The Meadows Center for Water and the Environment
Texas State University

Texas Stream Team
PROBE CORE FIELD GUIDE – MONITORING PROCEDURES

Equipment Needed

- Probe Core Kit
- Sample Bucket
- Deionized (DI) Water
- Waste Container
- Secchi Disc
- Gloves or Hand Sanitizer
- pH Buffer Solution (4.00, 7.00, or 10.00)
- Conductivity Standard Solution (600 or 1413 µS)
- Transparency Tube (optional for shallow water)

At Site

1. Record *Field Observations* and *Comments* on Core Environmental Monitoring Form.

2. Hang thermometer out of direct sunlight, wait 2-3 minutes; record *Air Temperature* to nearest 0.5 ℃.

3. Measure *Transparency* by selecting the method most applicable to your monitoring site:

A. *Secchi Disc Transparency* for deeper water, lower disc until it disappears, mark depth, then raise disc until barely visible, and mark depth again. Average depth readings and record to nearest 0.1 m.

B. *Transparency Tube* for shallow water:

1. Rinse bucket and tube 2X with sample water.
2. Standing in the centroid of flow of the waterbody and downstream of the tube, dip the tube into the water facing upstream to fill.
    a. If centroid is not accessible, or the waterbody is unsafe to stand in, use a bucket to collect sample water and pour into the tube immediately after collection to prevent settling of suspended materials.
3. Hold the tube vertically, look down the tube to see if the disc at the bottom is visible. If disc is not visible, release water until visible and record the water level in meters on Monitoring Form.
    a. If the tube is filled to the top and the disc is completely visible, record the measurement as > the maximum tube length (>1.2 m or >0.6 m).

4. Measure *Total Depth* by lowering Secchi disc into water until cord becomes slack, then raise until straight. Mark and record to 0.1 m.

5. Conduct bucket grab, rinse bucket 2X with sample water and discard water downstream.

6. Measure *Water Temperature* in the bucket sample with thermometer for 1-1/2 minutes. Read thermometer while in water to the nearest 0.5 ℃.

Conductivity

Record the Conductivity Standard Solution value under *Standard Value* on Monitoring Form.

Pre-Test Calibration

1. Rinse sample cup and conductivity probe 2X with Conductivity Standard Solution.

2. Fill sample cup to 20 mL with conductivity solution, insert probe and stir to remove bubbles.

3. Turn meter on while submerged and stir for 2 minutes.

4. Make sure the meter is in conductivity mode. A small "**µ**S" (microsiemens) symbol will appear. If not in µS, press and hold the MODE/HOLD button and toggle until "µS" appears. Once the CON symbol is shown at the bottom of the screen and the "**µ**S" symbol appears at the top, release the button.

5. Record the *Standard Temp. (°C)* and *Pre-Test Calibration Initial Reading* on Monitoring Form.

6. Press and hold the CAL/RECALL button until "CAL" appears in the lower display. Release button. When calibration is complete, the meter displays "SA," then "End" and returns to normal mode. The meter is now calibrated and should display the calibration standard value. Record the reading under *Calibrated To* on Monitoring Form.

7. Turn meter off while submerged, rinse sample cup and probe 2X with DI water before storing.

Measurement

1. Rinse sample cup and probe 2X with sample water.

2. Fill sample cup to 20 mL with sample water, insert meter, and remove bubbles. Turn meter on and stir for 2 minutes. Hold meter 1/2 inch off bottom and record *Conductivity (µS/cm)* and *Water Temperature (°C)* on Monitoring Form.

3. Turn meter off while submerged and rinse sample cup and probe 2X with distilled water before storing.

Post-Test Calibration

1. Rinse sample cup and probe 2X with conductivity solution.

2. Fill sample cup to 20 mL with conductivity solution, insert meter, and remove bubbles. Turn meter on and stir for 2 minutes. Hold meter ½ inch off bottom, record *Post-Test Calibration Initial Reading*. The difference between the *Calibrated To*

and *Post-Test Calibration Initial Reading* values should be within ±20% of the calibration solution.

