

For Office Use Only  
 Date Received: \_\_\_\_\_  
 Date Approved: \_\_\_\_\_  
 Approved by (name): \_\_\_\_\_

**PHASE I**

Email to: TxStreamTeam@txstate.edu



**THE MEADOWS CENTER**  
 FOR WATER AND THE ENVIRONMENT  
 TEXAS STATE UNIVERSITY

**TEXAS STREAM TEAM**  
**OPTICAL BRIGHTENER ENVIRONMENTAL MONITORING FORM**  
 PLEASE PRINT LEGIBLY

Community Scientist's Name \_\_\_\_\_

Site ID #  
 [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Group or Affiliation \_\_\_\_\_

Site Description \_\_\_\_\_

**Optical Brightener monitoring type:**  Modified Bottle  
 Whirl-Pak Bag

<b>Field Observations:</b>	<b>Optical Brightener Test:</b>
<input type="checkbox"/> FLOW SEVERITY: 1-no flow 2-low 3-normal 4-flood 5-high 6-dry	Sample Deployed or Collected
<input type="checkbox"/> ALGAE: 1-absent 2-rare (<25%) 3-common (26-50%) 4-abundant (51-75%) 5-dominant (>75%)	Date _____ Time (military) _____
<input type="checkbox"/> WATER SURFACE: 1-clear 2-scum 3-foam 4-debris 5-sheen	Sample Retrieved (bottle method only)
<input type="checkbox"/> WATER CONDITIONS: 1-calm 2-ripples 3-waves 4-white caps	Date _____ Time (military) _____
<input type="checkbox"/> PRESENT WEATHER: 1-clear 2-cloudy 3-overcast 4-rain	Total Immersion Time _____ (hrs) (both methods)
<input type="checkbox"/> DAYS SINCE LAST SIGNIFICANT PRECIPITATION (runoff)	Sample Analyzed
<input type="checkbox"/> TIDE STAGE (coastal only): 1-low 2-falling 3-slack	Date _____ Time (military) _____
<input type="checkbox"/> RAINFALL ACCUMULATION (inches within the last 3 days)	Sample Result (select only one)
<input type="checkbox"/> WATER COLOR: 1-no color 2-light green 3-dark green 4-tan 5-red 6-green/brown 7-black	Present <input type="checkbox"/> Absent <input type="checkbox"/>
<input type="checkbox"/> WATER CLARITY: 1-clear 2-cloudy 3-turbid	
<input type="checkbox"/> WATER ODOR: 1-none 2-oil 3-acrid (pungent) 4-sewage 5-rotten egg 6-fishy 7-musky	

**Comments (Describe types of fluorescence):**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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<b>TOTAL TIME SPENT SAMPLING AND TRAVELING</b>	<b>TOTAL ROUNDTRIP DISTANCE TRAVELED</b>	<b>TOTAL NUMBER OF PARTICIPANTS</b>
<input type="checkbox"/> Minutes	<input type="checkbox"/> Miles	<input type="checkbox"/>

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 COMMUNITY SCIENTIST'S SIGNATURE

\_\_\_\_\_  
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# OPTICAL BRIGHTENER FIELD QUALITY CONTROL CHECKLIST

Community 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 community 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.
- Supplies used for testing 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 or deployed in a shaded area, from the centroid of flow, with minimal streambed disturbance.
- All equipment was checked for contamination using an ultraviolet LED black light flashlight before the test 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.

## Optical Brightener Test

- Bottle was rinsed twice with DI water before and after sampling (bottle method only).
- The Whirl-Pak® Bag method was used for coastal/brackish waters, as well as for sites where the centroid of flow was inaccessible.
- Equipment was rinsed twice with sample water before deployment (bottle method only).
- Tampon was soaked in sample water for 24-72 hours, maintaining a consistent duration each month.
- Tampon was protected from UV light during transportation and analysis.

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## 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:

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**PHASE II**

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**TEXAS STREAM TEAM**  
**OPTICAL BRIGHTENER ENVIRONMENTAL MONITORING FORM**  
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Community Scientist's Name \_\_\_\_\_  
 Group or Affiliation \_\_\_\_\_

Site ID #  
 [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Site Description \_\_\_\_\_

Optical Brightener monitoring type:  Modified Bottle  
 Whirl-Pak Bag

Field Observations:	Optical Brightener Test:
<input type="checkbox"/> FLOW SEVERITY: 1-no flow 2-low 3-normal 4-flood 5-high 6-dry	Sample Deployed or Collected
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<input type="checkbox"/> DAYS SINCE LAST SIGNIFICANT PRECIPITATION (runoff)	Sample Analyzed
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**Comments (Describe types of fluorescence):**  
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# OPTICAL BRIGHTENER FIELD QUALITY CONTROL CHECKLIST

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## General Procedures

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## Optical Brightener Test

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Legible Trainer Full Name: \_\_\_\_\_ Trainer Signature: \_\_\_\_\_

Trainer Comments:

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## TEXAS STREAM TEAM

# OPTICAL BRIGHTENER FIELD GUIDE

### Equipment Needed

- Organic, untreated cotton tampons
- Gloves
- 365 nm UV LED black light flashlight
- Whirl-Pak® black photosensitive bags
- Waste bottle
- Tweezers (optional)
- Fine tip sharpie
- DI water bottle

### Modified Bottle Method

- Clear plastic bottle with slits (Figure 1)
- Scissors/scalpel
- Monofilament fishing line or strong rope
- Weighted kettlebell or similar object

### Whirl-Pak® Bag Method

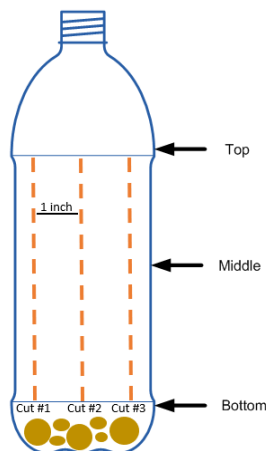
- Sample bucket or extension pole

### Method 1: Modified Bottle

Record Field Observations and Comments on the Monitoring Form.

