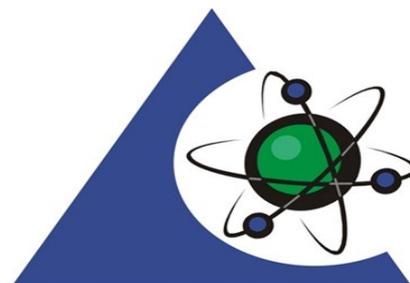




Revolutionizing Environmental Monitoring

Digital Tools for Accuracy, Efficiency, and Proactive Audit Management



PJLA

January 14th, 2025



Webinar Housekeeping

- This webinar will be recorded
- All PJLA webinars are made available on our website & YouTube channel
- <https://www.pjllabs.com/training/pjlla-webinars/past-webinars>
- All attendees are muted
- Please utilize the question tool bar to submit questions to be answered at the end of presentation

Overview

Sampling-Critical role in ensuring quality test results

Accreditation of Sampling Activities- Options Available

Introduction of Technology to Monitor Sampling Activities

Impacts of Field Sampling and Measurement

Sampling Plans

- Statistical validity, ensuring representativeness, assists with decision making

Appropriate Equipment

- Prevent contamination

Storage and Transport

- Prevent Mishandling

Data Integrity

- data collected during the sampling process should be accurate, consistent, and reliable

Competency of Personnel

- Should be trained, licensed as applicable

Failure in these areas could result in: resampling, poor decisions, inaccurate test results, excessive costs to organizations

Have you
thought about
Safeguarding
your Sampling
Activities
Through
Accreditation?

- National Environmental Field Activities Program TNI NEFAP
 - Utilizes 17025 with Specific Language and Criteria for Sampling and Measurement Organizations
 - Unique to the industry as the standalone accreditation program available just for samplers
- ISO/IEC 17025 2017 also allows for sampling organizations to be accredited
 - Section 7.3 –Addresses Sampling

Accreditation Resources

- <https://nelac-institute.org/content/NEFAP/index.php>.
 - Upcoming Training –January 23 Noon-4:00 Est. –Developing and Implementing a Sampling and Analysis Plan for Environmental Studies
 - <https://nelac-institute.org/events/nefap-workshop-2025/>
- <https://www.pjlabs.com/accreditation-programs/field-sampling-and-measurement-organization-fsmo-accreditation>

Introduction



SampleServe Evolved From Solving This Issue



2001: Sampling as a Service

2018: Software as a Service

2019: First Mobile App

**2024: Large Clients and Labs Across
the Country**

The Importance of Digital Transformation



- Benefits of digital tools: precision, cost savings, and streamlined workflows.
- Example: Digitization reduces manual errors by 95%.

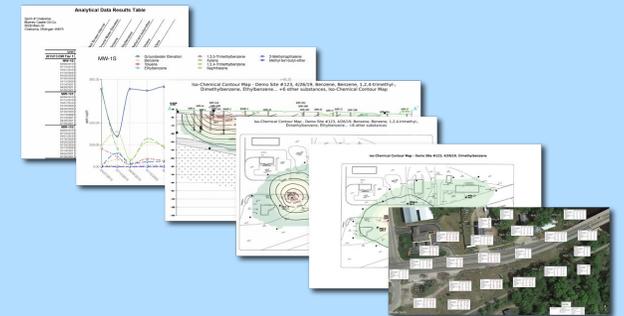
Planning & Sample Collection



Lab Login



Regulatory Report Production



Mobile Field App: The Backbone

Features:

- GPS tagging
- Photo capture
- Automated sample tracking.



Time-saving benefits: Data & sample collection efficiency improved by 20%, even 40%.



2-Day Project into 1-Day

Mobile Field App: Functionality



Digital Chain-of-Custody (D-COC)



- Overview of D-COC: GPS, timestamps, digital signatures.
- Benefits: Real-time updates, error reduction, immutable records.

Mobile Field App: Low Flow

Sampling Media:

- Groundwater
- Surface Water
- Soil
- Soil Vapor
- Asbestos
- Air
- Drinking Water
- Wastewater
- Etc..

