



**THE CLEAN WATER TEAM
CHECKLIST FOR ASSEMBLING
WATER QUALITY MONITORING
FIELD KITS**

Clean Water Team

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THE CLEAN WATER TEAM CHECKLIST FOR ASSYMBLING WATER QUALITY MONITORING FIELD KITS

Your field kit should be based on your monitoring plan and quality assurance project plan. Like these plans, your field kit is purpose focused.

A properly outfitted field kit will have everything needed to conduct a safe and successful water quality monitoring session. It will also anticipate problems which may occur and provide what is required so that monitoring can still occur, and data will not be lost. If your program is conducting several types of monitoring activity you will likely have more than one field kit although they may share many of the same tools and supplies.

The following list is a guide to help you get started assembling or modifying your field kit.

GENERAL SUPPLIES

PROJECT GUIDES

- Field Manual
 - Checklist for supplies to bring
 - List of sampling locations containing maps and travel directions (GPS coordinates/ addresses)
 - Basic instructions for all data sheets and forms, sampling protocols, meters, and test kits being used
- Field data sheets
- Chain of custody forms
- Safety Instructions and phone numbers to call in emergencies
- Consider also including prior field data sheets

PERSONAL PROTECTIVE EQUIPMENT

- Sunscreen
- Hat to protect from sun and in winter to help retain heat
- Bright-colored snag- and thorn- resistant clothes; long sleeves and pants are best
- Rubber gloves to guard against sample contamination
- Safety goggles
- Facemask/Face shield
- Rubber boots, reef/river shoes, wading boots, or waders (ice/snow grips may be required during certain seasons)

- Fixed or twist-lock wading staff
- Personal flotation device (PFD)
- Insect repellent/sunscreen
- Small first aid kit, flashlight/headlamp, and extra batteries (some individuals may include appropriate items for their specific needs such as items to treat allergic reactions)
- Eyewash bottle <filled>
- Whistle to summon help in emergencies
- Drinking water
- Hand sanitizer
- Soap and water for rinsing and cleaning the body should an exposure occur
- Towles
- Trash container
- Garbage bags
- Change of clothes

CLEANING & DECONTAMINATION

- Wash/Rinse bottle (one with DI water and another with tap water)
- A jug of distilled or deionized water (DI)
- 500-1000 ml containers with wide mouth and tight (for liquid waste)
- Soap & water
- Liquinox detergent (or other phosphate free detergent)
- Brushes of various sizes
- Bucket(s) and lid(s)
- Towels (paper and cloth)
- Cement mixing container or another large shallow tub
- Appropriate disinfection products (used to treat COVID-19, invasive species...)
- Trash containers and trash bags
- Other items needed to implement your Aquatic Invasive Species - Hazard Analysis and Critical Control Plan and efforts to prevent your field crew of being invasive species vectors

LITTLE THINGS THAT ARE VERY USEFUL

- Garbage bags of various sizes
- Buckets
- Measuring beakers or small cups for pouring sample water
- Paper towels
- Cleaning & disinfecting wipes
- Program handouts & watershed stewardship information fliers
- Extra eyeglasses/contacts or sunglasses
- A folding table (can also be used as a wind shelter lean-to.)

FIELD TOOLS

General field tools and supplies

- Backpack/bookbag, tote-bag, or plastic caddy

- Clipboard, preferably with plastic cover (waterproof paper that has a photocopied image of field forms)
- Several pencils (and a small pencil sharpener)
- Clipboard
- Camera (or cellphone)
- GPS unit
- Sample Containers (refer to your Quality Assurance Project Plan and Monitoring Plan for types and sizes)
- Factory-sealed, disposable Whirl-pak® bags
- Sampling pole
- Sampling apparatus (horizontal sampler, student sampler, Kemmerer bottle, DO/temperature sampler, bucket & rope...) and signaling weight if required
- Low flow samplers (dustpans, scoops, syringe pumps...)
- Thermometer(s)
- Test kits (reagents already checked against expiration dates and for sufficient volume/quality)
- Wash/Rinse bottle
- A jug of distilled or deionized water (DI)
- 500-1000 ml containers with wide mouth and tight (for liquid waste)
- Plastic bags for solid garbage
- Permanent marker
- Spare batteries for meters
- Ice chest
 - Wet ice or ice-substitute

When Using a Meter and Probe (meter, multi-meter, turbidimeter/nephelometer...)

