Field Sampling Procedures Manual Chapter 2 Update

March 31, 2022

Alissa Ambacher, Co-Moderator
Training Committee, Ass't. Chair

Lynne Mitchell, Co-Moderator
Training Committee, Manager

Continuing Education Credits (CECs)

SRP Licensing Board **has approved**

1.5 Technical CECs

for this Training Class

Attendance Requirements:

- **Webinar participants**: must be logged-in for the entire session and answer 2 out of 2 poll questions (randomly inserted in the presentation)

CECs: What's the Process?

Since the SRPL Board has approved CECs for the course:

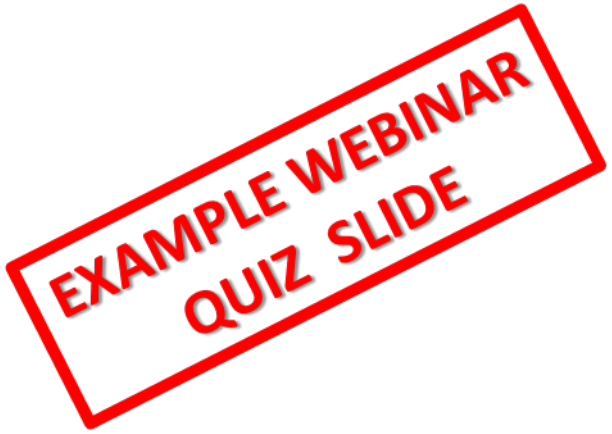
- DEP compiles a list of "webinar" participants eligible for CECs and provides the list to the LSRPA
- LSRPA will email eligible participants a link to an LSRPA webpage with certificate access instructions
- Certificates are issued by the LSRPA after paying a *$25 processing fee*

Test Your Knowledge

There are 30 days in March:

A. True

B. False



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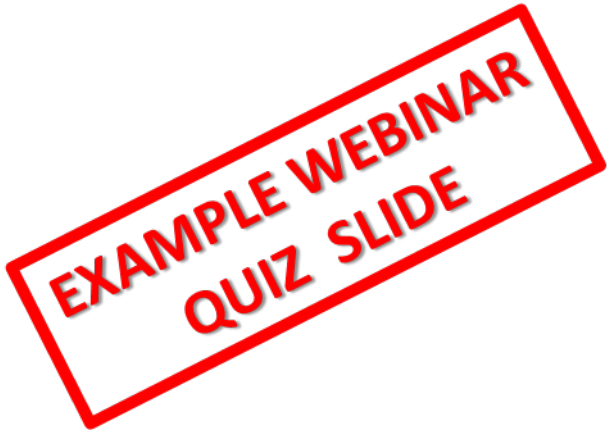

Question and Answer Segments

- Questions will be read aloud by the moderator as time permits
- Any questions that are not addressed during the presentation will be answered via email

Chat Function

- Please use the chat to advise the Department of technical issues with the presentation
- Please do not use the chat function to comment on presentations or to answer other attendee's questions

Remember!

Please fill out the Course Evaluation here:

https://www.surveymonkey.com/r/FHFZQCS

Updates to Chapter 2 of the Field Sampling Procedures Manual (FSPM)

March 31, 2022

Course #2022-013

LSRPs: 1.5 Technical CECs

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Upcoming LSRPA Courses & Events

- **April 19, 2022 – LSRPA Regulatory Roundtable** (1 Tech and .5 Regulatory CECs – LSRPs)
  Addressing Sediment Contamination Under the LSRP Program
  Meredith Hayes, GZA GeoEnvironmental, Inc.
  Moderator: Ken Haduch, LSRP, ERM

- **April 20, 2022 – Due Diligence in New Jersey** (2 Tech and 2 Regulatory CECs – LSRPs)
  William P. Call, PG, LSRP, PennJersey Environmental
  David J. Morris, LSRP, CHMM, LIEC, Tectonic Engineering
  John Scagnelli, Esq., Scarinci Hollenbeck

- **May 17, 2022 – LSRPA Regulatory Roundtable** (1.5 Regulatory CECs – LSRPs)
  Response Action Outcomes (RAOs): Important Practitioner Tips
  Heidi S. Minuskin, Esq.Schenck, Price et al.
  Mark D. Fisher, LSRPThe ELM Group, Inc.

Upcoming LSPRA Courses & Events

General Housekeeping

1. **Be sure to respond to poll questions to be eligible to receive Continuing Education Credits.**

2. **Please use the chat feature for questions for the presenters.**

3. **You will receive a link to the online evaluation at the end of the training. Be sure to complete it to give us feedback for the course.**

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Stay connected through lsrpa.org and these social media platforms.


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Thank You!

