

# Water Monitoring Field Data Sheets *(p 1 of 13)*

The following data sheets MUST be filled out entirely for the web host. Make sure to include all of the monitors' names, and be sure to write clearly and to use a pencil or waterproof pen.

Date: year \_\_\_\_\_ month \_\_\_\_\_ day \_\_\_\_\_ Time: \_\_\_\_\_ hour \_\_\_\_\_ minute

(NOTE: Time hr./min. on 24-hour clock, as 10:10 for AM or 22:10 for PM)

County of PaSEC Montgomery Site ID# 8

## **Monitor Information**

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone ( \_\_\_\_\_ ) \_\_\_\_\_ Fax ( \_\_\_\_\_ ) \_\_\_\_\_

e-mail \_\_\_\_\_ Identification Number \_\_\_\_\_

## **Monitor Information**

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone ( \_\_\_\_\_ ) \_\_\_\_\_ Fax ( \_\_\_\_\_ ) \_\_\_\_\_

e-mail \_\_\_\_\_ Identification Number \_\_\_\_\_

## **Monitor Information**

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone ( \_\_\_\_\_ ) \_\_\_\_\_ Fax ( \_\_\_\_\_ ) \_\_\_\_\_

e-mail \_\_\_\_\_ Identification Number \_\_\_\_\_

**Date** \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

**Site ID #** \_\_\_\_\_

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Date: year \_\_\_\_\_ month \_\_\_\_\_ day \_\_\_\_\_ Time: \_\_\_\_\_ hour \_\_\_\_\_ minute

### Recorder Information

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone (\_\_\_\_\_) \_\_\_\_\_ Fax (\_\_\_\_\_) \_\_\_\_\_

E-mail \_\_\_\_\_ Identification Number \_\_\_\_\_

### Stream Information

Watershed Name (instructions on how to obtain via internet can be found on page 24 of the Field Manual) \_\_\_\_\_

Waterbody Name \_\_\_\_\_

Township \_\_\_\_\_ County \_\_\_\_\_ State \_\_\_\_\_

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

Stream Code (from PA Gazetteer) \_\_\_\_\_ River Mile Index \_\_\_\_\_

Latitude: \_\_\_\_\_ N Longitude: \_\_\_\_\_ W  
Degrees Minutes Seconds (to 2 decimals)                      Degrees Minutes Seconds

Type of Waterbody:  stream     river     other \_\_\_\_\_

Length of Assessed Area in meters (The assessed Area is the area that is being monitored. This area should be up to 30 meters in length, or as large as an accessible area as the site allows):

\_\_\_\_\_ meters

Notes on this site may be added each monitoring event.

**Date** \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**Site ID #** \_\_\_\_\_

# Water Monitoring Field Data Sheet *(p 3 of 13)*

## Physical and Chemical Observations

### Precipitation (Check One)

#### In the past 24 hours:

- Storm (heavy rain > 2.5 cm)
- Rain (steady rain .85 to 2.5 cm)
- Showers (intermittent rain up to .85 cm)
- Overcast
- Clear

#### Current:

- Storm (heavy rain > 2.5 cm)
- Rain (steady rain .85 to 2.5 cm)
- Showers (intermittent rain up to .85 cm) \_\_\_\_\_
- Overcast
- Clear

### PHYSICAL CHARACTERISTICS ASSESSMENT (check all items that apply)

#### Water Appearance (choose at least one)

- |                                     |   |  |
|-------------------------------------|---|--|
| <input type="checkbox"/> Clear      | <input type="checkbox"/> Foamy                      | <input type="checkbox"/> Other (explain) |
| <input type="checkbox"/> Orange/red | <input type="checkbox"/> Milky/white                | _____                                    |
| <input type="checkbox"/> Dark brown | <input type="checkbox"/> Muddy/cloudy               |  |
| <input type="checkbox"/> Green      | <input type="checkbox"/> Multi-colored (oily sheen) |  |
|                                     | <input type="checkbox"/> Non-wadable stream         |  |

#### Water Odors (choose at least one)

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Chlorine             | <input type="checkbox"/> Fishy              | <input type="checkbox"/> Other (explain)   |
| <input type="checkbox"/> Sulfur (rotten eggs) | <input type="checkbox"/> Sewage             | _____                                      |
| <input type="checkbox"/> Musty                | <input type="checkbox"/> Earthy             |  |
| <input type="checkbox"/> Moldy                | <input type="checkbox"/> Spicy              | <input type="checkbox"/> No unusual smells |
|   | <input type="checkbox"/> Non-wadable stream |  |

