

CHAPTER 9

REQUIRED EQUIPMENT AND SPARE PARTS

Routine Field Measurements

- multiprobe instrument(s)—capable of unattended, automated monitoring hourly over a minimum of 24 hours
- long and short cables for multiprobe instrument(s)
- maintenance kits and electrolyte solutions for DO and pH sensors (varies by manufacturer)
- calibration standards for pH and specific conductance
- instrument-specific software for downloading multiprobe data
- weather radio or barometer
- pocket calculator
- flow meter, top-setting wading rod, 100 ft measuring tape
- Secchi disk with long cord made of wire, chain or Dacron, marked in metric units
- backup multiprobe instrument in working condition
- NIST traceable thermometer

Water Sampling

- clean plastic bucket with rope (bridge sampling)
- sample containers appropriate for type of sampling being conducted (see Table 5.2 for details)
- discrete water-sampling device (e.g., alpha sampler, Van Dorn, Kemmerer, bailer)
- sulfuric acid (H_2SO_4) for preserving routine water samples
- hydrochloric acid (HCl) for preserving VOAs
- **Metals in water:** see Chapter 5, Table 5.1 for required components of a metals sampling kit

Bacteriological Sampling

E. coli and Enterococci

- 120 mL sterile IDEXX bacteriological bottles or equivalent containers (for sample collection)
- > 250mL sterile IDEXX bacteriological bottles or equivalent containers (for sample collection)

Sediment Sampling

- Ekman or Ponar dredge
- plastic or Teflon pans for sediment sampling
- Teflon or stainless steel scoops

- clear 500 mL glass jars with Teflon lids for metals, organics, and conventionals (detergent-washed and DI-rinsed)

Fish-Tissue Sampling

- seines: short (6–10'), $\frac{3}{16}$ -inch mesh; long (20–25'), $\frac{1}{4}$ -inch mesh
- boat-mounted electrofishing unit—Smith Root Type VII or equivalent
- backpack shocker—Smith Root Type VII or equivalent and extra battery
- 5-gallon plastic buckets
- neoprene chest waders(backpack/barge electrofishing), hip or knee boots (boat electrofishing)
- heavy rubber gloves for electrofishing; rated for a minimum of 1,000 volts
- nonconductive dip nets for fish (both medium and small mesh)
- fish-measuring board
- heavy aluminum foil (for shipping tissue samples)
- plastic bags (for shipping tissue samples)
- trawl (for coastal regions)
- gill net

Other Office and Field Equipment

- boat, motor, trailer
- global positioning system
- refrigerator and freezer
- ice machine (unless an ice-delivery contract is in place)
- insulated coolers (for shipping samples)
- large plastic bags for lining ice chests (for shipping)
- battery charger
- rubber knee boots
- first-aid kit
- heavy-duty flashlight
- personal flotation devices
- rain gear
- cell phone

Optional Equipment

- tube floater (for non-wadable streams where a boat is not practical)
- telescoping survey rod (for depth measurements)
- scale for weighing fish
- deionizing water column in the office
- oyster dredge (for coastal regions)

- Peterson dredge (for coastal regions)
- peristaltic pump

Additionally, all SWQM personnel should keep on hand all necessary forms, calibration logbooks, procedures manuals, equipment instructional manuals, and identification manuals for biological specimens. All essential SWQM guidance, manuals, and forms are available online (see Appendix A). The multiprobe calibration logbook is available at the TCEQ website as a PDF (see Appendix A). Monitoring personnel are responsible for creating their own calibration logbooks.