Field Sampling Procedures Manual: Background and Introduction

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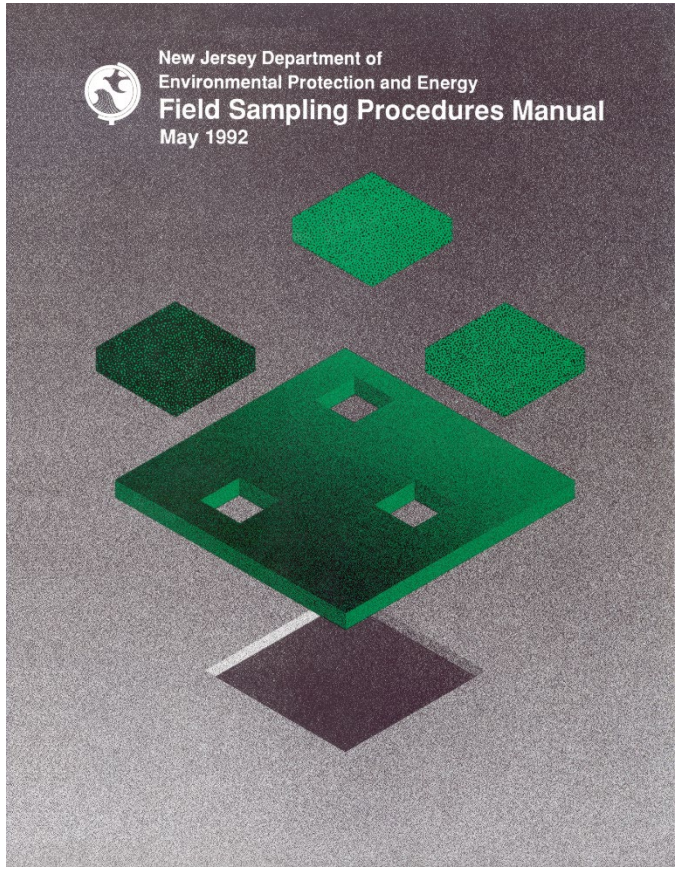
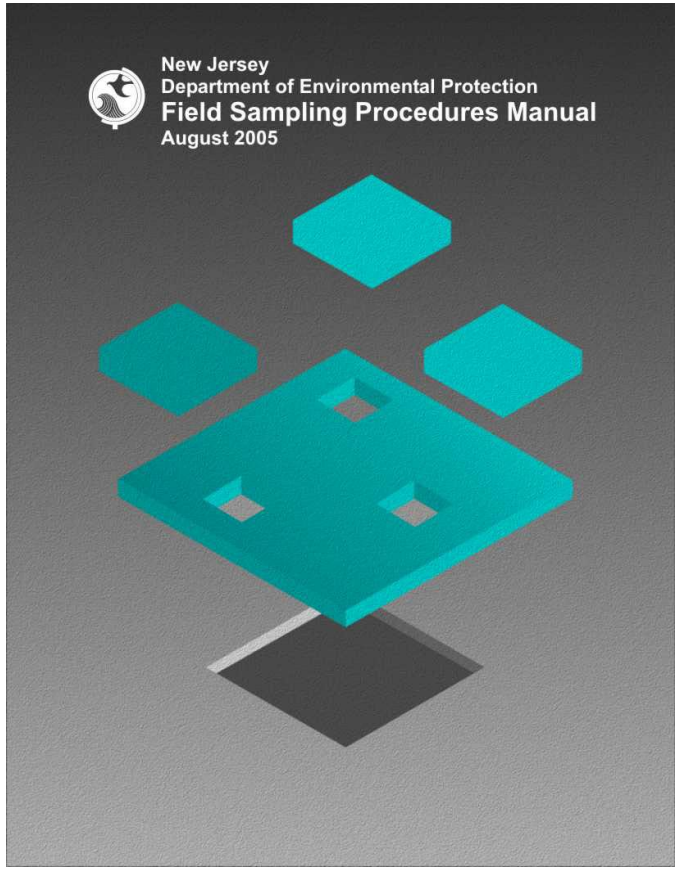
History: FSPM 1992 Version



- Original document
- Created to promote accuracy and consistency
- Discusses how environmental samples are collected and analyzed

FSPM 2005 Update



- Completely rewrote the manual
- First electronic copy

Other FSPM Updates

- Multiple updates since 2005
  - Most minor text and clarification updates
  - Last update was in 2011
  - Full list of updates

    https://www.nj.gov/dep/srp/guidance/fspm/updates.htm

FSPM Current Version

- Committee convened in the Fall of 2017
- Every chapter will be updated

FSPM Webpage

NJDEP SRP - Guidance: Field Sa

https://www.nj.gov/dep/srp/guidance/fspm/

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Guidance Documents ▸ Field Sampling Procedures Manual

Field Sampling Procedures Manual

Glossary of Terms

Acronyms

The Field Sampling Procedures Technical Guidance Committee is in the process of updating the Field Sampling Procedures Manual (FSPM), chapter by chapter. Completed chapters will be posted on this website as they are finalized. When all the updated chapters are posted, the 2022 edition will replace the 2005 edition as the most current technical guidance associated with procedures and equipment utilized for the collection of environmental samples. At that time, the 2005 version will be archived.

The FSPM is designed to help those parties responsible for conducting environmental sampling as part of requirements established by the New Jersey Department of Environmental Protection (NJDEP).

The 2005 edition of the FSPM is available (to the right). Updated chapters are listed below.

FSP Manual - 2022 Edition

Review the Response to Comments spreadsheets and Change Logs for each Chapter.

- **Introduction**
  - *Intended Use of the Document*
  - *Purpose*
  - *Document Overview*
  - *Disclaimers*
- **Chapter 1 The Sampling Plan**
  - *1.1 Introduction*
  - *1.2 The Triad Approach*
  - *1.3 Site History - Evaluating Existing Data/File Information*
  - *1.4 Defining the Physical Environment*
  - *1.5 Sample Locations and Numbers*
  - *1.6 Sample Methodology and Matrix*
  - *1.7 Laboratory Selection*
  - *1.8 Electronic Submission of Data for Site Remediation and Waste Management*
  - *1.9 Quality Assurance Considerations*
  - *1.10 Health and Safety Concerns*
- **Chapter 2 Quality Assurance**
  - *2.1 Introduction*
  - *2.2 Certifications*
  - *2.3 Data Quality Objectives*
  - *2.4 Sample Containers and Sample Preservation Requirements*
  - *2.5 Decontamination Procedures*
  - *2.6 Quality Control Samples*
  - *2.7 Quality Assurance for Emerging Contaminants*
- **Chapter 3 Gaining Entry to Inspect Sites for Actual or Suspected Contamination**
  (Chapter Removed)
- **Chapter 4 Site Entry Activities**
  - *4.1 Introduction*

FSPM Manual 2005 Edition

- Cover
  HTML, PDF [182 Kb]
- Acknowledgements
  HTML, PDF [29 Kb]
- Disclaimers
  HTML, PDF [25 Kb]
- Introduction
  HTML, PDF [31 Kb]

The following sections of the Manual, except the Glossary, are available only as Adobe PDF files. These PDF files have navigation links to move from section to section.