- DO meter and probe (electrode) (NOTE: Confirm that the meter has been calibrated according to the manufacturer's instructions prior to leaving for the field.)
- Wash/Rinse bottle of distilled water (DI)
- Wash/Rinse bottle of tap water (if using a pH probe)
- Extra membranes or caps and electrolyte solution for DO probe
- Extra batteries for the meters being used

Visual turbidity measurements

- Secchi disk and line
- Sounding weight and line
- Measuring tape
- Clothes pins
- Color comparator (Forel-Ule Scale....)
- Turbidity tube

Flow measurements

- Balls of heavy-duty string (colored utility line)
- Four tent stakes (plus a spare)
- Mallet (to drive stakes into the ground)
- Tent stake remover (some camping mallets already have these)
- Measuring tape (at least 20 feet)

- Stadia rod/waterproof yardstick or other implement to measure water depth
- Twist ties (to mark off intervals on the string of the transect line)
- A floatable (example: an orange or orange peels)
- Fishing net (to scoop the floatable out of the stream)
- Stopwatch (or watch with a second hand)
- Calculator (optional)
- Top-setting rod and current meter
- Current meter display
- Flow probe
- Flow meter or probe maintenance kit

Sampling Bottom Material

- Sediment id card
- Soil color charts
- Hand-held particle size analyzer
- Brass sieve set
- Scoop or spoon
- Telescoping pole
- Grab sampler (van Veen, Ekman ...) and required accessories (line, weights ...)
- Corer (soil, peat, Russian, Beeker, Stitz ...)
- Sediment sample containers

BIOASSESSMENT EQUIPMENT & SUPPLIES

Benthic Macroinvertebrates

- SWAMP Bioassessment SOP for reference
- Field data sheets
- Chain of custody forms
- Camera (or cell phone)
- GPS
- Pencils (small pencil sharpener)
- Clipboard
- GPS
- Tape measure/ laser range finder
- Stadia rod
- Flagging – wire flags, flagging tape wrapped large washers
- D-frame net
 - 500 µm mesh top and solid cloth bottom, mouth: 305x254 mm (12x10”), bag: 559 mm (22”) deep, shroud: bottom only
- Small pry bar
- Forceps
- Metal Sieve – 500 micron
- Sample container - 500-mL wide-mouth plastic sample jar with alcohol proof lids
- Labels for sample jar (jar, lid, and contents)
- Wide clear tape

- 95% ethanol
- Note that the target concentration of ethanol is 70%, but 95% ethanol is used in the field to compensate for dilution from water in the sample.)
- Spherical convex densitometer – modified as per Strickler in “Use of the densiometer to estimate density of forest canopy on permanent sample plots”
www.fs.usda.gov/treesearch/pubs/25832
- Compass
- Auto level with tripod or:
 - Clinometer (May be used for reaches with a slope of > 1%.)
 - Hand level (Not preferred but may be used for reaches with a slope of > 1%. Use as a back-up.)
- Water quality sample bottle
- Flow (see above)
- Water chemistry probes/meters (see above)
 - Thermometers (one each for water and air)
 - pH
 - Dissolved oxygen
 - Specific conductivity
 - Salinity
 - Turbidity
- Water chemistry kits
 - Alkalinity
 - Silica

☐ Algae & Periphyton (When added to benthic macroinvertebrate sampling)

- SWAMP Bioassessment SOP for reference
- Field data sheet, reconnaissance form, chain of custody form
- Camera (or cell phone)
- GPS
- Sample labels
- Pencils (small pencil sharpener)
- Clipboard
- Elbow-length gloves
- DI water (deionized water)
- Secchi disk (and measuring tape)
- Flat masonry trowel
- Razor blade or knife
- Scissors
- Toothbrush, stiff-bristled brush and scouring pads
- Wash bottle
- Algae sampling devices
 - ABS delimiter (Refer to SOP for instructions on how to make this.)
 - Rubber delimiter (Refer to SOP for instructions on how to make this.)
 - Syringe scrubber (Refer to SOP for instructions on how to make this.)
- Dish tub or bucket
- Turkey baster

