

## MWAC Sample Processing Protocol – *Wet Collection Method*

**This document describes the method for collecting MWAC samples and obtaining sediment weights, using the wet sample collection method.**

### Equipment needed in field:

- 2 gallons deionized water
- Squeeze/wash bottle with 90° neck
- ¾" diameter x ~14" long bottle brush
- 5/16" nut driver or wrench
- Digital or manual level
- Steel roll-up measuring tape
- Replacement MWAC sampler bottle set (108 uniquely numbered bottles)
- MWAC Field Collection Data Sheet
- Pencil for writing on data sheet

### Equipment needed in lab:

- Drying oven set at 60°C
- Supply of deionized water
- Squeeze/wash bottle with 90° neck
- Fine-tipped forceps
- Metal spatula
- Soft, clean paint brush (0.5" width)
- Food-grade white vinegar
- Bottle brush, ~4" diameter
- Electronic balance with resolution of 0.0001 g, on a stable surface
- 400ml glass beakers (x108)
- Plastic vials (minimum size 16 dram) for archived composited samples (x12)
- Permanent marker pen for labeling plastic vials

### **In the field:**

1. Remove MWAC sampler bottle from mast.
2. Write the sampler bottle ID number on the MWAC Field Data Collection Sheet next to relevant MWAC mast ("Stack" on sheet) and height at which it was deployed. Record the sampler bottle ID number in column 4: "Bottle #".
3. Insert ¾" bottle brush into intake and exhaust tubes, pushing any sediment sitting in the tubes into the bottle.
4. Remove tube assembly and screw replacement lid on to the sampler bottle.
5. Clean tube assembly with deionized water, shake to remove excess water, and screw on to a clean replacement sampler bottle.
6. Install the clean replacement bottle on the MWAC mast "stack".
7. Use level to ensure that sampler inlet tubes, outlet tubes, and bottles sit level on the assembly/fin. Use a tape measure to ensure that the center of the inlet tubes sit at the correct heights above the soil surface (10 cm, 25 cm, 50 cm, and 85 cm). Note: if inlet tube heights are not correct, then adjust the mast set screw (beneath washers at the base of mast) up or down until correct heights are obtained.
8. Repeat these steps for each MWAC sampler bottle on each mast across the Network site.

### **In the laboratory or office:**

1. Record 108 glass beaker numbers in the "Beaker # (wet)" column on the data sheet, and match each beaker with a field sampler bottle.
2. Weigh each clean, dry beaker on a calibrated electronic balance and record weights in the "Empty Beaker wt. (g) (wet collection)" column on the data sheet.

3. Unscrew aluminum lid from field sampler bottle and remove any insects, arthropods, and other foreign material (i.e., plant litter, or other non-soil debris) >5 mm in the longest dimension from the sediment sample using fine-tipped forceps.
4. Using a squirt bottle of deionized water, wash contents of sampler bottle into its appropriate glass beaker, ensuring all sediment is removed from sampler bottle.
5. Repeat steps 3 and 4 for the remainder of the field sampler bottles.
6. Place beaker into drying oven at 60°C for at least 48 hours, or until all water has evaporated from all beakers.
7. Thoroughly rinse off the sampler bottle with deionized water, inside and out, over a sink or basin and hang upside down to dry. Replace lids on bottles when dry before deploying to field again.
8. After appropriate drying time has passed, remove beakers from oven and allow to cool to touch (~10 minutes).
9. On a calibrated electronic balance, weigh each beaker and record weights in the “Beaker + sediment oven-dry wt. (g) (wet collection)” column on the data sheet.
10. If sediment sample is to be retained (recommended for further analyses), scrape out the sediment into the appropriate plastic vial for compositing using a metal spatula and/or soft, clean brush (refer to Standard Methods for Wind Erosion Research and Model Development: [winderosionnetwork.org/documents](http://winderosionnetwork.org/documents)). Mark in column 9 on the MWAC Field Data Collection Sheet if the sediment sample was, or was not, composited for archiving: “Soil composited (yes/no)”.
11. Repeat steps 9 and 10 until all sediment samples are weighed, with weights recorded on the MWAC Field Data Collection Sheet at their appropriate location (i.e., for the correct sampler bottle number, deployment height, and MWAC mast/stack) and samples composited.
12. To clean beakers after removing sediment, pour a small amount of white vinegar in each – enough to cover the bottom of the beaker.
13. Fill the beaker to capacity with deionized water and soak 24 hours or overnight.
14. Scrub beaker with a large bottle brush and rinse inside and out with deionized water.
15. Hang beaker upside down to dry.