- Full Table of Contents [218 Kb]
- Chapter 1 - The Sampling Plan [112 Kb]
- Chapter 2 - Quality Assurance [351 Kb]
- Chapter 3 - Gaining Entry to Inspect Sites For Actual or Suspected Pollution [51 Kb]
- Chapter 4 - Site Entry Activities [85 Kb]
- Chapter 5 - Sampling Equipment [1.63 Mb]
- Chapter 6 - Sample Collection [1.42 Mb]
- Chapter 7 - Field Analysis [129 Kb]
- Chapter 8 - Geophysical Techniques [453 Kb]
- Chapter 9 - Soil Gas Surveys [638 Kb]
- Chapter 10 - Documentation [68 Kb]
- Chapter 11 - Sample Shipment [51 Kb]
- Chapter 12 - Radiological Assessment [120 Kb]
- Chapter 13 - Personnel Protection [85 Kb]
- Chapter 14 - Personnel Contamination Reduction [84 Kb]
- Glossary of Technical Terms
  HTML, PDF [56 Kb]

Versions of the Manual for Offline Work

- ZIP of all the manual's PDF files [4.86 Mb]
- Single PDF of the Manual [5.06 Mb]
- ZIP of the single PDF version [4.64 Mb]

FSPM Webpage

- Additions to the webpage
  - Glossary
  - Acronyms

FSPM Chapters

Introduction

Chapter 1 The Sampling Plan
Chapter 2 Quality Assurance
Chapter 3 (reserved)
Chapter 4 Site Entry Activities
Chapter 5 Sampling Equipment
Chapter 6 Sample Collection
Chapter 7 Field Analysis
Chapter 8 Geophysical Techniques
Chapter 9 Soil Gas Surveys
Chapter 10 Documentation
Chapter 11 Sample Shipment
Chapter 12 Radiological Assessment
Chapter 13 Personnel Protection
Chapter 14 Personnel Contamination Reduction

Update Process

- The workgroup assigned to each chapter went through the entire chapter and made changes and updates
- The document was then given to the entire committee to review
- The document then went to the stakeholders and NJDEP for review
- All comments received were reviewed and discussed and the finalized chapter posted to the DEP website

Chapters 1, 3, and 4 Workgroup

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Chapter 1: The Sampling Plan

1.1 Introduction

1.2 The Triad Approach

1.3 Site History

1.4 Defining the Physical Environment

1.5 Sample Locations and Numbers

1.6 Sample Methodology and Matrix

1.7 Laboratory Selectin

1.8 Electronic Submission

1.9 Quality Assurance Considerations

1.10 Health and Safety Considerations

Chapter 1: The Sampling Plan

- Objective of the sampling dictates the sampling plan
- Site specific information is important to consider
  - History
  - Physical environment
  - Sample locations
  - Laboratory selection

Chapter 3: Gaining Entry to Inspect Sites

- Chapter 3 was written as an internal DEP process for gaining entry to inspect sites
- No longer needed in the FSPM and was removed

Chapter 4: Site Entry Activities

4.1 Introduction

4.2 Health and Safety Program Plans

4.3 General Safety Measures

4.4 Site Entry and Reconnaissance

Chapter 4: Site Entry Activities

- Discusses how to establish a health and safety program for a site
  - Health and Safety Plan (HASP)
  - Training
  - Site-specific monitoring
  - Emergency contingency planning

Chapter 2 Workgroup Members

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Chapter 2: Quality Assurance

2.1 Introduction

2.2 Certifications

2.3 Data Quality Objectives

2.4 Sample Containers and Sample Preservation Requirements

2.5 Decontamination Procedures

2.6 Quality Control Samples

2.7 Quality Assurance for Emerging Contaminants

Section 2.1 Introduction

- Provides the user with QA requirements and procedures for conducting environmental measurements and sampling
- This chapter discusses elements highlighted in the Quality Assurance Project Plan (QAPP) and the need to follow it
- A list of relevant guidance manuals and links are provided

Section 2.2 Certifications and Section 2.3 Data Quality Objectives

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Sections 2.2 and 2.3 of the FSPM includes:

2.2 Certifications

2.2.1 Field Environmental Measurements Certifications

2.3 Data Quality Objectives

2.3.1 Laboratory Analytical Methods

2.3.2 Field Screening Methods

What Changed

- Information reorganized into more logical order
- Hyperlinks added/updated
- Wording changed to make explanations as clear as possible

2.2 Certifications

- Certification may be obtained through either program

NELAP

National
Environmental
Laboratory
Accreditation
Program

-VS-

ELCP

Environmental
Laboratory
Certification
Program

2.2 Certifications

- Certification is analyte/method/matrix specific
- The *Regulations Governing the Certification of Laboratories and Environmental Measurements* (N.J.A.C. 7:18), require certification to be held by any "laboratory" submitting analytical data to the NJDEP
  - This applies to field environmental measurements as well as laboratory generated data
- N.J.A.C. 7:18 https://www.nj.gov/dep/rules/rules/njac7_18.pdf
- Certified laboratories must adhere to federal regulations, the N.J.A.C. 7:18 rules, as well as requirements found within the method/s for which they are certified

2.2 Certifications

- Determine the certification status of a laboratory prior to submitting environmental samples
  - Office of Quality Assurance Laboratory Certification website: https://www.nj.gov/dep/enforcement/oqa/certlabs.htm
  - Data Miner 2.0 home page allows you to search for certified laboratories based on location, analyte, method, matrix, etc.
    - When in doubt, contact the laboratory!

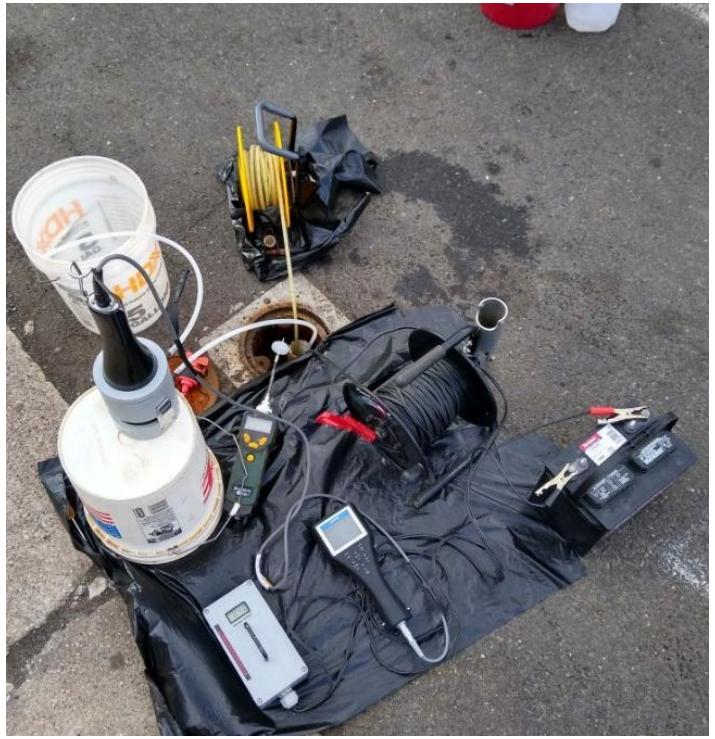
2.2.1 Field Environmental Measurements Certifications

