Splitting Surface Water Samples with a Dekaport Splitter

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Hazard Class: ☐ Low ☒ Moderate ☐ High/Complex

Usage Mode: ☒ Reference ☐ UET ☐ Both UET & Reference

The Responsible Manager has determined that the following organizations' review is required for initial procedure release as well as subsequent major revisions. Review documentation is contained in the Document History File.

ER-FS Operations Manager	Waste Management
Technical Leads	Quality Assurance
Environmental Protection	Training

Classification Review: ☒ Unclassified ☐ UCNI ☐ Classified

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REVISION HISTORY

Document No./Revision No.	Issue Date	Action	Description
EP-DIV-SOP-20218, R0.	06/16/2014	New document	New document
ER-SOP-20218, R0	12/21/2017	Major	Technical and formatting updates. Revisions to process steps.

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1. PURPOSE

This procedure describes the process for splitting surface water samples using the Dekaport Splitter.

2. SCOPE

This procedure applies to all Los Alamos National Laboratory (LANL) personnel and any subcontractors who process surface water samples in the Storm Water Processing Facility (SWPF).

3. BACKGROUND

Surface water samples are collected across Los Alamos National Laboratory for a variety of projects. The Dekaport Splitter is used to ensure mixing and splitting of water samples when paired analyses are to be performed.

4. TRAINING PREREQUISITES

All personnel performing this procedure must complete the following:

Waste Generator Overview Training Live (Course #23263)
Waste Generator Overview Training Refresher (Course #21464)

Orientation to the SWPF by an authorized individual is required. Personnel performing this procedure will read and follow the most current versions of the following procedures:

ER-SOP-20217, Processing Surface Water Samples

5. PRECAUTIONS AND LIMITATIONS

The Dekaport Sample Splitter is used when specified in the sampling analysis plan, and is not used for NPDES Individual Permit Samples. Per EPA 833-8-92-001, NPDES Storm Water Sampling Guidance Document Section 3.5.1 Decontamination of Sample Equipment Containers requires an acid rinse of equipment for metals analysis. Current process restrictions do not allow the use of an acid rinse as part of equipment decontamination in the SWPF. For quality assurance, an equipment blank will be collected to determine if any residual contamination is affecting the surface water sample; see section 7.2.

Inspect the Dekaport Splitter to ensure all components are clean and free of residual material. Only use the Dekaport Splitter in a clean, level area, with ample room for equipment and sample bottles.

When processing water samples workers must wear:

- Lab coats
- Fully closed toe shoes
- Long pants
- Eye protection, (safety glasses with side shields)
- Chemical-resistant gloves

6. PREREQUISITE ACTIONS

6.1 Equipment and Tools

- Copy of this procedure
- Copy of Integrated Work Document (IWD)
- Safety glasses with side shields
- Nitrile gloves
- Lab Coat
- Dekaport Splitter with hard FEP tubing attached
- Level
- Large spill containment tray
- Carboy for mixing
- Certified clean glass and poly sample containers
- Deionized water – 3 or more gallons
- Alconox
- Decontamination supplies (e.g., paper towels, plastic tubs, squirt bottles, soft scrub brush)
- Waste supplies (e.g., bags in various sizes, drum liners, liquid storage container)
- Large clean clear plastic bag to completely cover splitter

7. STEP-BY-STEP PROCESS DESCRIPTION

7.1 Dekaport Splitter Setup

NOTE *Directing more than one tube into a sample bottle often results in spilled sample. It is preferred to place bottles under each tube and recombine samples as needed.*

Sample Processor

[1] **PLACE** the pre-cleaned splitter in the large spill containment tray.

NOTE *If the splitter is not level, the sample volumes will not be even and the process will need to be repeated.*

[2] **USE** a level to ensure the top of the splitter is level from all directions.

[3] **PLACE** certified clean sample containers under each splitter tube. Use containers that are larger than the minimum sample volume required, ensuring sample is not spilled in the event of an uneven split.

7.2 Equipment Blank

Sample Processor

[1] **POUR** enough lab deionized water to assure sufficient analytical volumes specified on Form 20217-1, Sample Processing Log; through the splitter (refer to ER-SOP-20217).

[2] **RECOMBINE** the split water into one sample container.

7.3 Splitting a Sample

NOTE *Directing more than one tube into a sample bottle often results in spilled sample. It is preferred to place bottles under each tube and recombine samples as needed.*

Sample Processor

[1] **COMBINE** all sample water to be split in a mixing carboy and **AGITATE**.

NOTE *Water level should be kept near the top of the reservoir chamber so that as much head pressure as possible is maintained to ensure even flow through the tubes.*

[2] Slowly **POUR** the sample through the splitter. While pouring, **SWIRL** the sample to keep material suspended for an even split.

[3] **IF** the volumes are uneven, the water or sediment levels do not appear even, or any port plugs,
THEN RECOMBINE the split samples into the composite container, **RE-LEVEL** the splitter, and **REPEAT** steps 7.3 [1] and [2] as necessary.

[4] **IF** even volumes cannot be achieved,
THEN NOTIFY the originator of the sampling analysis plan or subject matter expert.

[5] **SECURE** lids on the sample bottles.

7.4 Cleaning the Dekaport Splitter

NOTE *Equipment must be cleaned immediately after use to ensure material does not dry and stick to the inside of the splitter.*

Sample Processor

[1] **PREPARE** an Alconox wash and tap water rinse in squirt bottles and wash tubs.

[2] **DISASSEMBLE** the splitter, thoroughly **CLEAN** the inside of the splitter, and **RINSE**. A soft brush should be used to dislodge any residual dirt/sediments that has accumulated during splitting.

[3] In the wash tubs, **WASH** equipment blank sample containers, carboy, and all equipment that has contacted sample material.

[4] **USE** approximately 3 liters of 18 mega ohm deionized water as the final rinse in the splitter and all other equipment.

NOTE *The hard FEP tubing may be replaced if any residual material is present and that cannot be removed. Replacement tubes shall all be the same length as original.*

[5] **AIR DRY** the Dekaport, carboy and sample containers. Never use paper towels (Wypalls) to dry equipment.

7.5 Waste Management

Sample Processor

[1] A significant amount of decontamination liquid is generated by this process. Liquid waste and contact waste is to be containerized, labeled, and disposed of in accordance with the current Waste Characterization Strategy Form.

[2] All containerized waste stored in the SWPF shall be listed on the Storm Water Monitoring Program Waste Accumulation Log.

7.6 Storage

Sample Processor

[1] **COVER** the clean, dry splitter and associated equipment with clean clear plastic bags.

8. REFERENCES

ER-SOP-20217, Processing Surface Water Samples

EPA 833-8-92-001, NPDES Storm Water Sampling Guidance Document