

NPDES Lab Compliance Inspections

General Lab Criteria (GLC)

- **Why?**
- **How?**
- **What?**

General Lab Criteria

Why is accurate data important?

- **Water Quality Based Effluent Limits**
- **Facility demonstrate compliance with effluent limits**
- **Design decisions**

General Lab Criteria

Why needed?

- **Inspection history**
- **Ensure data are defensible**
- **Ensure requirements are known**
- **Identify red flags**

General Lab Criteria

How were the GLC developed?

- **Benchmarking**
- **40 CFR 136**
- **“Standard Methods for the Examination of Water and Wastewater” (AKA: Standard Methods)**

General Lab Criteria

How were the GLC developed?

- **Chose common analyses**
- **Associated Equipment**

- Sample Collection / Handling
- Balance
- Drying Oven
- pH Meter
- Dissolved Oxygen Meter
- Incubator
- Refrigerator
- Chlorine Meter
- Ammonia Meter
- Desiccator
- Bench Sheets
- Hot Water Bath

General Lab Criteria

What is the GLC focus?

- **Documentation**
- **Std. Methods Requirements**
- **Common Equipment / Procedures**
- **Encourage correction of problems**

General Lab Criteria

What do the criteria look like?

- Sample Collection and Handling



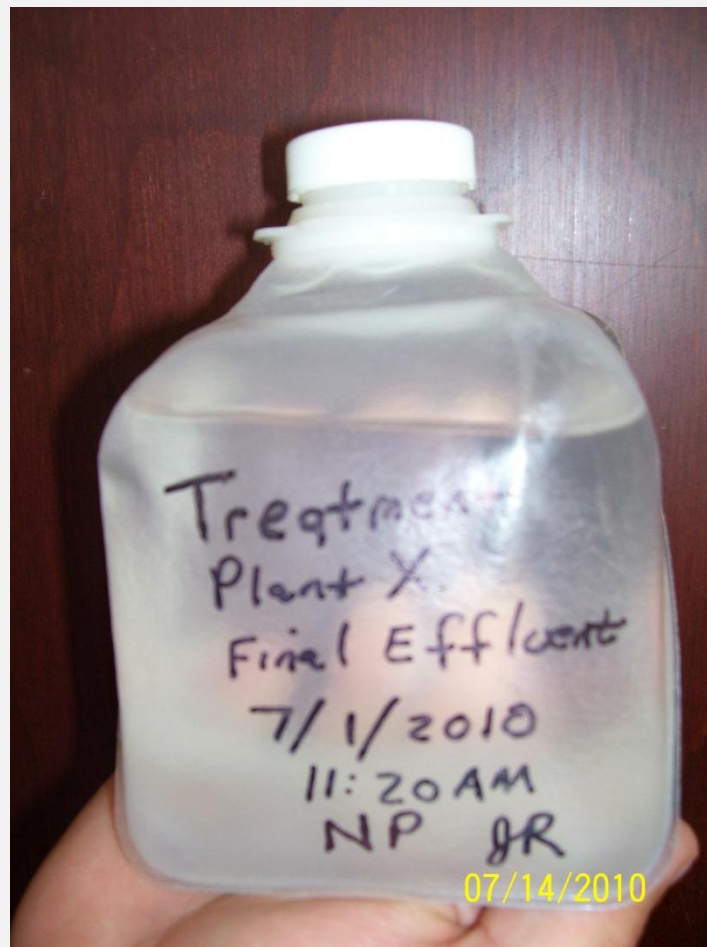
General Lab Criteria

What do the criteria look like?