Certification is required for measurements collected in the field and submitted to the NJDEP to support regulatory compliance and decision making (unless a specific NJDEP regulation allows for measurements by a non-certified entity)

2.2.1 Field Environmental Measurements Certifications

Certification must be obtained for Low Flow Analysis parameters

(Temp, pH, DO, Turbidity, Conductivity)



Low Flow Testing

Analyze Immediately parameters

For certification information, visit: https://www.nj.gov/dep/enforcement/oqa.html

2.3 Data Quality Objectives

- Data Quality Levels now called Data Quality Objectives
- Data Quality Objectives (DQO) are developed by the investigator to ensure that a sufficient quantity and quality of analytical data are generated to meet the goals of the project and support defensible conclusions that protect human health and the environment
- DQOs must take analytical method sensitivity and method selection into account
- EPA *Guidance on Systematic Planning using the Data Quality Objectives Process* at: https://www.epa.gov/quality/agency-wide-quality-program-documents

2.3 Data Quality Objectives

- Any sampling conducted by remediation professionals and state contract vendors (pursuant to N.J.A.C. 7:26E) requires the development and implementation of a Quality Assurance Project Plan (QAPP)
- The QAPP should address:
  - Site-specific Data Quality Objectives
  - Sample collection and handling procedures, and field QC samples
  - Analytical methods, target analytes, reporting levels, laboratory certification, and laboratory QC samples
  - Data deliverables (Data Report type and Electronic Data Deliverables format)
- NJDEP QAPP Guidance at:
  - https://www.state.nj.us/dep/srp/guidance/#analytic_methods
  - https://www.state.nj.us/dep/wms/bears/cwm_qapps.htm

2.3.1 Laboratory Analytical Methods

- Links to approved methodology are included
  - Approved methods are analyte and matrix specific
- Consider method specific sample collection, handling, and quality control sample requirements
  - May be more specific than sample requirements found in federal or state regulations

2.3.2 Field Screening Methods

For some projects field screening methods can provide real-time data and rapid characterization that can aid project developers in meeting data quality objectives

Final Thoughts

- The FSPM is Guidance
- Consult the test method for sample requirements which may differ from the FSPM
- Consult NJDEP program requirements and federal requirements related to your project
- Plan ahead!

Section 2.4 Sample Containers and Sample Preservation Requirements

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esnyder@alphalab.com

Section 2.4 of the FSPM includes:

2.4.1 Reactivity of Container Material with Sample
2.4.2 Sample Volume
2.4.3 Color of Container
2.4.4 Container Closures
2.4.5 Sample Container Quality
2.4.6 Chain of Custody
2.4.7 Sample Bottle Storage and Transport
2.4.8 Sample Preservation Requirements

Appendices 2.1 to 2.5

2.4.1 Reactivity of Container Material with Sample

- Sample container composition is designed to ensure that the chemical and physical integrity of the sample is maintained

2.4.1 Reactivity of Container Material with Sample

- Selection of container type is based several factors:
  - Sample Matrix (i.e., solid, liquid, waste, biota, etc.)
  - Sample Constituents (i.e., waste, solvents, plasticizers, etc.)
  - Analytical Parameters and Methods (i.e., organics, metals, etc.)
  - Regulatory Program (i.e., drinking, non-potable water, wastewater, waste, etc.)

Sample Container Types

- Glass vs. Plastic Container?
- Amber vs. Opaque Container?
- What are factors that effect container choices?

Sample Container Types

Sample Container Types

- Glass Amber Container
  - Used for photosensitive constituents
  - Chemically inert to most substances
  - Used for sampling potentially hazardous material and most organic analytical parameters in solid and liquid matrix
- Plastic Opaque Container
  - Used for sampling Metals, General Chemistry, and PFAS analytical parameters in solid and liquid matrix

Test Your Knowledge

For sample container selection, what factors should be considered?

A. Sample matrix
B. Analytical methods
C. Sample constituents
D. All of the above

Test Your Knowledge

For sample container selection, what factors should be considered?

A. Sample matrix
B. Analytical methods
C. Sample constituents
D. All of the above

2.4.2 Sample Volume

- Sample volumes are based on:
  - Regulatory program
  - Analytical method
  - Target analytes of concern
  - Laboratory specific protocols

2.4.2 Sample Volume

- Safe Drinking Water Program Methods define the sample volume, container, preservative, hold time
- Safe Drinking Water Methods (500 series) are prescriptive, with no modification allowed
- Example: Drinking Water VOAs by EPA 524.3 as 2 x 40mL Amber Glass, Teflon Lined Cap Vials, w/ Ascorbic Acid, HCL, to pH<2, Cool to 4° C, HT @ 14 Days

2.4.2 Sample Volume

2.4.2 Sample Volume

- Wastewater Program Methods (600 series) define the sample volume, container, preservative, hold time, with limited modification allowed
- Example: Wastewater VOAs by Method 624.1 as 3 x 40ml VOA Vials, Amber Glass, Teflon Lined Caps, w/ Sodium thiosulfate (Na2S2O3), Cool to 4° C, HT @ 7 Days (3 Days for Acrolein)

2.4.2 Sample Volume

2.4.2 Sample Volume

- Water and Waste Methods (SW846 Compendium) provide guidance on sample volume, container, preservative, and hold time
- Example: NPW VOAs by SW-846 Method 8260 collected in 3 x 40mL Vials Amber Glass, Teflon Lined Caps, w/ HCL, to pH<2, Cool to 4° C, HT @ 14 Days

2.4.2 Sample Volume

2.4.2 Sample Volume

- Laboratory specific protocols for SW846 Methods may determine sample volumes by method for non-potable water sample matrices
- Example: NPW SVOCs by SW-846 Method 8270 as
  - 2 x 1-Liter Amber Glass (standard containers) vs.
  - 2 x 250-mL Amber Glass (low volume containers)

