Part 3 – Sampling and Analysis Plan

Overview

A proper SAP will provide for a sound local limits evaluation and prevent inconsistent data.



NERPCA
New England
Regional Pretreatment Coordinators Association

Five Ws

- Who needs to be involved in the evaluation?
- What tools will be needed to collect samples and what will samples be analyzed for?
- When will samples be collected?
- Where will samples be collected?
- Why is the evaluation being conducted?

The Team

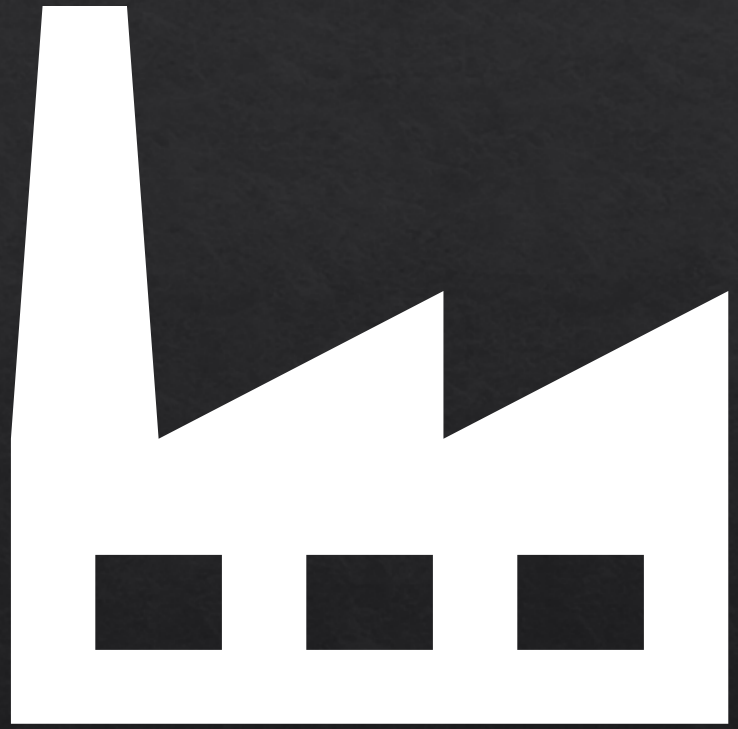
- How many people will be needed?
- Are the people collecting samples familiar with chains of custody and able to remove manhole covers?
- Will some staff collect samples and other perform the evaluation?
- Will a policer officer be needed for traffic control?



NERPCA
New England
Regional Pretreatment Coordinators Association

Contributors

- IUs should be aware that the POTW is undertaking a LL evaluation.
- Outreach leading up to the event about both sampling and what local limits are can help avoid concerns and challenges down the road.
- Does a satellite community need to collect their own samples?



NERPCA
New England
Regional Pretreatment Coordinators Association

Tools

- Equipment will be needed to safely access sampling points, collect samples and deliver the samples.
- Make field notes on observed conditions.



Analyses

- Ultra-clean protocol aka “Clean Techniques” via method 1669 for ambient.
- Different methods and sample containers for wastewater and sludge.
- Some samples are grab like pH, cyanide and VOCs where others are composite such as BOD and nutrients.



Sampling Considerations

- Samples will be analyzed for the POCs but also:
  - Percent solids in biosolids;
  - Ambient conditions like temperature, pH, hardness and total organic carbon.
- Naming convention is crucial.
  - If IU samples are delegated to the industry, make sure they are clear in their naming.

No "Sample 1"!

Cost

- Will a consultant be used?
- Can special sample pricing be received?
- Can the industries pull their own samples?
- Initial vs. ongoing LL monitoring costs.



NERPCA
New England
Regional Pretreatment Coordinators Association

Logistics

- Is there a university or transient population present?
- Do industries have widely varying discharge schedules?
  - Will one of them be shutdown for the week?
- Is a drier time of year preferable because of I/I?