The screenshot shows the 'Low Flow' section of the mobile field app. At the top, there are five tabs: 1 Elevation, 2 Field Data, 3 Equip. Setup, 4 Low Flow (highlighted), and 5 Sample Collection. Below the tabs is a table with the following data:

Interval Time	DTW (ft)	Flow Rate (ml/min)	Running Vol (ml)	pH ±0.1	ORP ±10 (mV)	Conductivity ±3% (mS/cm)	DO ±10% (mg/l)	Temp. ±3% (°C)	Turbidity ±10% (NTU)
3:00	15.33	125.00	1875.00	7.52	208.76	4478.95	3.96	12.47	50.16
3:00	15.33	125.00	2250.00	7.54	205.41	4510.25	3.99	12.26	30.00
3:00	15.33	125.00	2625.00	7.55	201.82	4518.79	3.89	12.26	12.37
3:00	15.33	125.00	3000.00	7.55	199.07	4501.86	3.84	12.10	8.64
3:00	15.33	125.00	3375.00	7.56	197.55	4513.21	3.83	11.92	1.73
3:00	15.33	125.00	3750.00	7.56	194.79	4511.09	3.80	12.03	3.65
3:00	15.33	125.00	4125.00	7.56	191.90	4512.16	3.79	12.22	0.00

Below the table, there is a green checkmark icon and the text 'Field parameters are now stable.' To the right of this text is a checkbox labeled 'Bypass Stability Calculations'. Below this is an information icon and the text 'Next reading in 2:37'. To the right of this is a button labeled 'Take Another Reading' with a plus sign. At the bottom left, there is a button labeled 'UNABLE TO SAMPLE'. At the bottom right, there is a large purple button labeled 'COLLECT SAMPLES'.





Mobile Field App: Screen Recording Technology

- **Captures:** Every field interaction for audit and compliance. The location, time, and user is recorded.
- **Benefits:** Transparency, reduced travel costs, enhanced accountability.

Screen Recording Technology = Data Integrity



- **Data Flow:** Entered data is captured and every edit is captured.
- **Benefits:** Data and sampling protocol accountability . Can be audited months later.

1:57 Tue, May 28 90%

TW-3
Sample - Low Flow

1 Setup 4 Low Flow 5 Sample Collection

Interval Time	(ft)	(ml/min)	Volt	ORP ±10 (mV)	Conductivity ±3% (mS/cm)	DO ±10% (mg/l)	Temp. ±3% (°C)	Turbidity ±10% (NTU)
3:00	15.33	125.00	1875.00	208.76	4478.95	3.96	12.47	50.16
3:00	15.33	125.00	2250.00	205.41	4510.25	3.99	12.26	30.00
3:00	15.33	125.00	2625.00	191.82	4518.79	3.89	12.26	12.37
3:00	15.33	125.00	3000.00	199.0	4501.86	3.84	12.10	8.64
3:00	15.33	125.00	3375.00	197.55	4513.21	3.83	11.92	1.73
3:00	15.33	125.00	3750.00	194.79	4511.09	3.80	12.03	3.65
3:00	15.33	125.00	4125.00	191.90	4512.16	3.79	12.22	0.00