2.4.2 Sample Volume (1-L)

2.4.2 Sample Volume (1-L & 250mL)

2.4.2 Sample Volume (1-L & 150mL)

2.4.3 Color of Container

- Analytical Methods and Target Analyte Parameters determine sample container color
- Container color choices include:
  - Clear
  - Amber
  - Opaque

2.4.3 Color of Container

- Colored containers prevent photodegradation of the samples:
  - Amber glass containers used for organics parameters
  - Opaque Plastic containers used for metals, general chemistry, and PFAS parameters
- Protect sample containers from light at all times when practical during shipping and handling

2.4.3 Color of Container

- Amber Glass vs. Clear Glass VOA Vials
- Some Laboratories provide clear glass 40 mL vials for VOA sample analysis for easy detection of air bubbles during sample collection

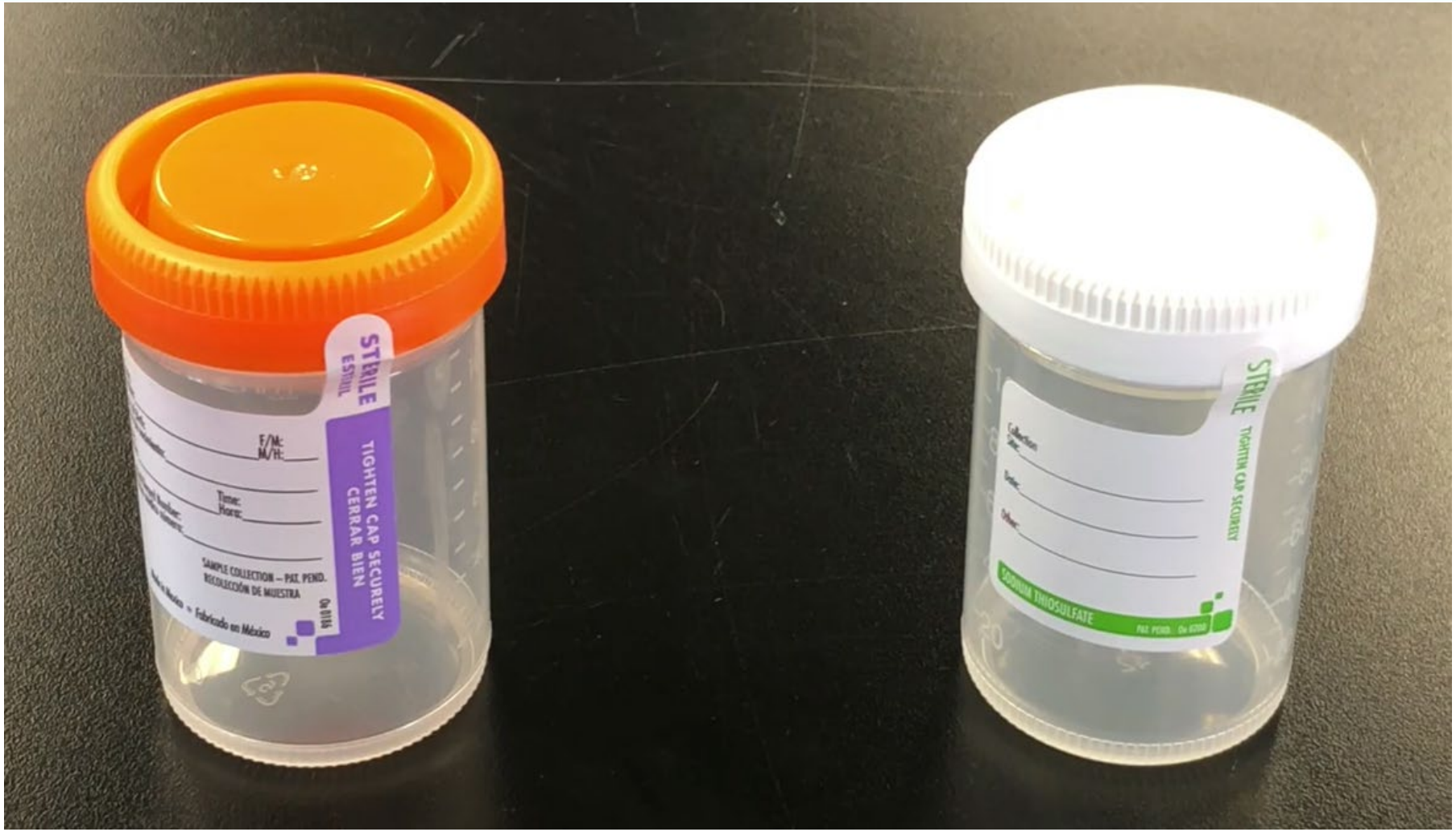
2.4.3 Color of Container

2.4.4 Container Closures

- Closures should form a leakproof seal to maintain sample integrity
- Closures should be constructed of a material that is inert from the material sampled
- Closures may be specified by the analytical method

