

PHASE I



THE MEADOWS CENTER
FOR WATER AND THE ENVIRONMENT
TEXAS STATE UNIVERSITY

TEXAS STREAM TEAM

Email to: TxStreamTeam@txstate.edu
Send to: Texas Stream Team
The Meadows Center - Texas State University
601 University Drive
San Marcos, TX 78666-4616

For Office Use Only
Partner ID: _____
Date Received: _____
Date Approved: _____
Approved by (name): _____

CORE ENVIRONMENTAL MONITORING FORM

PLEASE PRINT LEGIBLY

Sample Date
M M D D Y Y Y Y

Sample Time (military)
H H M M

Citizen Scientist's Name _____

Site Description _____

Site ID #
| | | | |

Sample Depth (meters)
| | | | |
(not total depth)

Group or Affiliation _____

Core monitoring type conducted
 Standard Core Probe Core Other

Instrument Calibration: Conducted within 24 hours of sampling. Store standard solutions and calibrate at room temperature.

Calibration	Date	Time	Standard Value	Standard Temp (°C)	Pre-Test Calibration Initial Reading	Calibrated To	Post-Test Calibration Initial Reading
Conductivity/Salinity							
Dissolved Oxygen							
pH							

Field Observations:

FLOW SEVERITY: 1-no flow 2-low 3-normal 4-flood 5-high 6-dry

ALGAE: 1-absent 2-rare (<25%) 3-common (26-50%) 4-abundant (51-75%) 5-dominant (>75%)

WATER SURFACE: 1-clear 2-scum 3-foam 4-debris 5-sheen

WATER CONDITIONS: 1-calm 2-ripples 3-waves 4-white caps

PRESENT WEATHER: 1-clear 2-cloudy 3-overcast 4-rain

DAYS SINCE LAST SIGNIFICANT PRECIPITATION (runoff)

RAINFALL ACCUMULATION (inches within the last 3 days)

WATER COLOR: 1-no color 2-light green 3-dark green 4-tan 5-red 6-green/brown 7-black

WATER CLARITY: 1-clear 2-cloudy 3-turbid

WATER ODOR: 1-none 2-oil 3-acrid (pungent) 4-sewage 5-rotten egg 6-fishy 7-musky

Core Tests and Measurements:

AIR TEMPERATURE (°C)

SECCHI DISC TRANSPARENCY (meters)
Average Disappears _____ Appears _____

TOTAL DEPTH (meters)

TRANSPARENCY TUBE (meters)

WATER TEMPERATURE (°C)

CONDUCTIVITY (µS/cm)

DISSOLVED OXYGEN (mg/L)
Average 1st titration _____ 2nd titration _____

pH (standard units)

Presence of Litter:

MONOFILAMENT REMOVED Yes No
Amount (please circle): 0-5 ft 6-15 ft 16 ft+

NURDLE SURVEY Yes No

TRASH REMOVED Yes No

Please check Yes or No

Coastal Area Salinity Tests and Observations:

SALINITY (ppt)

TIDE STAGE: 1-low 2-falling 3-slack 4-rising 5-high

Comments:

TOTAL TIME SPENT SAMPLING AND TRAVELING

Minutes

TOTAL ROUNDTRIP DISTANCE TRAVELED

Miles

TOTAL NUMBER OF PARTICIPANTS

I certify that all procedures, including the items listed in the Quality Control Checklist on the following page and in the manual, have been followed.

CERTIFIED CITIZEN SCIENTIST'S SIGNATURE

DATE

CORE FIELD QUALITY CONTROL CHECKLIST

Citizen scientists are required to check all applicable boxes for each monitoring event to verify the procedures are followed. If the monitoring event fulfills a Field Audit Session, the trainer must observe the citizen scientist conducting the monitoring event and document observations in the comments field. The trainer will also sign to verify Field Audit Session was conducted.

General Procedures

- Gloves were worn or hand sanitizer was applied throughout.
- No reagents used for testing were expired and all reagents were stored in an environment protected from extreme weather prior to use.
- Sampling was conducted at approximately the same time/day as previous sampling events at this site, preferably before noon or after 4pm.
- Monitoring sample was collected from the centroid of flow with minimal streambed disturbance.
- All equipment was rinsed 2X with sample water before the test was conducted.
- All equipment was rinsed 2X with deionized water after testing was conducted.

Field Observations

- Algae:** Recorded algae observed on and below the water surface.
- Water Color:** Observed water color in a plastic cup or bucket with a white background.
- Water Clarity:** Observed the relative cloudiness of the water from bridge or banks.
- Water Odor:** Tested by wafting from plastic cup or bucket.
- Present Weather:** Marked cloudy if there is at least one cloud in the sky.

Instrument Calibration

- The instruments/meters were calibrated within 24 hours of monitoring and conducted in a temperature-controlled environment.
- All meters were held in center of beaker not touching the bottom or sides and stirred for 2 minutes before recording the reading.
- All meters were turned on/off while submerged in solution.
- Meters were rinsed with DI water and caps were replaced immediately after use.
- Pre- and post-test calibration were conducted and the difference between the "Calibrated To" value of the pre-test calibration and "Post-Test Calibration Initial Reading" is within the error limit listed below for each parameter:

Parameter	Error limit
Conductivity	± 20% of calibration standard solution
Salinity	± 1 ppt
Dissolved Oxygen (Standard Core)	± 0.5 mg/L
Dissolved Oxygen (Probe Core)	± 6% saturation
pH (Probe Core only)	± 0.5 s.u.