#### Sample Deployment

1. Label a black photosensitive Whirl-Pak® bag with the site ID, date, and time of deployment and retrieval (repeat for each site).
2. Using gloves, rinse the bottle and cap 2X with DI water and check for optical brightener contamination using a UV LED black light flashlight. Tie monofilament line or rope around the bottle neck, ensuring it's long enough for full submersion. Using gloves, rinse the scalpel with DI water and cut up to 5 evenly spaced 4–6-inch slits along the bottle to allow water flow while protecting the tampon (Figure 1).



**Figure 1. Modified Bottle**

3. At the sampling site, use gloves to rinse the bottle and monofilament line 2X with sample water, discarding water downstream after each rinse.

4. Using gloves, unscrew the cap, carefully remove the tampon from its packaging without touching it, and hold it by the string. Place it halfway inside the bottle and secure the string by tightening the cap. Add pebbles if needed for weight (through the slits). Secure the bottle to a tree branch, rock, or weighted kettlebell via the monofilament line/rope.

5. Deploy the bottle at the site, ensuring it is fully submerged in the centroid of flow and shaded. Take a photo to document the location for retrieval and record the date and time of deployment on the Monitoring Form. If centroid deployment is not possible, see Method 2.

#### Sample Retrieval

1. Allow **24-72 hours** between deployment and retrieval of modified bottle. Record the date and time of bottle retrieval on the Monitoring Form.
2. Using gloves, retrieve the bottle and remove the tampon. If appropriate, quickly rinse with sample water to remove excess sediment. Place the tampon in the labeled Whirl-Pak® bag to prevent UV exposure until sample analysis.

### Method 2: Whirl-Pak® Bag (for Coastal & Non-Accessible Sites)

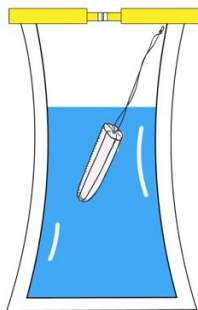
Record Field Observations and Comments on the Monitoring Form.

#### Sample Collection

1. Before collecting the water sample, label each Whirl-Pak® bag with the site ID, date, and time collected.
2. Using gloves, collect a water sample. There are three ways to do this:
  - **Bucket Grab Method:** rinse bucket 2X with sample water and discard the water downstream. Grab the sample from the centroid of flow. Pour water from the bucket into the Whirl-Pak® bag - never dip the bag into the bucket.

- **Extension Pole Method:** rinse pole 2X with ambient water downstream from the monitoring site. Attach the sealed Whirl-Pak® bag to the receiving carriage on the sampling pole using the yellow tabs. Immediately prior to obtaining the sample, remove the seal without touching the bag's interior. Open the bag with the tabs and invert it into the water, keeping the mouth downward to avoid introducing surface scum. Facing the bag upstream, tip it slightly upward to allow air to exit and the bag to fill. Avoid sediment contact.
- **Whirl-Pak® Bag Directly:** if the site is accessible, submerge the bag 0.3 m (1 ft), or roughly one-third of the depth, in very shallow streams. With the open end facing upstream, push the opened mouth of the bag upstream until full. Avoid sediment contact.

3. After collecting the water sample, using gloves, carefully remove the tampon from its packaging without touching it, and hold it by the string. Place the entire tampon in the Whirl-Pak® bag (Figure 2). Close the bag and invert 25X.



**Figure 2. Whirl-Pak® Bag**

4. Allow the tampon to soak in the Whirl-Pak® bag, positioned upright, in a dark environment for **24 hours**.

### Sample Analysis (Both Methods)

1. After the designated exposure period, in a dark setting with minimal light, use gloves to squeeze out as much water as possible. Place the tampon on a clean surface to prevent cross-contamination.

2. Gently unravel the tampon and expose as much

surface area as possible for analysis.

3. While exposing the tampon with the 365 nm UV LED black light flashlight, observe the tampon for distinctive blue fluorescence. Notes for Presence/Absence:

- If distinctive blue spots are present within the cotton fibers of the tampon (gently pull apart fibers to confirm), even if small amount, mark as "Positive".
- Blue flecks on the tampon surface are likely from contamination after retrieval. This does NOT count as a positive result. (When in doubt, use rinsed/sterilized tweezers to see if blue flecks are easily removed from surface).
- Other colors may be visible with UV LED black light flashlight but do not reflect optical brighteners (red = photosynthetic material, purple = decaying organic material). A positive result refers ONLY to the blue fluorescence.

4. Document the presence and types of fluorescence, along with any comments on the Monitoring Form. If unsure about your markings or information, include your reasoning in the comments section and be consistent. Take photos of the exposed tampon and submit them with the Monitoring Form. It's best to use a dark background, hold the camera at the same distance as the flashlight, and, if possible, turn down your camera or iPhone exposure.

5. Dispose of the tampon in household waste. If using the modified bottle method, rinse the bottle, tweezers (if used), and scalpel/scissors 2X with DI water for reuse. As long as the bottle remains intact and is rinsed properly, it can be reused along with the monofilament line for the modified bottle method.