

# APPENDIX A

## EQUIPMENT AND MATERIALS

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### Flow Measurement

Chapter 3, Volume 1 (RG-415)

- flow meter
- top-setting wading rod
- 100 ft tape measure (marked in tenths of a foot)
- hip and chest waders
- calculator
- forms for recording flow
- stakes or posts

### Fish Sampling

Chapters 3 and 4

- TPWD Scientific Collection Permit
- boat-mounted electrofisher
- backpack electrofisher—Smith-Root Type VII or equivalent (for waters where conductivity allows use) and extra battery
- non-conductive dip nets (both medium and small mesh)
- battery charger
- seines (30' or 15' × 6' × ¼" mesh, 15' or 6' × 6' × ³/₁₆" mesh, and 6' × 6' × ⅛" mesh)
- seines 10', 15', or 30' long with ³/₁₆" mesh (height and length are based on site requirements)
- experimental gill nets (graduated mesh sizes)
- two holding buckets or tanks with aerators—one for use in boat or in stream while sampling, and one for maintaining fish for processing
- 5-gallon plastic buckets
- fish-measuring board
- 1 L plastic wide-mouth containers with screw-top lids
- preservative—10% formalin and 70% ethanol
- sample-labeling materials
- electrical-safety gloves

- chest waders for electrofishing
- personal flotation device
- fish-identification manuals for field and laboratory identification; see Chapter 11
- stereo dissecting microscope
- trawl
- scale
- data-recording form(s)

## **Freshwater Benthic-Macroinvertebrate Sampling**

Chapters 5 and 6

- D-frame kicknet (mesh size 595  $\mu\text{m}$ ) or Surber sampler
- sorting trays and subsampling mechanism (for example, a Mason-jar lid)
- screen sieves—U.S. std. sieve no. 30, 595  $\mu\text{m}$
- jeweler's forceps
- magnifying glass
- petri dishes
- wide-mouth sample jars and 2-dram vials
- preservatives—70 percent ethanol and 10 percent formalin
- sample-labeling material
- hip and chest waders
- manuals for field and laboratory identification of freshwater benthic macroinvertebrates; see Chapter 11
- stereo dissecting microscope
- compound binocular microscope —10 $\times$  and 15 $\times$  eyepieces; 4 $\times$ , 10 $\times$ , 20 $\times$ , and 45 $\times$  objectives
- lopping shears for snag samples
- Surber sampler
- Ekman dredge
- data-recording form(s)

## **Marine Benthic-Macroinvertebrate Sampling**

Chapter 6

- dredges—Ekman (soft sediment); Ponar or Van Deen (shell or sand)
- small bucket or pan (narcotizing sample)

- wide-mouth jars; 500 mL
- screen sieve bucket—U.S. std. sieve no. 30 (mesh size  $\leq 595 \mu\text{m}$ ) or no. 35 (mesh size = 500  $\mu\text{m}$ )
- 0.5mm sieve
- preservatives—magnesium chloride; Rose Bengal; borax; 70 percent ethanol or isopropyl alcohol; 10 percent formalin
- compound binocular microscope —10 $\times$  and 15 $\times$  eyepieces; 4 $\times$ , 10 $\times$ , 20 $\times$ , and 45 $\times$  objectives
- stereo dissecting microscope
- manuals for field and laboratory identification of marine benthic macroinvertebrates; see Chapter 11
- forceps
- shallow white pan
- light magnifier (2 $\times$ )
- small vials

## **Benthic-Algae Sampling**

### Chapter 7

- pocketknife or other scraping device
- pipettes
- sample-collection jars—60 mL, glass, snap-on caps
- preservative—glutaraldehyde or formalin
- compound microscope
- glass slides and coverslips
- hot plate
- mounting media
- data recording form(s)

## **Plankton Sampling**

### Chapter 8

- plankton net
- sample jars
- Lugol's solution
- compound binocular microscope—10 $\times$  and 15 $\times$  eyepieces; 4 $\times$ , 10 $\times$ , 20 $\times$ , and 45 $\times$  objectives
- glass slides and coverslips

- Sedgewick-Rafter counting chamber
- data-recording form(s)

## **Measurements of Physical Stream Habitat**

### Chapter 9

- 50 m tape measure, minimum
- clinometer with degrees and percent
- convex densiometer
- range finder
- metric survey rod
- hip and chest waders
- metric rangefinder or hip chain
- survey tape or flags
- flotation tube, small boat
- metric tag line or sturdy rope
- metal stakes or fence posts
- mallet
- data recording form(s)

## **Other Equipment**

- field logbook and pencil
- GPS equipment (real-time correction mode capabilities preferred)
- 7.5-minute-series topographic maps for sampling area
- digital camera or camera with film
- Volume 1 of *SWQM Procedures* (RG-415) for water chemistry, flow measurement, field parameters (including 24-hour DO), and tissue sampling
- laboratory forms for submitting water-chemistry samples
- winch
- long rope