- **Sample Collection and Handling**
 - **Sample labeling;**
 - ✓ **Description**
 - ✓ **Date and time of collection**
 - ✓ **Preservative added**
 - ✓ **Initials of person that collected the sample**

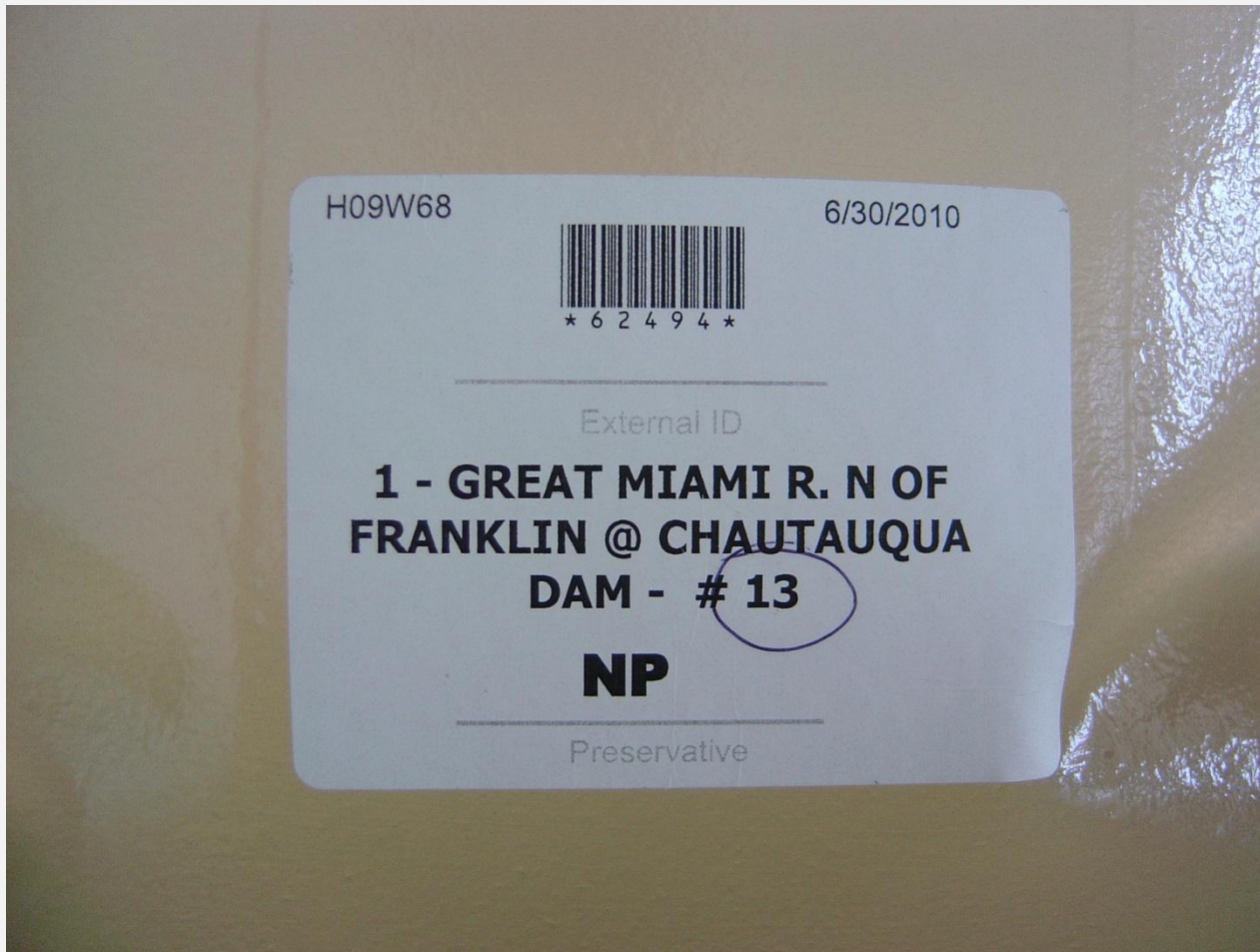
General Lab Criteria

Sample Labeling



General Lab Criteria

Sample Labeling



General Lab Criteria

What do the criteria look like?

- **Chain of Custody must include.**
 - ✓ **Description of sample**
 - ✓ **Date and time of sample collection**
 - ✓ **Signature of person who collected the sample**
 - ✓ **Dates and times of sample transfers**
 - ✓ **Initials of person receiving sample**

General Lab Criteria

What do the criteria look like?