- Example: Teflon lined caps
- Example: Sterile container seal

2.4.4 Container Closures



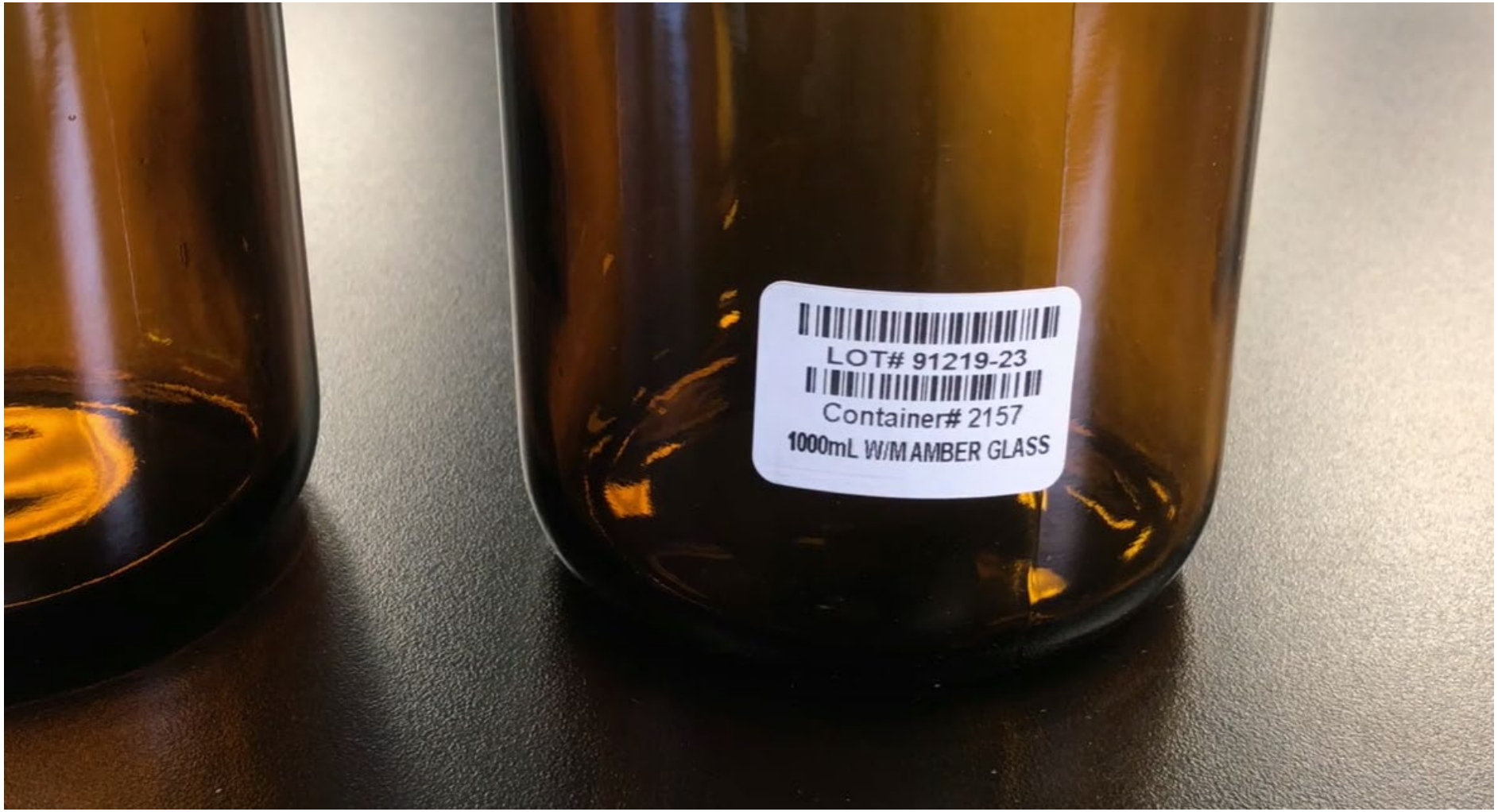
2.4.5 Sample Container Quality

- Sample Containers should be:
  - New
  - Single-use
  - Pre-cleaned
  - Batch certified with documentation
  - Traceable
  - Sourced from a trusted vendor

2.4.5 Sample Container Quality

2.4.5 Sample Container Quality

2.4.5 Sample Container Quality



2.4.5 Sample Container Quality

- Sample Containers should NOT be:
  - Purchased from a retail outlet (i.e., hardware store)
  - Altered or rinsed prior to use
  - Allowed to sit on the shelf in an equipment warehouse for an extended time
  - Switched out, mixed up, or reused

2.4.5 Sample Container Quality

2.4.6 Chain of Custody

- Sample Chain of Custody Forms should:
  - Accompany the Samples from the Lab – to the Investigator's Office – to the Field – back to the Lab
  - Should list ALL samples collected during the field event
  - Should list ALL field QC samples (i.e., Trip Blanks, Field Blanks, project-specific MS/MSD samples)
  - Should list Sample IDs on Sample Bottle labels

2.4.6 Chain of Custody

- Sample Chain of Custody Forms
  - Represent the evidentiary record of samples collected during a field event
  - A signed Chain of Custody Form is a legal document
  - Samples are consumed by the Laboratory during processing and residuals are disposed of after data are reported; the signed Chain of Custody Form is the remaining record of the existence of the samples

