

US EPA ARCHIVE DOCUMENT

**ENVIRONMENTAL MONITORING AND ASSESSMENT PROGRAM-
SURFACE WATERS:**

**FIELD OPERATIONS AND METHODS FOR MEASURING THE
ECOLOGICAL CONDITION OF WADEABLE STREAMS**

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SECTION 10 SEDIMENT TOXICITY

by
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This section describes procedures to prepare a sediment sample for shipment to a laboratory for use in toxicity testing (see Section 1.3.8). The “biomorphs” (refer to Figure 2-1) collect sediment samples from each transect at the same time as periphyton samples (Section 8) and benthic macroinvertebrate samples (Section 11). At each stream, a composite “index” sample of sediment is prepared. A portion of this composite sample is used in the determination of sediment community metabolism (Section 9).

10.1 SAMPLE COLLECTION AND PREPARATION

The composite sediment sample remaining after the sediment respiration sub-samples have been prepared is used to prepare a sediment toxicity sample. The procedure to prepare the sediment toxicity sample is presented in Table 10-1. A completed sample label for the sediment toxicity sample is shown in Figure 10-1. Record the sample ID number on the Sample Collection Form as shown in Figure 10-2. Use a heavy-duty self-sealing plastic bag as a sample container. Double-bag the sample and place it in a suitably sized hard plastic container with a snap-on lid for transport and storage. Keep the sample chilled (but not frozen) until it can be shipped to the laboratory (Section 3).

10.2 EQUIPMENT AND SUPPLIES

Figure 10-3 is a checklist of equipment and supplies required to prepare the sediment toxicity sample. This checklist is similar to the checklist presented in Appendix A, which is used at the base location (Section 3) to ensure that all of the required equipment is brought to the

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TABLE 10-1. PROCEDURE FOR PREPARING SEDIMENT TOXICITY SAMPLES

1. Complete a sediment toxicity sample label with the stream ID and the date of collection. If sediment for the composite sample was collected at several cross-section transects, write "ALL" in the "STATION" field.
2. Record the sample ID number (barcode) printed on the label in the "SEDIMENT TOXICITY SAMPLES" section of the Sample Collection Form (page 2).
3. Attach the completed label to a 2-gallon polyethylene (4-mil) bag. Cover the label with a strip of clear tape.
4. Mix sediment well with a stainless steel or plastic mixing spoon, or gloved hand. Transfer at least 1 L of sediment from the composite sediment index sample container to the labeled plastic bag. Close bag, squeeze air out and tie a knot in the remaining portion of the bag to seal. Seal the bag.
5. Place the labeled bag with the sample inside a second 2-gallon polyethylene bag and tie off the top to seal. Place the sample into a hard plastic container with a snap-on lid (if available), to further protect the sample.
6. Place the sample inside a cooler containing bags of ice that is used only for sediment samples in them. Store the sediment toxicity sample chilled, but not frozen, until it can be shipped to the laboratory.

SEDIMENT TOXICITY

SITE ID: MAIA 9 7 - 9 9 9

DATE: 7 / 15 / 98

STATION: _____



229011

Figure 10-1. Completed sample label for sediment toxicity.

stream. Use this checklist to ensure that equipment and supplies are organized and available at the stream site in order to conduct the activities efficiently.

Reviewed by (initial): SP

SAMPLE COLLECTION FORM - STREAMS (continued)				
SITE NAME: <u>MILL CREEK</u>		DATE: <u>7/15/97</u> VISIT: ☒ 1 ☐ 2		
SITE ID: <u>MAIA 97-999</u>		TEAM ID (X): ☒ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8		
CHEMISTRY AND MICROBIAL WATER SAMPLE (Chem: 4-L Cubitainer and 2 Syringes, Micro: Glass Bottle)				
	SAMPLE ID (BARCODE)	TRANSECT	FLAG	COMMENTS
CHEMISTRY	<u>229015</u>	<u>X</u>		
MICROBIAL				
SEDIMENT TOXICITY SAMPLES				
	SAMPLE ID (BARCODE)	FLAG	COMMENTS	
	<u>229011</u>			
FISH TISSUE SAMPLES - PRIMARY SAMPLE (min. 50g total wgt)				
SAMPLE ID (BARCODE) -		<u>229013</u>		
LINE	SPECIES CODE	COMMON NAME	NUMBER OF INDIVIDUALS	FLAG
P1	<u>NOCOLE</u>	<u>Bluehead chub</u>	<u>16</u>	<u>F1</u>
IS COMPOSITE SAMPLE COMPOSED OF INDIVIDUALS COLLECTED FROM THROUGHOUT REACH? (X) -			☒ YES ☐ NO	
IF NO, EXPLAIN:				
FISH TISSUE SAMPLES - SECONDARY SAMPLE (where available; 5 individuals)				
SAMPLE ID (BARCODE) -		<u>229012</u>		
LINE	SPECIES CODE	COMMON NAME	TOTAL LENGTH (MM)	FLAG
S1	<u>CATOCO</u>	<u>White sucker</u>	<u>128</u>	
S2	<u>CATOCO</u>	<u>White sucker</u>	<u>125</u>	
S3	<u>CATOCO</u>	<u>White sucker</u>	<u>134</u>	
S4	<u>CATOCO</u>	<u>White sucker</u>	<u>128</u>	
S5	<u>CATOCO</u>	<u>White sucker</u>	<u>125</u>	
IS COMPOSITE SAMPLE COMPOSED OF INDIVIDUALS COLLECTED FROM THROUGHOUT REACH? (X) -			☒ YES ☐ NO	
IF NO, EXPLAIN:				
LINE	COMMENT OR FLAG EXPLANATION FOR FISH TISSUE			
P1	<u>F1 = 16 individuals weighed 60 g.</u>			

Flag codes: K= Sample not collected; U= Suspect sample; F1, F2, etc.= misc. flag assigned by field crew. Explain all flags in Comments sections.

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SAMPLE COLLECTION FORM - STREAMS - 2

Figure 10-2. Sample Collection Form (page 2), showing information recorded for a sediment toxicity sample.

EQUIPMENT AND SUPPLIES FOR SEDIMENT TOXICITY

QTY.	ITEM	
1	Small scoop sampler for sediments	
1	Wide-mouthed plastic jar labeled "COMPOSITE SEDIMENT SAMPLE". If sediment is only being collected for metabolism samples, use a 250-mL jar is sufficient. If metabolism and toxicity samples are being prepared, use a 1-gallon jar	
1	Sediment toxicity sample label	
1	Sample Collection Form	
	Soft (#2) lead pencils to fill in field data forms	
	Fine tip indelible markers for preparing labels	
2	1-gallon heavy-duty self-sealing plastic bags for the sediment toxicity sample	
1 pkg	Clear tape strips for covering labels	
1	Plastic container with snap-on lid to hold sediment toxicity sample	
1	Cooler with bags of ice to store the sediment toxicity sample	
1 copy	Field operations and methods manual	
1 set	Laminated sheets with procedure tables and/or quick reference guides for sediment toxicity	

Figure 10-3. Checklist of equipment and supplies for sediment toxicity.