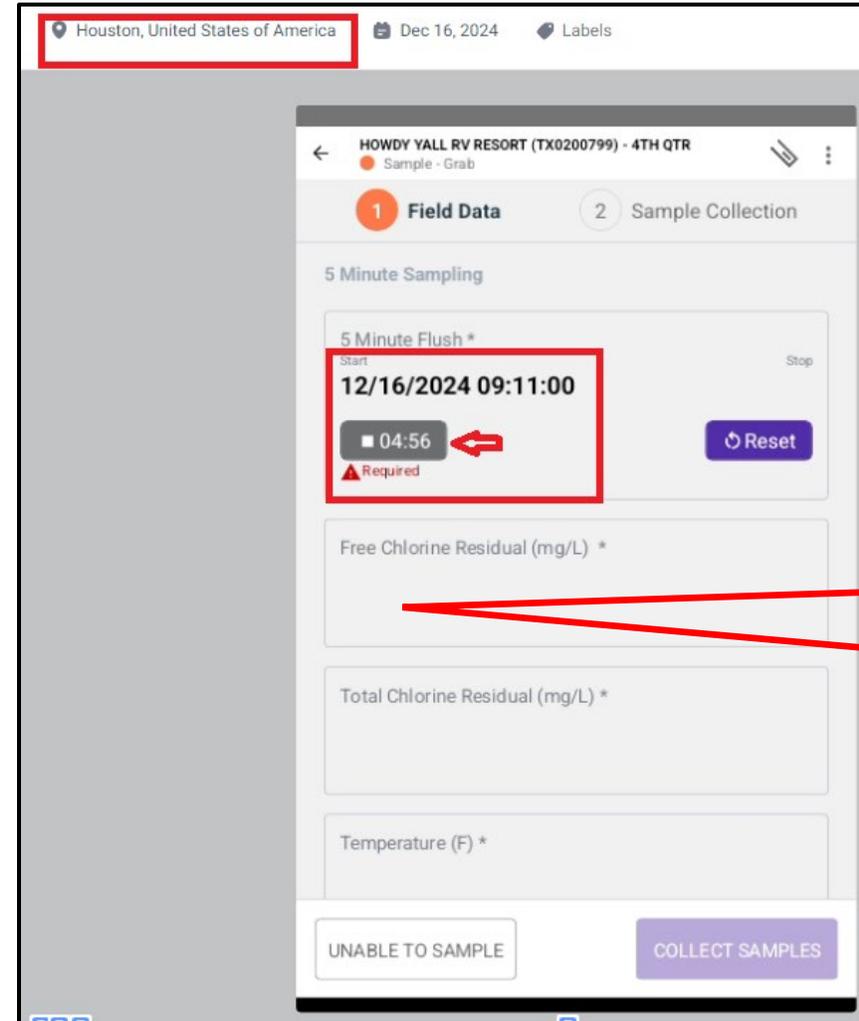
✓ Field parameters are now stable. Bypass Stability Calculations

Next reading in 2:37

Case Study: Remote Auditing of Drinking Water



- **Example:** Using screen recording for remote compliance in **Texas**.
- **Built in:** SOP Compliance. Field data entered only when flush timer is finished.
- **Results:** Cut auditing costs while ensuring SOP adherence.



Data Entry Not Allowed Until Timer is Complete

Customizable Data Entry Validation



- **Features:** Customizable data entry warnings, preventing certain values and requiring comments.
- **Example:** Exclude pH values above 14.0 and require a comment if the pH is below 5.0 or above 9.0.

The image shows a configuration interface for data entry validation. It features a dropdown menu for 'Validation Type' with the following options: Allow, Prevent (highlighted), Require Comment, and Warn. Below the dropdown, there are two validation rules. The first rule has a value of '100' and is set to 'Inclusive' (checked). The second rule has a value of '4.9' and is also set to 'Inclusive' (checked). Each rule has a 'Delete' button next to it.

Alert Systems for Proactive Management



- **Features:** Customizable alerts. Missed samples or lab delivery. Exceedances of parameters or values.
- **Example:** The WWTP effluent sample for BacT not delivered to lab by 1:00 PM. “Send Email and/or Text Message to the plant manager and technician”.

The screenshot shows a mobile application interface for creating alerts. At the top, there is a header with a back arrow, the text 'Create Alert', and a close 'X' button. Below the header, the word 'Alerts' is centered. There are two columns of alert types: 'Not At Lab' and 'Not Collected'. To the right of these columns is an orange button with a plus sign and the text 'Add Alert'. Below the header, there is a table with three rows. The first row has a blue checked checkbox under 'Not At Lab' and an unchecked checkbox under 'Not Collected'. The second row has an unchecked checkbox under 'Not At Lab' and a blue checked checkbox under 'Not Collected'. The third row has unchecked checkboxes under both 'Not At Lab' and 'Not Collected'.