Core Tests and Measurements

- Sample Depth:** The sample depth is either 0.3 m or 1/3 of the total depth.
- Air Temperature:** Thermometer placed in shade.
- Transparency Tube:** Be careful to not scrape the streambed or disturb or kick up sediment.
- Secchi Disc Transparency:** Secchi lowered in water shaded from the sun. Record average then lower to bottom to get total depth reading.
- Water Temperature:** If using thermometer, air temperature was measured first.

Dissolved Oxygen:

- Bottles rinsed 2X with sample water and titration vials rinsed 2X with fixed solution.
- Bottles filled so the meniscus is resting on the line.
- Lids capped underwater with no air bubbles.
- Duplicate sample conducted and titration values within 0.5 mg/L of each other.
- Reagent bottles completely inverted when adding drops to prevent interference from air bubbles.

pH:

- The pH vial cap was removed and the tube was held up against a white background before viewing.
- The test tube was filled so the meniscus is resting on the line.

Refractometer (tidally-influenced saltwater only)

- Time was allowed for the temperature of the sample water to stabilize before the salinity measurement was recorded.
- Instrument was held up to a light source when gathering the salinity measurement.

Field Audit Session

This section should be filled out by a certified trainer ONLY if a Field Audit Session was conducted. Field Audit Sessions are required at a minimum every two years.

Legible Trainer Full Name: _____ Trainer Signature: _____

Trainer Comments:

PHASE II



THE MEADOWS CENTER
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TEXAS STATE UNIVERSITY

TEXAS STREAM TEAM

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CORE ENVIRONMENTAL MONITORING FORM

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Sample Date
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Sample Time (military)
H H M M

Citizen Scientist's Name _____

Site Description _____

Site ID #
| | | | |

Sample Depth (meters)
| | | | |
(not total depth)

Group or Affiliation _____

Core monitoring type conducted
 Standard Core Probe Core Other

Instrument Calibration: Conducted within 24 hours of sampling. Store standard solutions and calibrate at room temperature.

Calibration	Date	Time	Standard Value	Standard Temp (°C)	Pre-Test Calibration Initial Reading	Calibrated To	Post-Test Calibration Initial Reading
Conductivity/Salinity							
Dissolved Oxygen							
pH							

Field Observations:

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ALGAE: 1-absent 2-rare (<25%) 3-common (26-50%) 4-abundant (51-75%) 5-dominant (>75%)

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PRESENT WEATHER: 1-clear 2-cloudy 3-overcast 4-rain

DAYS SINCE LAST SIGNIFICANT PRECIPITATION (runoff)

RAINFALL ACCUMULATION (inches within the last 3 days)

WATER COLOR: 1-no color 2-light green 3-dark green 4-tan 5-red 6-green/brown 7-black

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Core Tests and Measurements:

AIR TEMPERATURE (°C)

SECCHI DISC TRANSPARENCY (meters)
Average Disappears _____ Appears _____

TOTAL DEPTH (meters)

TRANSPARENCY TUBE (meters)

WATER TEMPERATURE (°C)

CONDUCTIVITY (µS/cm)

DISSOLVED OXYGEN (mg/L)
Average 1st titration _____ 2nd titration _____

pH (standard units)

Presence of Litter:

MONOFILAMENT REMOVED Yes No
Amount (please circle): 0-5 ft 6-15 ft 16 ft+

NURDLE SURVEY Yes No

TRASH REMOVED Yes No

Please check Yes or No

Coastal Area Salinity Tests and Observations:

SALINITY (ppt)

TIDE STAGE: 1-low 2-falling 3-slack 4-rising 5-high

Comments:

TOTAL TIME SPENT SAMPLING AND TRAVELING

Minutes

TOTAL ROUNDTRIP DISTANCE TRAVELED

Miles

TOTAL NUMBER OF PARTICIPANTS

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Instrument Calibration

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- Duplicate sample conducted and titration values within 0.5 mg/L of each other.
- Reagent bottles completely inverted when adding drops to prevent interference from air bubbles.

pH:

- The pH vial cap was removed and the tube was held up against a white background before viewing.
- The test tube was filled so the meniscus is resting on the line.

Refractometer (tidally-influenced saltwater only)

- Time was allowed for the temperature of the sample water to stabilize before the salinity measurement was recorded.
- Instrument was held up to a light source when gathering the salinity measurement.

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Trainer Comments:

PHASE III



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TEXAS STREAM TEAM

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Sample Time (military)
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Citizen Scientist's Name _____

Site Description _____

Site ID #
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Sample Depth (meters)
| | | | |
(not total depth)

Group or Affiliation _____

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Dissolved Oxygen							
pH							

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Please check Yes or No

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pH:

- The pH vial cap was removed and the tube was held up against a white background before viewing.
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Refractometer (tidally-influenced saltwater only)

- Time was allowed for the temperature of the sample water to stabilize before the salinity measurement was recorded.
- Instrument was held up to a light source when gathering the salinity measurement.

Field Audit Session

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Legible Trainer Full Name: _____ Trainer Signature: _____

Trainer Comments: _____



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 $^{\circ}\text{C}$.
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 $^{\circ}\text{C}$.

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 " μS " (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 " μS " symbol appears at the top, release the button.
5. Record the *Standard Temp. ($^{\circ}\text{C}$)* 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 ($\mu\text{S}/\text{cm}$)* and *Water Temperature ($^{\circ}\text{C}$)* 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 1/2 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 $\pm 20\%$ 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 $\frac{1}{2}$ 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 $\frac{1}{2}$ 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 $\frac{1}{2}$ 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 $\pm 6\%$ saturation.
4. Turn meter off, then rinse sample cup and probe 2X with DI water before storing.