- Graduated cylinders
- Vacuum filtering field kit with hand pump
 - Glass-fiber filter, pre-combusted (47 mm, 0.7 μ m pore size)
 - Clean filter forceps
- Whirl-Pak bag 100ml
- 50 mL centrifuge tubes
- Snap-top Petri dishes
- Ziplock bags
- Sample Bottle 1 Liter
- 5 % formalin solution
- Aluminum foil
- Wide clear tape
- Ice chest
 - Wet ice or ice substitutes

FRESHWATER HARMFUL ALGAL BLOOMS (FHABS) EQUIPMENT & SUPPLIES

- Copy of the SWAMP FHAB Sampling SOP
- Site Dossier (See Reconnaissance Guide)
- SWAMP Cyanobacteria Field Data Sheets and Chain of Custody Forms
- Sample labels
- Camera (or cell phone)
- GPS
- Pencils (small pencil sharpener)
- Clipboard
- Sampling pole
- Sampling device
 - Thief Samplers (Kemmerer bottle or VanDorn bottle)
 - Bailers (Teflon stop-cock bailer)
 - Pumps (diaphragm or peristaltic)
 - Cyanoscope kit tube sampler
- Algal mat collection tools
- Teflon churn
- Graduated cylinders
- Forceps
- Pipette dropper
- Turkey baster
- Paper towels
- Deionized water
- Liquinox or other phosphate free detergent
- Wash basin
- Soft brush or sponge
- Garbage bags
- Clear tape
- Resealable zipper plastic bags
- Sample bottles: Polyethylene terephthalate glycol (PETG, recycle symbol #1) bottles or amber glass

- Composite sample container of adequate volume
- Abraxis® ana-sax preservative liquid to prevent degradation during storage.
- Ice chest
 - Wet ice or ice substitutes

REFERENCES & RECOMENDED RESOURCES

Clean Water Team

www.waterboards.ca.gov/water_issues/programs/swamp/cwt_volunteer.html

Clean Water Team's Guidance Compendium for Watershed Monitoring and Assessment

www.waterboards.ca.gov/water_issues/programs/swamp/cwt_guidance.html

Clean Water Team's Tool Box

www.waterboards.ca.gov/water_issues/programs/swamp/cwt_toolbox.html

SWAMP's Bioassessment Program

www.waterboards.ca.gov/water_issues/programs/swamp/bioassessment/

SWAMP's Freshwater CyanoHABs Program (Blue-Green Algae) Program

www.waterboards.ca.gov/water_issues/programs/swamp/freshwater_cyanobacteria.html

SWAMP's Information Management and Quality Assurance Center (SWAMP IQ)

www.waterboards.ca.gov/water_issues/programs/swamp/swamp_iq/#:~:text=Who%20We%20Are,Wat er%20Board%20programs%20and%20agencies.

SWAMP's Quality Assurance

https://www.waterboards.ca.gov/water_issues/programs/swamp/quality_assurance.html

USA VOLUNTEER WATER MONITORING NETWORK

www.volunteermonitoring.org/

USEPA's Designing Water Quality Monitoring Programs for Watershed Projects

www.epa.gov/sites/production/files/2015-10/documents/technote2_wq_monitoring.pdf

USEPA's Nonpoint Source: Volunteer Monitoring

<https://www.epa.gov/nps/nonpoint-source-volunteer-monitoring>

USEPA's Volunteer Monitor's Guide to Quality Assurance Project Plans

<https://www.epa.gov/quality/volunteer-monitors-guide-quality-assurance-project-plans>

Reference in this document to any specific commercial product, process, or service, or the use of any trade, firm or corporation name is for the information and convenience of the public, and does not constitute endorsement, recommendation, or favoring by the Water Resources Control.



www.waterboards.ca.gov/water_issues/programs/swamp/cwt_volunteer.html