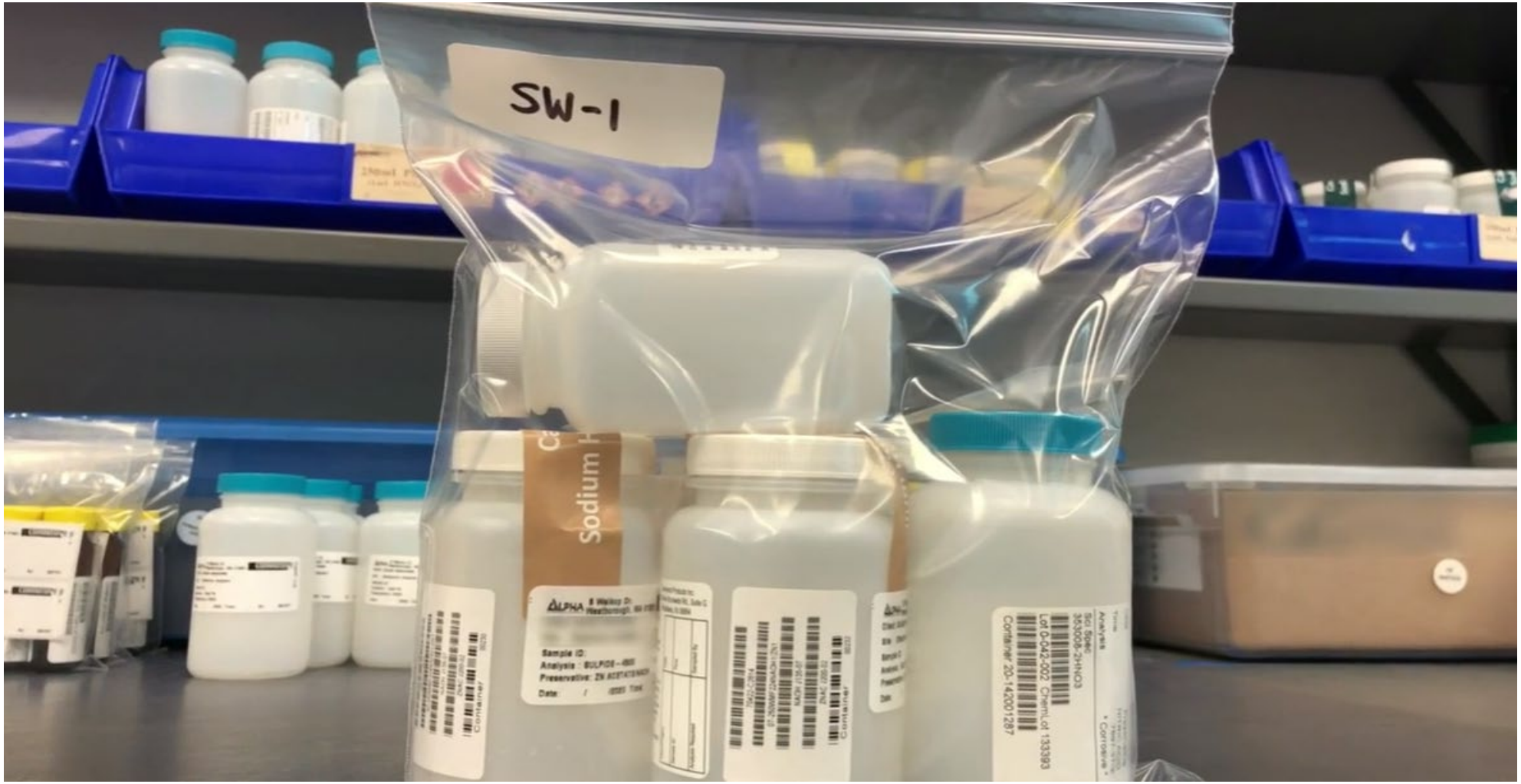
2.4.6 Chain of Custody

- Sample Custody is a process that begins with the Field Sampling Team
- Sample Custody should be maintained during sample collection → and proceed through sample transport from the Field to the Laboratory → and proceed during sample processing by the Laboratory → and ends with sample disposal after final sample analytical data are reported

2.4.7 Sample Bottle Storage and Transport

- Sample Bottles – both empty and filled – must be stored and transported in secure, clean environments under sample custody maintained by authorized personnel
- Field Sampling Teams are responsible for maintaining the integrity of the sample containers – both empty and filled – during the field sampling event
- Samples should be transported to the Laboratory under clean, safe, and custody-secure conditions

2.4.7 Sample Bottle Storage and Transport



2.4.7 Sample Bottle Storage and Transport

- Sample bottles and clean sampling equipment must NOT be stored near running vehicular exhaust pipes, solvents, gasoline, or other materials that are potential sources of contamination
- Sample bottle storage on site during the field sampling event should be kept to a minimum duration to avoid the potential for extraneous contamination

2.4.7 Sample Bottle Storage and Transport

- Sample bottles should be stored on site during the field sampling event at method-defined temperatures
- Example: Cool to 0-6° C
- Sample Bottles should be stored in zip-top baggies, in a Sample Cooler on wet ice, under Chain of Custody

2.4.7 Sample Bottle Storage and Transport

2.4.7 Sample Bottle Storage and Transport

2.4.8 Sample Preservation Requirements

- Sample Preservation is method defined including:
  - Drinking Water Methods – 500 series
  - Wastewater Methods – 600 series
  - Water and Waste Methods – SW846 Compendium
  - Radiological Parameters
  - Biological Parameters

2.4.8 Sample Preservation Requirements

- Appendices discuss method-specific sample preservation:
  - Drinking Water Methods (500 series) (40 CFR 141) - Appendix 2.1
  - Wastewater Methods (600 series) (40 CFR 136) - Appendix 2.1
  - Radiological Parameters - Appendix 2.2
  - Water and Waste Methods (SW846 Compendium) - Appendix 2.3
  - Biological Samples from Freshwater, Estuarine and Marine Environments – Appendices 2.4 and 2.5

2.4.8 Sample Preservation Requirements

Volatile Organics by GC/MS

Analyses	Methods	Container	Sugg. Qty.	Preservative	Holding Time
Volatile Organics - 8260 (High Level)	8260C/D / 5035A (High Level)	40 ml Amber VOA Vial and Terracore, if required	5-15 Grams (refer to collection instructions)	MeOH, 4° C	14 Days
Volatile Organics - 8260 (Low Level)	8260C/D / 5035A (Low Level)	(2) 40 ml Amber VOA and Terracore, if required	5 Grams	$NaHSO_4$, 4° C	14 Days
Volatile Organics - 8260 (Low Level)	8260C/D / 5035A (Low Level)	(2) 40 ml Amber VOA and Terracore, if required	5 Grams	Water, 4	48 Hours (Freeze), 14 Days (Analysis)
Volatile Organics - 8260 (Encore)	8260C/D / 5035A	(3) Encore samplers	15 Grams (Three 5 gram samplers)	4° C	48 Hours

Questions?

BREAK

Section 2.5 Decontamination Procedures and 2.6 Quality Control Samples

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Section 2.5 Decontamination Procedures

- Proper and routine decontamination of sampling equipment is a critical component of all field sampling
- Having an established and effective decontamination procedure is critical to providing an analytical data set which is representative of actual field conditions

Section 2.5 Decontamination Procedures

Insufficient decontamination may result in:

- Data which can not be relied upon
- Development of a Conceptual Site Model which is not accurate, and
- Significant additional costs and loss of time due to a need to go back and reevaluate site conditions

Section 2.5 Decontamination Procedures

- Prior to implementation, the decontamination method should consider the potential for cross-contamination from the materials used in the process, as well as how to properly dispose of decontamination related waste which may be generated
- Decontamination procedures should include both equipment which is used at multiple locations within a day, and dedicated equipment which may remain in place for long periods of time

Section 2.5 Decontamination Procedures

Changes in the upcoming FSPM from the 2005 version

The sample equipment decontamination procedures have been moved to Chapter 5. Additional information will be announced in a future training session

Section 2.6 of the FSPM includes:

2.6.1 Aqueous Matrix

2.6.2 Non-Aqueous Matrix

2.6.3 Air Matrix

2.6.4 Blank Water Quality

2.6.5 QC Sample Management and Holding Times

2.6.6 Specialty Methods

2.6.7 Additional QC Samples

Section 2.6 Quality Control Samples

- Quality Control (QC) samples are intended to provide control over the collection of environmental measurements and subsequent validation, review, and interpretation of generated analytical data
- Use and function of QA samples should be detailed in the Quality Assurance Project Plan or Field Sampling Plan