- **Sample Collection and Handling (cont.)**
 - **Other**
 - ✓ **Composite samples refrigerated**
 - ✓ **Equipment Blanks**
 - ✓ **Equipment Logbook**
 - ✓ **Written SOP for cleaning of sampling equipment**

General Lab Criteria

What do the criteria look like?

- **Reference Methods**
 - **1060 A (Collection and Preservation of Samples - Introduction)**
 - **1060 B (Collection and Preservation of Samples - Collection of Samples)**

General Lab Criteria

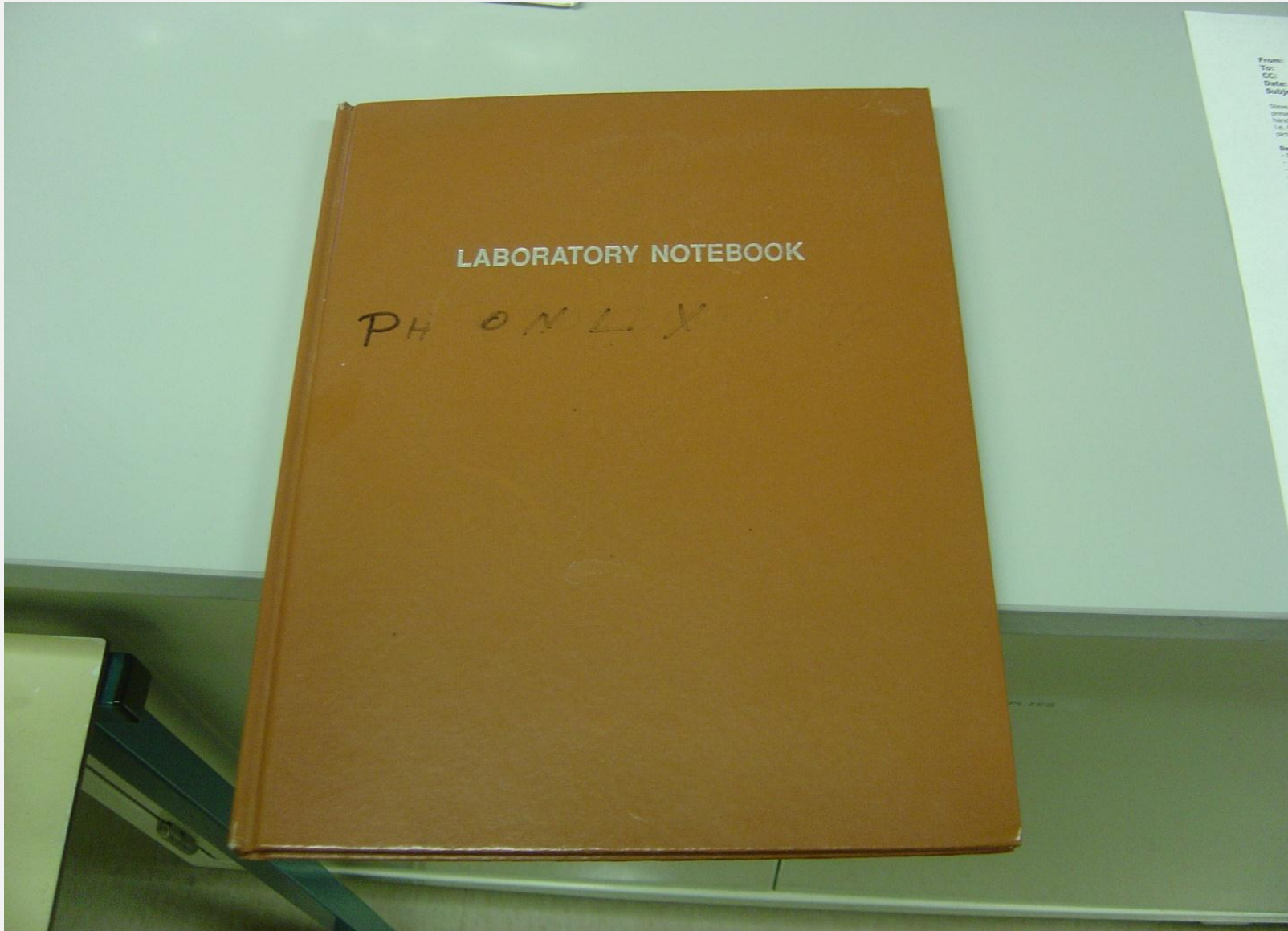
What do the criteria look like?