Alert Type	Not At Lab	Not Collected
Alert 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Alert 2	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alert 3	<input type="checkbox"/>	<input type="checkbox"/>

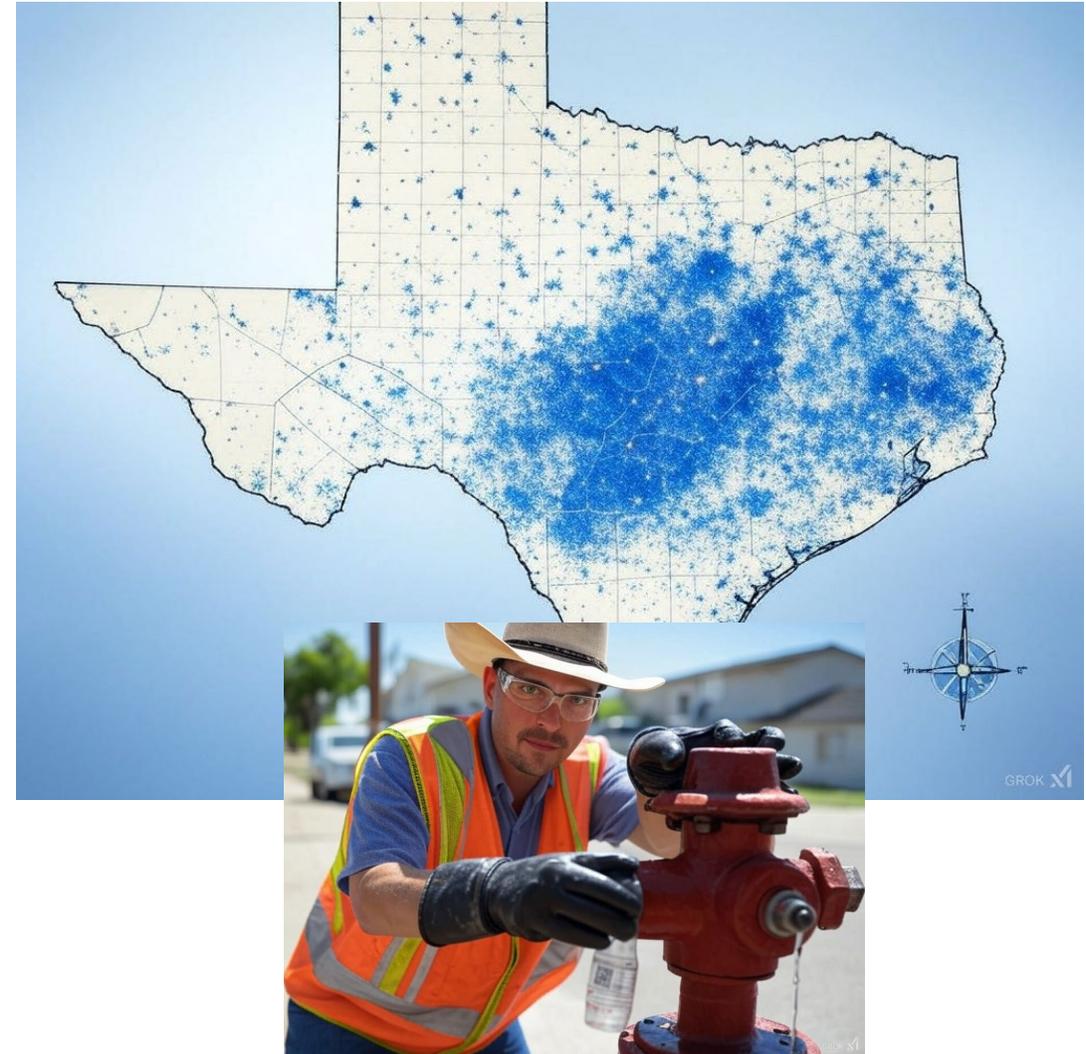
Applications in Water & Wastewater Systems

- **Impact:** Ensures timely sampling, even when sample collection schedules and frequencies are complicated.
- **Example:** Samples collected but not delivered to the lab, causing penalties, fines, and reputational damage.