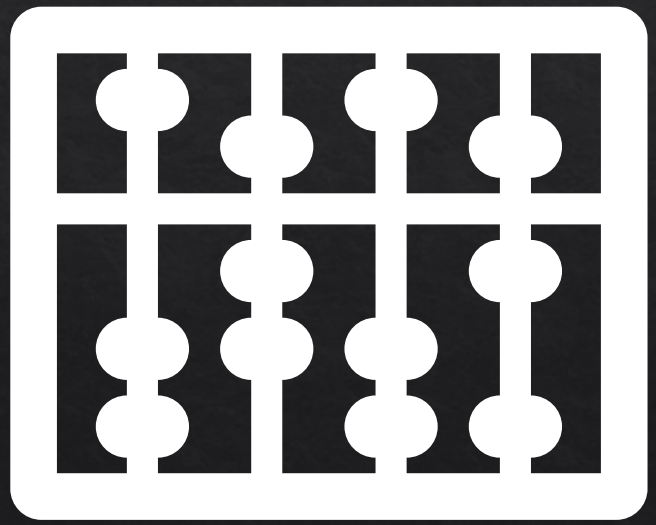
Corn

- It takes time for influent to become effluent.
- Detention time can roughly be calculated using the tankage and the flow but not all tankage is always used.



Fate and Transport

- Local limits are a mass balance exercise.
- The load that comes in is distributed throughout the process and will conceptually end up in one or more of the following:
  - Effluent;
  - Sludge;
  - Return flow; or
  - Air emissions.

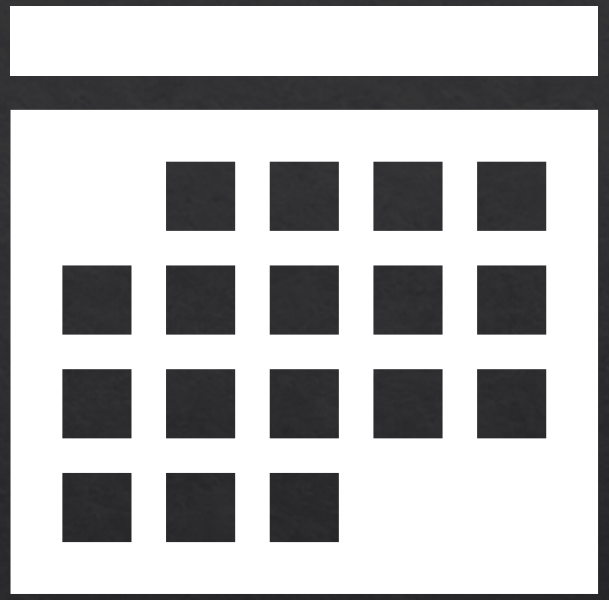


Questions?