General Lab Criteria

What do the criteria look like?

- **pH Meter**
 - **Calibration**
 - ✓ **Initial Calibration**
 - ✓ **Calibration verification**
 - ✓ **Equipment Logbook**



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PROJECT

Notebook No.

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DATE	SLOPE	pH 7.0	pH 4.0	SAMPLE ID	INIT
3/24/10	97.0	7.0	4.01	2 Wat	ES
3/24/10	95.8	7.02	4.00	micro H ₂ O QC/mFC	JA
4/19/10	95.7	7.01	4.00	micro mFC	JA
4/19/10	97.0	7.02	4.02	micro H ₂ O QC	JA
4/22/10	98.7	7.01	4.01 3.97	2 Wat	ES
5/06/10	new pH	Buffer SOL	pH 10.0	Lab Chem Inc	LC
Open Lot #	0028-21	cat # L	E 125710-1	Exp. 02/11/11	
05/07/10	99.2	7.02	4.02	2 Wat + 2 Wat	ES
05/10/10	98.9	7.02	4.02	5 Wat, 1st wp	ES
5/17/10	98.6	7.03	4.01	P.A for H ₂ O samp	JA
5/17/10	97.1	7.00	4.04	mFC / mTEC	JA
5/20/10	98.9	7.02	4.03	6 Wat	ES
5/21/10	98.8	7.03	4.02	Wat / Urea	ES / JA
5/21/10	97.2	7.02	4.00	mod mTEC / mTEC	JA
5/25/10	98.8	7.01	4.02	3 Wat + 4 Wat	ES
Open new Buffer SOL			pH 4.0	Lab Chem Inc	
Lot #	9321-12	cat # L	E 12280-1	Exp 12/01/11	
Open new pH 7.00 Buffer			Ricca chem. comp.		
cat #	1551-16	Lot #	1907075	exp jun 2011.	
5/26/10	97.3	6.99	4.03	mFC / mTEC	JA
5/26/10	98.9	7.02	4.02	micro H ₂ O QC	JA
5/27/10	98.6	7.00	4.00	4 Wat	ES
Open new Buffer			pH 2.00	Ricca chem. com.	
cat #	1493-16	Lot #	1812457	exp Dec. 2010	
6/2/10	98.7	7.01	4.01	8 Wat	ES
6/3/10	98.9	6.99	4.02	6 Wat	ES
6/3/10	96.8	7.00	4.00	mTEC	JA
6/4/10	98.4	7.01	4.02	2 Wat	ES
6/9/10	97.9	7.01	4.01	5 Wat	JA
6/9/10	96.1	7.03	4.02	mod mTEC / Nitrogen	JA
6/11/10	opened new Buffer SOL		pH 10.0	Lab Chem Inc.	JA
lot #	0028-21	cat #	LC 12510-1	Exp: 2/11/11	
6/11/10	98.8	7.01	4.02	7 Wat	JA
6/11/10	97.1	7.02	4.01	mTEC	JA



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General Lab Criteria

What do the criteria look like?

➤ pH Meter (cont.)

- **Buffers**

- ✓ **Buffers used during calibration must bracket anticipated result**
- ✓ **Buffers must not be expired**

- **Other**

- ✓ **Instrument Manual**
- ✓ **Stirrer (teflon coated?)**

General Lab Criteria

What do the criteria look like?

