Invertebrate Hester-Dendy Sample Preparation

(Modified from Standard Methods 10500C)

1. SCOPE AND APPLICATION

1.1 This method details the rinsing and storing of macroinvertebrate samples collected with a Hester-Dendy sampler.

1.2 This method is used for samples collected per Standard Operating Procedure (SOP) FS 7000 - *General Biological Community Sampling* in environments deemed to have acceptable conditions for calculating macroinvertebrate community and diversity measures per SOP LT 7000 - *Biological Indices*.

1.3 This method is to be used for all samples with Laboratory Information Management System (LIMS) test code MI-FW-QNAC.

2. SUMMARY OF METHOD

2.1 A biological sample, consisting of the assembled Hester-Dendy sampler, surface water, macroinvertebrates, leaves, stems, sand, silt and other detritus, is emptied into a U.S. #30 mesh sieve.

2.2 The Hester-Dendy sampler is dismantled and rinsed over the sieve to collect all organisms retained by #30 mesh size.

2.3 All organisms are transferred to an ethanol-filled glass jar for storage and subsequent identification.

3. APPARATUS AND EQUIPMENT

3.1 U.S. #30 mesh sieve
3.2 Wrench for dismantling Hester-Dendy samplers
3.3 Glass jars, 100 to 250 mL
3.4 Squeeze bottle of 80% Ethanol

4. REAGENTS AND CHEMICALS

4.1 Ethanol (80%) – prepared following SOP IZ-09

5. SAMPLE COLLECTION, PRESERVATION, AND HANDLING

5.1 Samples are collected, preserved, and delivered to the lab per SOP FS 7000.

5.2 Samples are checked into the laboratory per SOP IZ-01.

6. SAMPLE PREPARATION PROCEDURE

6.1 Select a sample for preparation. **Check that the label on the Ziploc bag matches the LIMS sticker Receiving added to the bag during log-in**. Determine which sample is being prepared (control site, test site, etc.) and attach the corresponding LIMS label, provided by

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Receiving, to the smallest practical container that will hold the sample (usually a 100 mL to 250 mL glass jar).

6.1.1 Hester-Dendy samplers typically arrive in Ziploc bags on ice and must be processed promptly. Receiving staff notifies the Biology staff as soon as the samples are logged into LIMS. Receiving provides a second set of sample labels to use after the samples are prepped and have been placed in a jar with ethanol (see step 6.5).

6.2 Pour the contents of the Ziploc bag (an assembled Hester-Dendy sampler and associated detritus) into a U.S. #30 mesh sieve. Rinse the Ziploc bag with tap water to ensure all organisms are washed into the sieve. Do not remove the labels. Place the Ziploc bag on a counter or in a drying oven to dry.

6.2.1 Empty Ziploc bags will be kept for a period of time, designated by the Lab Data Support (LDS) staff, after the job is authorized in LIMS. After this period of time, designated staff will collect the empty Ziploc bags and discard them from LIMS.

6.3 Using a wrench to remove the bottom nut, dismantle the Hester-Dendy sampler. Work over the sieve so that no organisms fall outside the sieve and get lost.

6.4 Gently rinse the sample material with tap water. If the water pressure is too high, the organisms can be damaged (a small hose attached to the faucet works best). Scrape and simultaneously rinse organisms off Hester-Dendy plates with fingers (or a soft brush), using care not to damage them. Wash fine debris (silt, mud) through the sieve. Any large debris (leaves, twigs) should be brushed clean of organisms, rinsed, and discarded. Rinse the organism plus detritus matrix to one small area of the sieve.

6.4.1 Save the Hester-Dendy plates and hardware; place them in the drying oven or on a table to dry overnight.

6.4.2 If using a brush, rinse it and visually check to ensure that no organisms are trapped in the bristles.

6.5 Using an ethanol-filled (80% ethanol) squeeze bottle, rinse the organism plus detritus matrix into the clean, labelled container (from step 6.1).

6.6 Place all jars for a given study together in the log-in area near the sample shelf.

6.7 Place all dried Ziploc bags for the study together in the designated sample bottle storage area.

6.8 Log in the samples per SOP IZ-01.

7. SAMPLE ANALYSIS PROCEDURE

7.1 Samples are analyzed per SOP IZ-06.

8. QUALITY CONTROL AND DOCUMENTATION

8.1 Use a pen with black ink for all bench sheet or form entries.

8.2 To correct raw data entries, place a single line through the incorrect entry, write the corrected entry near the error, and initial and date the correction. If the correction requires an explanation, write a comment and reference the error.

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8.3 If a problem occurs during sample processing, submit a nonconformance report (NCR) describing the problem and the corrective action. To create a NCR, open LIMS and go to Laboratory/Administrative/Non-Conformance Report. For a decision tree regarding issuance of NCR's, refer to SOP LB-002.

8.4 Quality Control (QC) of Sorting is performed per SOP IZ-40.

8.5 QC of Taxonomic Identification is performed per SOP IZ-13.

8.6 Refer to the Laboratory Quality Manual.

9. SAFETY/HAZARDOUS WASTE MANAGEMENT

9.1 Lab coat, latex or vinyl gloves, and eye protection are required when working with chemicals and unprocessed samples.

9.2 Squeeze bottles must be labeled with the name and concentration of the reagent.

9.3 Refer to the Material Safety Data Sheet (MSDS) for information about reagents and chemicals in this SOP.

9.4 Refer to the Laboratory Health and Safety Plan.

10. REFERENCES

10.1 DEP Laboratory Quality Manual, https://floridadep.gov/dear/florida-dep-laboratory/content/dep-laboratory-quality-assurance-manual-and-sops

10.2 DEP Laboratory Health and Safety Plan, https://www.floridadep.net/resources/health-safety-manual

10.3 Standard Methods 10500 C, *Benthic Macroinvertebrates: Sample Processing and Analysis*

10.4 SOP FS-7000, *General Biological Community Sampling*

10.5 SOP LT-7000, *Biological Indices*

10.6 SOP IZ-01, *Sample Arrival/Log-in Procedures*

10.7 SOP IZ-06, *Invertebrate Enumeration and Taxonomic Analysis*

10.8 SOP IZ-09, *Preparation of 80% Ethanol*

10.9 SOP IZ-13, *Invertebrate Taxonomic Identification Quality Control*

10.10 SOP IZ-40, *Invertebrate Sorting Quality Control (QC)*

10.11 SOP LB-002, *Non-conformance Reporting System*

Appendix of Changes

12/10/2009 Reformatted the layout following SOP LB-001.
12/10/2009 Added procedure for saving Whirl-pak bags
11/10/2011 Updated name for the Laboratory Safety Manual.
11/04/2013 Updated sorting QC SOP #

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10/27/2014	Updated sample log-in and preparation procedure between Receiving and Invert (step 6.1). Formatted for 508 compliance
11/05/2015	Updated SOP references. Included reference to form IZ-LOG.
11/17/2015	Removed reference to the Log In logbook and form.
02/22/2017	Standardized SOP naming conventions
03/13/2018	Removed instruction about hand written labels and container storage. Updated DEP Laboratory Quality Manual link. Removed step requiring the empty Whirl-pak bags to be placed in a zip-top bag.
03/06/2019	Clarified Whirl-pak instructions in Section 6.
02/25/2020	Added Standard Methods to Reference Section.
02/10/2021	Updated link to Laboratory Health and Safety Plan
02/05/2025	Changed bag type from Whirl-pak to Ziploc.

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