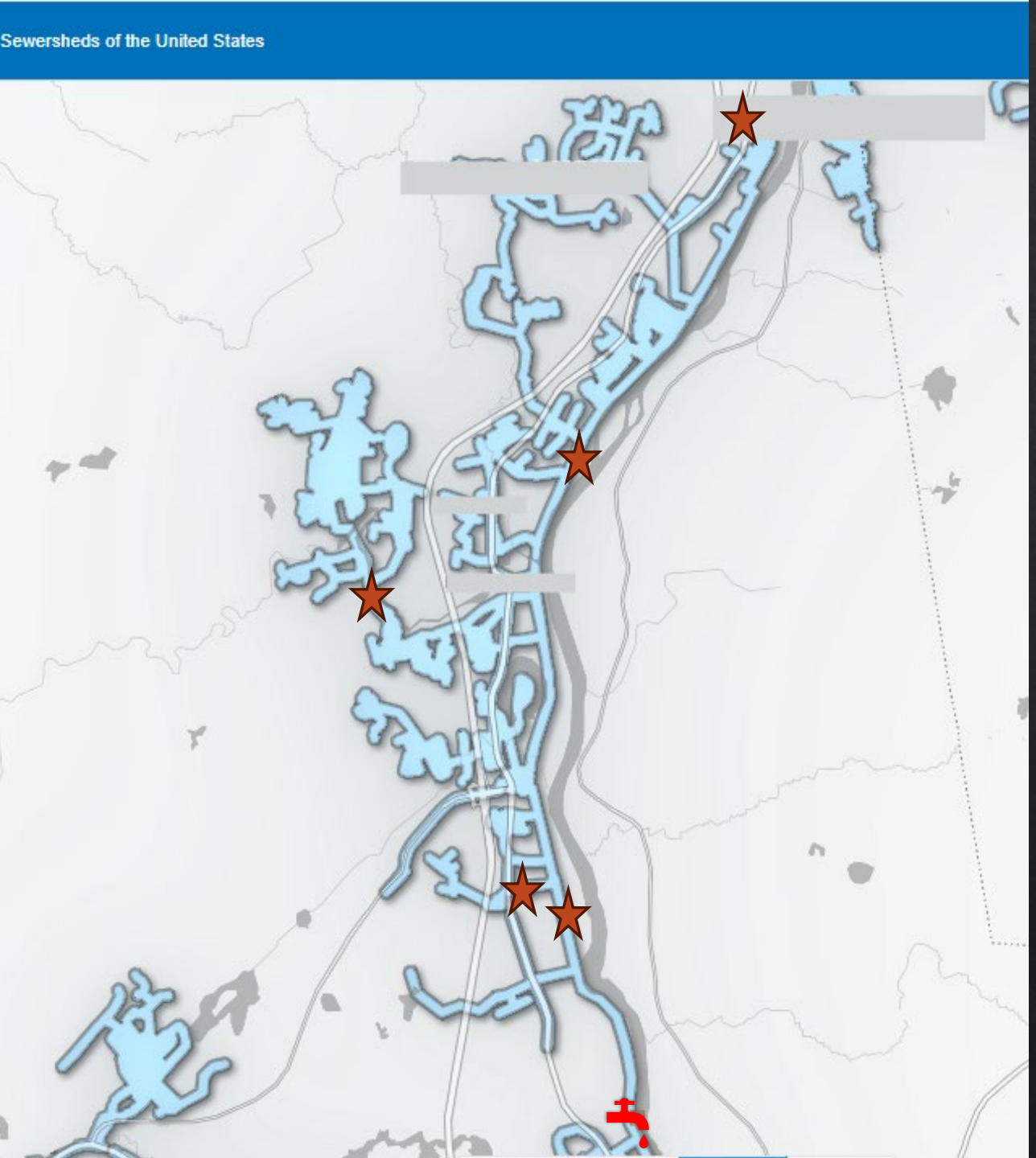


Logistics

- Composite samples may straddle two days.
- How will sample hold times be met?
- Will maintenance on the POTW be occurring?



NERPCA
New England
Regional Pretreatment Coordinators Association



Sewershed

1. IUs.
2. Domestic only.
3. Satellite communities.

Map courtesy of EPA https://www.epa.gov/cwns/sewersheds?tab=map

Existing Data

- POTWs may have extensive records of common pollutants such as ammonia, BOD and TSS in wastewater and metals in sludge.
- However, some data sets may exclude important sample locations such as influent for metals.



NERPCA
New England
Regional Pretreatment Coordinators Association

Initial vs. Continued

- Initial LL development is suggested to have, at a minimum, seven consecutive days of sampling.
- At the end of the process, notice what data would be good going forward and build it into the budget.



Initial vs. Continued

Once established, continued monitoring is often required. EPA recommends LL monitoring:

- Once every two to three months for POCs with adopted LLs.
- Once every three to twelve months for POCs with MAHL but no LL.