Section 2.6 Quality Control Samples

QC samples are critical for documenting:

- An analytical data set which is both representative of actual field conditions
- The efficacy of the decontamination procedures
- The accuracy of the analytical data set
- If background conditions are impacting the analytical data set

QC samples can also provide multiple parties with analytical data in order to allow for independent review of investigation findings

Section 2.6 Quality Control Samples

Types of QC samples

- Trip Blanks
- Field Blanks
- Duplicate Samples
- Split Samples
- Background Samples

Section 2.6 Quality Control Samples

Trip Blank

Used to measure possible cross-contamination of samples during shipping to and from the site

Prepared by the laboratory, travel with other sample bottles into the field, and are returned to the laboratory along with the collected samples for analysis with the same set of bottles they accompanied to the field

Section 2.6 Quality Control Samples

Trip Blank

Aqueous Matrix

Only required for aqueous sampling events, for volatile organic parameters, pursuant to the specific analytic method

Should be included at a rate of one per sample shipment. However, certain contract requirements, such as with NJDEP and USEPA, may require additional trip blanks to be included

Section 2.6 Quality Control Samples

Trip Blank

Non-Aqueous Matrix

Trip blanks for non-aqueous sampling are not required unless specifically requested for by Special Analytical Services or if required by the analytical method

Section 2.6 Quality Control Samples

Field Blank

Used to place a mechanism of control on sample equipment and its related handling, preparation, storage, and shipment

Also provides an additional check on possible sources of contamination, such as ambient air, beyond that which is intended for trip blanks

Field blanks should be analyzed for all the same parameters that the collected samples will be analyzed for

Section 2.6 Quality Control Samples

Field Blank

Aqueous Matrix

Water provided by the analytical laboratory is passed through the field sampling device and into an empty set of sample bottles

Should be collected at a rate of 5% per analytical parameter per sampling procedure. For sampling events lasting more than one day, field blanks associated with an aqueous matrix should be collected at a minimum of one per day

Section 2.6 Quality Control Samples

Field Blank

Non-Aqueous Matrix

Same function as with aqueous samples

Should be collected at a rate of one per day. For sampling events lasting more than one day, should be collected at a minimum of one per day

Section 2.6 Quality Control Samples

Duplicate Sample

Allow for evaluation of the laboratory and field sampling team's performance by comparing analytical results of two samples from the same location

Should be collected for each matrix at a maximum rate of one for every twenty samples. If less than twenty samples are collected during a sampling episode, one duplicate should be collected

Section 2.6 Quality Control Samples

Duplicate Sample

Aqueous Matrix

Duplicate aqueous samples should be obtained by the collection of one sample and splitting it into separate sample containers

Consideration is needed to ensure that sufficient sample volume is collected and when sampling for volatile organics

Section 2.6 Quality Control Samples

Duplicate Sample

Non-Aqueous Matrix

Non-aqueous matrix duplicate samples for volatile organic samples should be taken from discrete locations or intervals, without using compositing or mixing

For non-volatile organic samples, the sample volume should be put into a decontaminated container, homogenized with a decontaminated instrument, and then sample containers should be alternately filled

Section 2.6 Quality Control Samples

Split Sample

Split samples can allow for independent evaluation of analytical data by different parties

Split samples should be collected in the same manner as detailed for Duplicate Samples

Consider utilizing different laboratories for analysis of each party's samples

Section 2.6 Quality Control Samples

Background Sample

Background samples, such as for the type of evaluation detailed in N.J.A.C. 7:26E-3.8 when conducting a natural background investigation, allow for a comparison of site conditions to the surrounding environment

These samples should be collected in the same manner as other samples

Section 2.6 Quality Control Samples

Additional QC Sample Considerations

Blank Water Quality

Trip and field blanks must:

- Utilize laboratory provided contaminant-free water, and
- Must be the same as the method blank water used by the laboratory performing the specific analysis

Section 2.6 Quality Control Samples

Additional QC Sample Considerations

Sample Management

- QC samples should be stored in the same manner and in accordance with applicable requirements as other samples
- Hold times need to be factored in when including QC samples
- The Site Remediation and Waste Management Program recommends that quality control samples not be held on site in excess of four days

Section 2.6 Quality Control Samples

Additional QC Sample Considerations

Sample Holding Times

- QC samples should have the same holding time as other samples
- The holding time clock starts when the sample is collected in the field

Section 2.6 Quality Control Samples

Additional QC Sample Considerations

Specialty Methods

As part of project planning, any special methods used in the analysis of samples should be included and part of the QC evaluation

Section 2.6 Quality Control Samples

Changes in the upcoming FSPM from the 2005 version

The 2005 FSPM states “Field and trip blank samples must travel with sample containers and **must** arrive on-site within one day of their preparation in the lab. Blanks and their associated samples may be held on-site for no longer than two calendar days, and **must** arrive back in the lab within one day of shipment from the field. This constitutes the maximum 4-day handling time”.

The current FSPM states “The Site Remediation and Waste Management Program recommends that quality control samples not be held on site in excess of 4 days”.

Test Your Knowledge

You can use tap water for a Blank Water sample:

A. True
B. False

Test Your Knowledge

You can use tap water for a Blank Water sample:

A. True

B. False

Laboratory-provided, contaminant-free water should be used

Questions?

2.7 Quality Assurance for Emerging Contaminants

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2.7 Quality Assurance for Emerging Contaminants

- Quality assurance requirements for emerging contaminants may require special attention during project planning and execution
  - Work with your certified laboratory during project planning
  - Analytical method, sample container, holding times
  - Evaluate potential for cross-contamination
  - Sample collection and handling considerations

Additional Emerging Contaminants Info

- http://www.nj.gov/dep/srp/emerging-contaminants/.
- https://www.epa.gov/fedfac/emerging-contaminants-and-federal-facility-contaminants-concern

Emerging Contaminants Analytical Contact Information

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What's Next

- Chapters 5 and 6: workgroup is going through the 624 comments received during the review period
  - Next training to be provided for the FSPM
- Chapters 7, 8, and 9: currently being updated by the workgroup

Remember!

Please fill out the Course Evaluation here:

https://www.surveymonkey.com/r/FHFZQCS