3. Turn meter off while submerged, rinse sample cup and probe 2X with DI water before storing.

pH

Record the pH buffer value under *Standard Value* on Monitoring Form.

Pre-Test Calibration

1. Rinse sample cup and probe 2X with the pH buffer.

2. Fill sample cup to 20 mL with pH buffer, insert meter, and remove bubbles. Turn meter on and stir for 2 minutes.

3. Make sure the probe is in pH mode. A small pH symbol will appear. If not, press and hold the MODE/HOLD button and toggle until pH is displayed.

4. Record *Standard Temperature* and *Pre-Test Calibration Initial Reading* on Monitoring Form.

5. Press and hold the CAL/RECALL button until "CAL" appears in the lower display. Release button. When calibration is complete, the probe displays "SA," then "End" and returns to normal operation mode. The probe is now calibrated and should display the pH buffer value. Record the reading under *Calibrated To* on Monitoring Form.

6. Turn meter off while submerged, rinse sample cup and probe 2X with DI water before storing.

Measurement

1. Rinse sample cup and probe 2X with sample water.

2. Fill sample cup to 20 mL with sample water, insert probe, and remove bubbles. Turn meter on and stir for 2 minutes. Hold meter ½ inch off bottom, record reading under *pH* on Monitoring Form.

3. Turn probe off while submerged, rinse probe and sample cup 2X with DI water before storing.

Post-Test Calibration

1. Rinse sample cup and probe 2X with pH buffer.

2. Fill sample cup with 20 mL, insert meter, and remove bubbles. Turn meter on and stir for 2 minutes. Hold meter ½ inch off bottom, record *Post-Test Calibration Initial Reading*. The difference between the *Calibrated To* value and the *Post-Test Calibration Initial Reading* should be within ±0.5 s.u.

3. Turn meter off while submerged, rinse sample cup and probe 2X with DI water before storing.

Dissolved Oxygen

Leave the *Standard Value* in the Dissolved Oxygen row on Monitoring Form blank.

Pre-Test Calibration

1. Remove the probe cap and moisten but don't soak the sponge inside the cap with DI water. Replace the cap on the probe, but don't tighten it.

2. Turn meter on and press the MODE/HOLD button until the percent saturation mode (%) is displayed. Allow 2-3 minutes for the meter to fully polarize, or until the tiny asterisk is visible on the bottom right portion of the screen.

3. Once stable, record *Standard Temperature* and *Pre-Test Calibration Initial Reading* on Monitoring Form.

4. Next, press and hold the CAL/RECALL button until CAL is shown in the lower display. The readings will blink "101.7" and "SA" will appear. When the calibration is complete, "END" will appear. Record the *Calibrated To* value 101.7 on Monitoring Form. Turn the meter off.

Measurement

1. Rinse sample cup and probe 2X with sample water.

2. Turn on meter and press the MODE/HOLD button until the DO – mg/L unit is displayed.

3. Fill sample cup to 20 mL with sample water, insert probe, and remove bubbles. Turn meter on and stir for 2 minutes. Hold meter ½ inch off bottom, record *Dissolved Oxygen (mg/L)*.

4. Rinse sample cup and probe 2X with DI water before storing.

Post-Test Calibration

1. Remove then replace the cap on the probe, but don't tighten it.

2. Turn the meter on and press the MODE/HOLD button until the percent saturation mode (%) is displayed. Allow 2-3 minutes for the probe to fully polarize, or until the tiny asterisk is visible on the bottom right portion of the screen.

3. Once stable, record *Post-Test Calibration Initial Reading* on Monitoring Form. The difference between the *Calibrated To* value and the *Post-Test Calibration Initial Reading* should be within ±6% saturation.

4. Turn meter off, then rinse sample cup and probe 2X with DI water before storing.

The preparation of this publication is financed and prepared in cooperation through grants from the U.S. Environmental Protection Agency through the Texas Commission on Environmental Quality. Revised May 10, 2022.