Sampling Locations

- IUs
- Domestic Only
- Influent
- Effluent
- Primary Effluent
- Ambient (WQS)
- Hauled Waste
  - Septage and IU
- Sludge
  - Activated Sludge
  - Lagoon

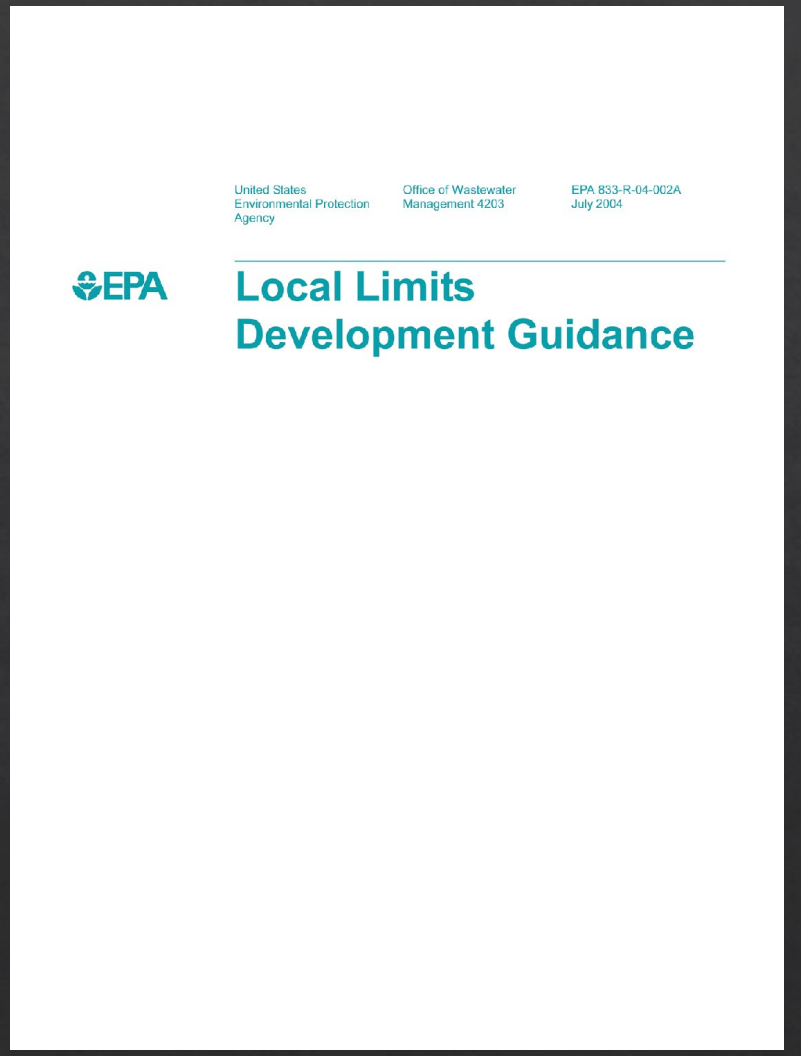
NERPCA
New England
Regional Pretreatment Coordinators Association

Sample Every Location?

- To properly do a local limits analysis, many locations must be sampled.
- This is to help make any limit defensible when implemented.