- **Reference Methods**
 - **1020 A (Quality Assurance - Introduction)**
 - **1020 B (Quality Assurance - Quality Control)**
 - **4020 B (Quality Control)**
 - **4500-H⁺ B (pH Value - Electrometric Method)**

General Lab Criteria

What do the criteria look like?



General Lab Criteria

What do the criteria look like?

➤ Balance

- **Standard Weights Used Traceable to:**
 - ✓ **NIST Class S or ASTM/ANSI Class1**
- **Calibration Freq. / Documentation:**
 - ✓ **Check once per day**



59431
SERIAL NO. 59431
DATE CAL. 2/18/10
2/18/12
RECAL DUE 1006-1m6
Tolerance: UltraClass NIST Class F
ASTM 0 1 2 3 4 5 6 7
OIML E1 E2 F1 F2 M1 M2
TROEMNER
201 WOLF DRIVE, P.O. BOX 87 • THOROFARE, NJ 08086 USA
PHONE: 856-686-1600 • FAX: 856-686-1601 • INTL: 1-856-686-1600

Serial No. 59431



General Lab Criteria

Balance, cont'd

- **Cleanliness, Air Movement, Vibration**
 - ✓ **Balance clean**
 - ✓ **Air movement minimized**
 - ✓ **Vibration**

General Lab Criteria

What do the criteria look like?

- **Balance (cont.)**
 - **Other:**
 - ✓ **Service and recalibrate annually**
 - ✓ **Measure to 0.1 grams**
 - ✓ **Equipment manual**
 - ✓ **Log Book**

General Lab Criteria

What do the criteria look like?



General Lab Criteria

What do the criteria look like?

- Reference Methods
 - 9020-B (Intralaboratory Q.C. Guidelines)
 - 1020-A (Quality Assurance – Introduction)
 - 1020-B (Quality Assurance – Quality Control)
 - 2020 (Quality Control)
 - 2540-B (Total Solids dried at 103-105 °C)