Large-Scale Sampling Success - Texas

- **Case study:** Texas - 64,000+ samples annually across 7,200 municipal systems.
- **Benefits:** Increased efficiency. Saves technicians 20% of time. No in office sampling data entry. Streamlined Chain-of-custody. Guardrails on data entry time & values. Adherence to the SOP and remote auditing capability.





Data Security and Integrity

- **Secure Communication:** All endpoints encrypted with TLS protocol suite.
- **Token-Based Authentication:** 2-Factor Utilizes OpenID Connect over OAuth 2.0.
- **Password Policy:**
 - History tracking to prevent reuse
 - No personal data in passwords
 - Strength requirements: 8+ characters, mix of case, numbers
 - Dictionary check to block common passwords
 - Passwords stored using one-way hashing.
- **Anomaly detection for:** unusual login attempts, brute force attack prevention and breached password detection
- **Secure Storage:** Data segregation, SQL injection protection, access via secret key.
- **Data Backup:** Daily backups with point-in-time recovery capabilities.
- **Data Privacy:** Data stored on Google Cloud Platform; adheres to high standards (ISO 27001, PCI DSS, SOC 2/3).



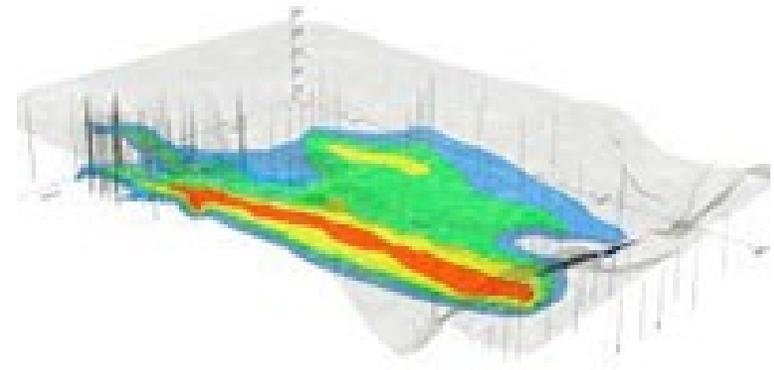
Future Outlook

Innovations:

- AI-driven contaminant modeling.
- Predictive analytics for environmental impact.

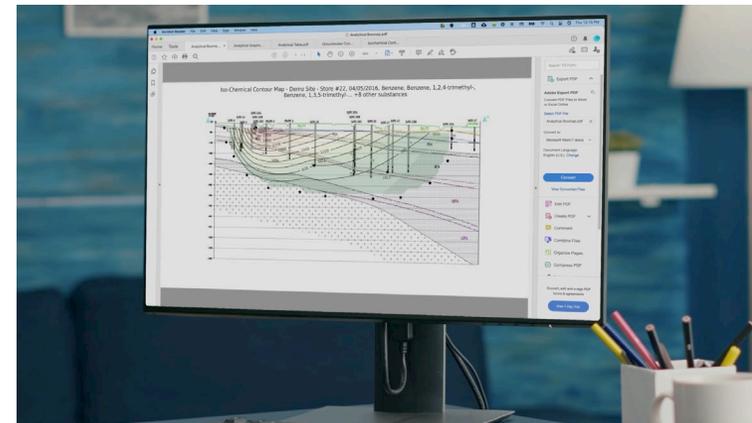
Goals:

- Enhanced decision-making, better resource allocation. “What does sight look like 2-years, 5-years, 10-years from now?”
- Proactive management. Maintain better operation control for WWTPs.



Conclusion and Q&A

- **Recap:** Digital tools redefine environmental monitoring.
- **Call to action:** Explore SampleServe's free* project management and sample collection tools and optional enhanced data reporting services.



* Drinking Water and Wastewater Sampling Excluded

Upcoming Training Events

- January 21, 2025 1:00 pm Est–Free 2 Hour Workshop
Determining Calibration Intervals for Laboratory
Equipment –Certificate Provided-Presenter- Matt Sica
- January 28, 2025 – 1:00pm Est-1 Hour Webinar-A
Roadmap to Inspection Agency Accreditation-Presenter-
George Anastasopoulos
- 17025 Overview Course-February 18-19th -\$500.00 per
Participant –Certificate Provided



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