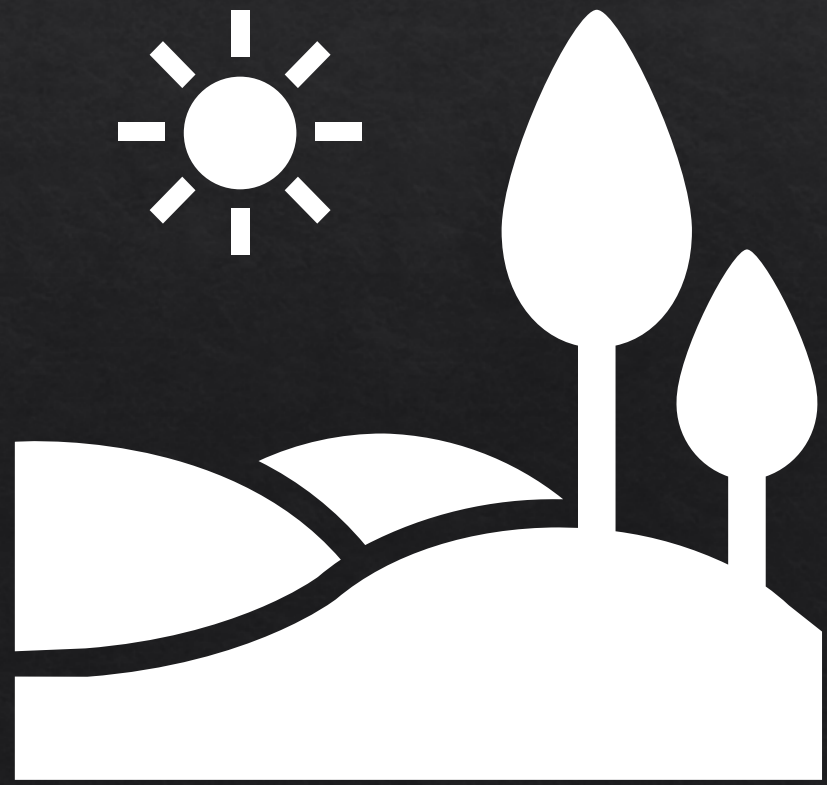


- Some data can be used from EPA's guidance such as removal rates and domestic only concentrations.



Sludge

- Conservative pollutants like metals won't age much.
- Some pollutants may change over time or not be measurable in sludge.
- Can be helpful when doing the mass balance.
- Critical for sludge disposal restrictions.
  - For example, metals in 40 CFR 503.



NERPCA
New England
Regional Pretreatment Coordinators Association

Why

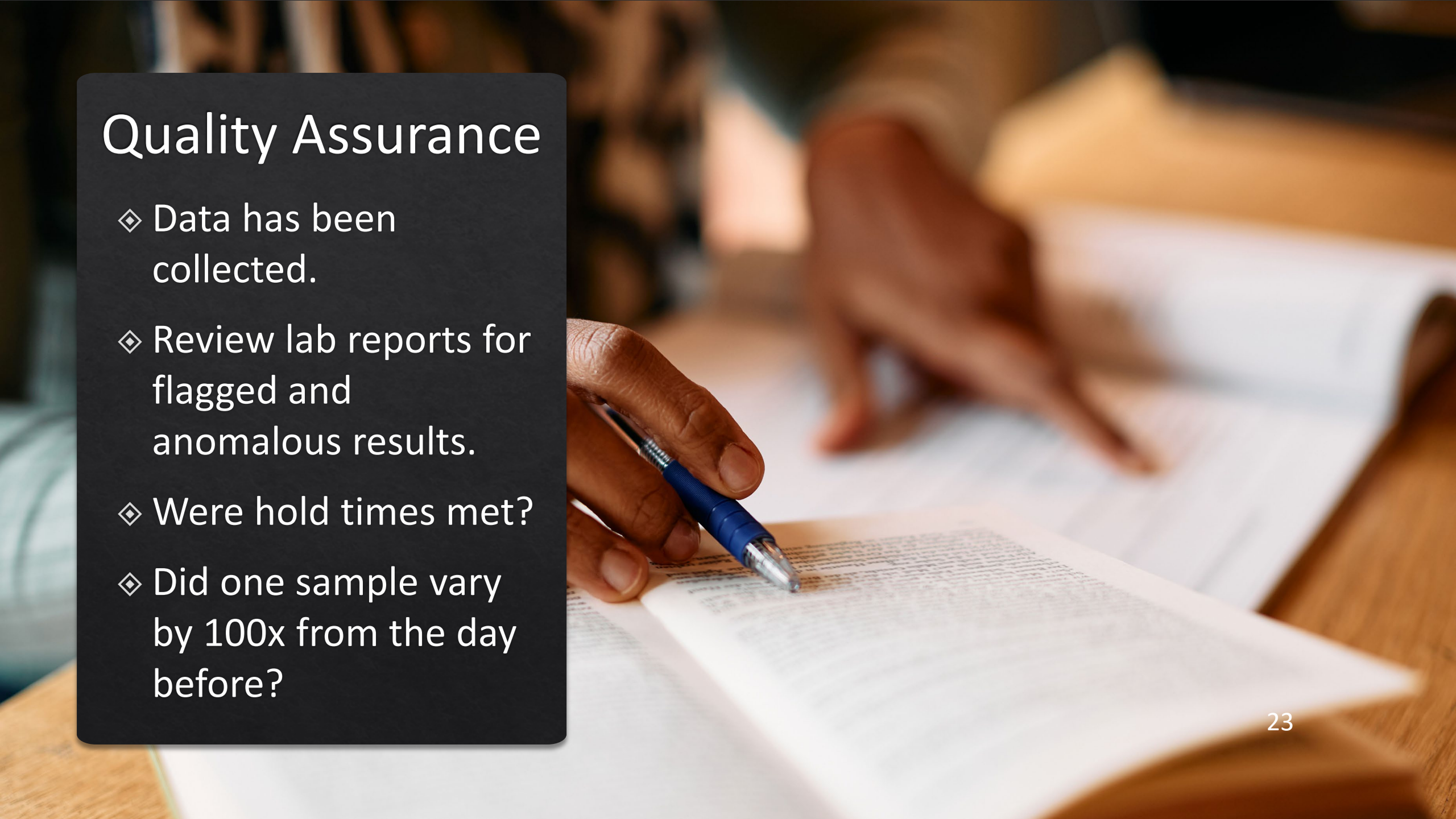
- Local limits answer the question, “How much of a pollutant a POTW can receive without experiencing passthrough or interference?”
- Be able to answer the question, “If a metal finisher moves into town, what concentration do they need to treat to?”