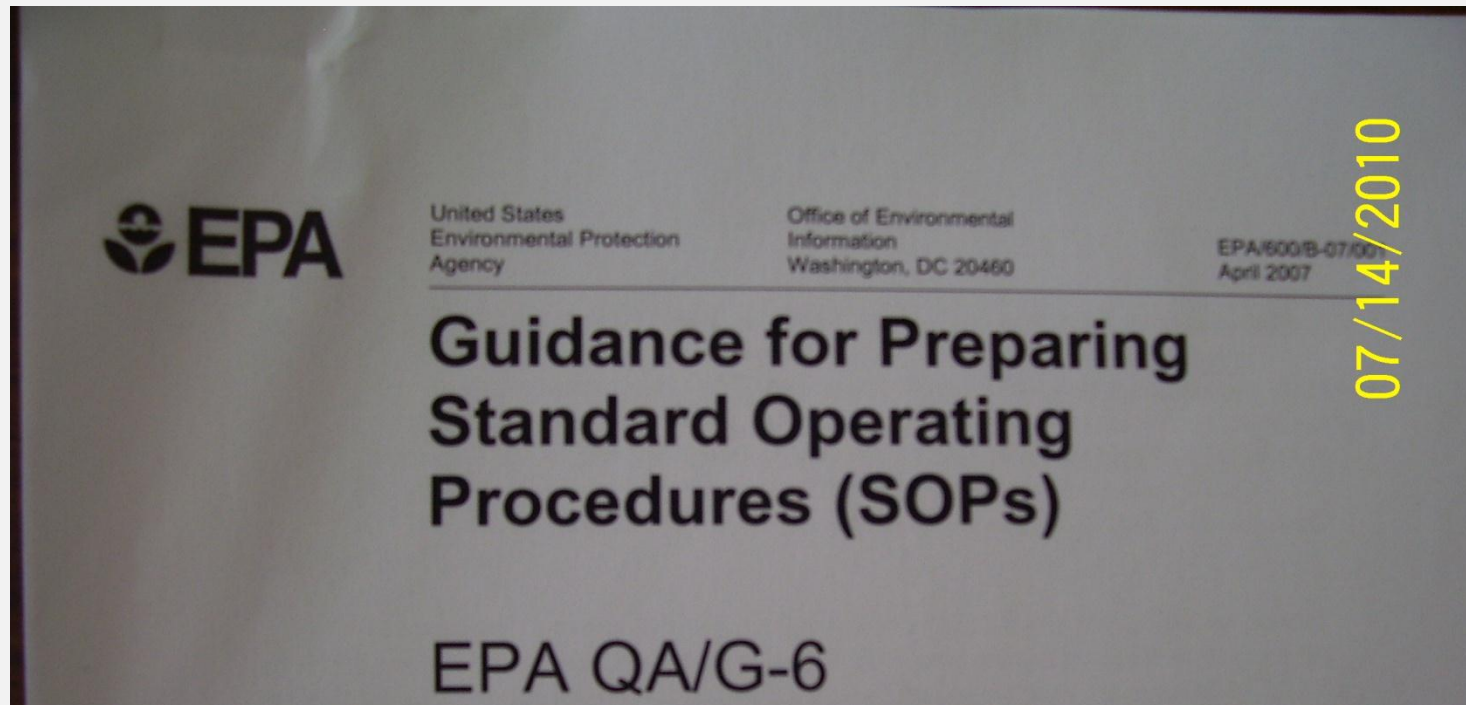
General Lab Criteria

What are common “Red Flags”?

- **Written Standard Operating Procedures**

General Lab Criteria

What are common “Red Flags”?



EPA/600/B-07/001 April 2007

General Lab Criteria

What are common “Red Flags”?

- The following items need to have written SOPs:
 - **All analyses**
 - Sample receiving protocol
 - Glassware washing
 - MDL procedure
 - Calibration of thermometers
 - Calibration of pipettes

General Lab Criteria

What are common “Red Flags”?

- **Written Standard Operating Procedures**
 - **Title**
 - **Procedure**
 - **Scope and Application**
 - **Calculations**
 - **Summary**

General Lab Criteria

What are common “Red Flags”?

- **Written Standard Operating Procedures to Include (cont.)**
 - **Quality Control**
 - **Sample Handling & Preservation**
 - **Apparatus and Materials**
 - **Reagents**
 - **Corrective Action**

General Lab Criteria

What are common “Red Flags”?

- **Written Standard Operating Procedures to Include (cont.)**
 - **Interferences**
 - **Maintenance**
 - **Reference (Parent Method)**

General Lab Criteria

What are common “Red Flags”?

- **Equipment Logbooks to include**
 - **Date**
 - **Initial**
 - **Calibration activities**
 - **Maintenance activities**

General Lab Criteria

What are common “Red Flags”?

- **Calibration documentation to Include**
 - **Initial calibration**
 - ✓ **Manufacturer Specification**
 - ✓ **Known Standard (NIST, etc.)**
 - **Calibration verification**
 - ✓ **Appropriate Frequency**
 - ✓ **Known Standard (NIST, etc.)**

General Lab Criteria

What are common “Red Flags”?

- **Calibrations to Include (cont.)**
 - **Periodic Recertification**
 - ✓ **Manufacturer’s Specification**
 - ✓ **Known Standard (NIST, etc.)**

General Lab Criteria

What are common “Red Flags”?

➤ Chains of Custody

General Lab Criteria

What are common “Red Flags”?

- **Documentation, Documentation!**

General Lab Criteria

What if problems are not corrected?

- **Data Validity in Question**
- **Operator Responsibilities**

General Lab Criteria

Signing (pinning) e-DMRs

e-DMRs have to be signed by;

- **Responsible Officials**
- **Delegated Responsible Officials**

General Lab Criteria

Signing (pinning) e-DMRs

“I believe the submitted information is true, accurate and complete”



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General Lab Criteria Summary

- NPDES program relies upon defensible data
- **Documentation is key!**
- GLC is intended to be a tool for the inspector and the facility

Questions?

Contact Information

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