- POTW’s with approved pretreatment programs are required to conduct and maintain local limits.

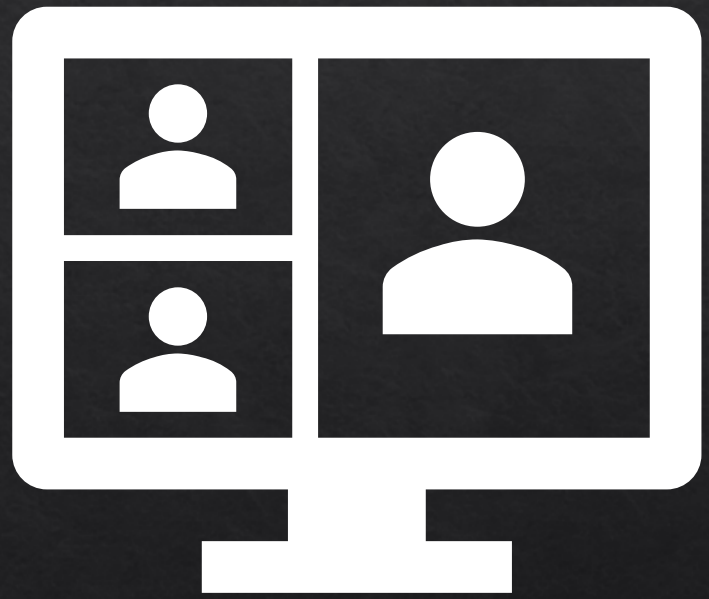
Quality Assurance

- Data has been collected.
- Review lab reports for flagged and anomalous results.
- Were hold times met?
- Did one sample vary by 100x from the day before?



Review SAP Before Execution

- Consult with state or federal regulators to review the SAP to increase defensibility.
- Prevent having to go back or throwing out data.
- Address justification for consecutive vs. randomized sampling days.



Defensible Example

- Not accounting for residence time could provide no removal.
- Incorrect LL -> industry violation -> court -> incorrect -> waste of time!
- Install unneeded treatment.



NERPCA
New England
Regional Pretreatment Coordinators Association



Intimidating

- Approved IPPs get LLs reviewed.
- NH reviews all LLs.
- EPA guidance.
- Consultants.

NERPCA
New England
Regional Pretreatment Coordinators Association

SAP Summary

- It can be difficult to adjust for incomplete data after the fact.
- Document decisions.
- Communication and planning are paramount.