#### Soil Odors (in stream bed at test site, scoop up with a spoon to smell) (choose at least one)

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Chlorine             | <input type="checkbox"/> Fishy              | <input type="checkbox"/> Other (explain)   |
| <input type="checkbox"/> Sulfur (rotten eggs) | <input type="checkbox"/> Sewage             | _____                                      |
| <input type="checkbox"/> Musty                | <input type="checkbox"/> Earthy             |  |
| <input type="checkbox"/> Moldy                | <input type="checkbox"/> Spicy              | <input type="checkbox"/> No unusual smells |
|   | <input type="checkbox"/> Non-wadable stream |  |

Date \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Site ID # \_\_\_\_\_

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## **Sediment Deposits** *(Examine the stream bottom visually, by looking through the water.) (choose at least one)*

- Sludge
- Sand
- Sawdust
- Other \_\_\_\_\_
- Paper fiber
- No unusual sediments
- Non-wadable stream

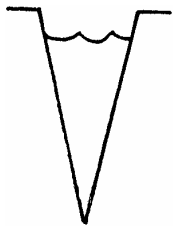
## **Stream Type** *(Look upstream and downstream) (choose at least one)*

- Straight
- Channelized (human made sides or bottom)
- Meandering/curving
- Pool/riffle (calm pools/fast moving rocky areas)
- Braided (small islands present)

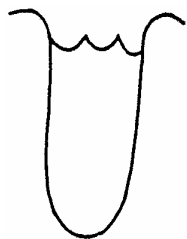
Are there any dams present?  yes  no

Level of high water mark above present stream level: \_\_\_\_\_ *(Numeric meters)*  
Check here if this is an estimate.

## **Stream/Bank Cross-section Shape** *at site (check one)*



V-shaped



U-shaped



banks undercut



Rectangular

## **Stream Bank Erosion** *(Check One)*

- No sign of erosion
- Extensive erosion
- Occasional areas of erosion
- Artificial stabilization present

Date \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Site ID # \_\_\_\_\_

# Water Monitoring Field Data Sheet *(p 5 of 13)*

## **Stream Bottom** *(at least one entry in each category required)*

(Inorganic and Organic combined should total 100%. Begin by estimating the percentage of the stream bottom that is inorganic and that which is organic. Determine this by looking at the surface area that is covered by inorganic or organic materials. For example, if most of the stream bottom is covered by algae or other aquatic plants, the percentage of organic materials would be rated higher overall than the percentage of inorganic. Continue to break down the percentages into specific types of inorganic and organic stream bottom categories based on your visual observations

### **Inorganic** *(estimated by percentage)*

- \_\_\_\_ % Bedrock (solid)
- \_\_\_\_ % Boulder (>25 cm diameter)
- \_\_\_\_ % Cobble (6.25 cm - 25 cm)
- \_\_\_\_ % Gravel (.25 cm - 6.25 cm)
- \_\_\_\_ % Sand (up to .25 cm)
- \_\_\_\_ % Silt (soft, fine sand)
- \_\_\_\_ % Clay (fine sand with a sticky texture)
- \_\_\_\_ % Other

### **Organic** *(estimated by percentage)*

- \_\_\_\_ % Muck-mud (black, very fine)
- \_\_\_\_ % Pulpy peat (unrecognizable plant parts)
- \_\_\_\_ % Fibrous peat (partially decomposed plants)
- \_\_\_\_ % Detritus (sticks, wood, coarse plant material)
- \_\_\_\_ % Logs, limbs
- \_\_\_\_ % Marl (gray, shell fragments)
- \_\_\_\_ % Other

- or - \_\_\_\_ **Non-Wadable Stream**

\_\_\_\_ % **Total (Inorganic + Organic = 100%)**

## **Predominant Surrounding Land Use** *(at least one entry required)*

*(estimated by percentage - should total 100%)*

Tip: Estimate the surrounding land use based on your assessment of the area, a distance of 30 meters back from the edges of the stream on both sides in your monitoring area.

- |                    |   |                        |
|--------------------|---|------------------------|
| ____ % Wetlands    | ____ % Commercial                       | ____ % Other (explain) |
| ____ % Forest      | ____ % Industrial                       | _____                  |
| ____ % Cropland    | ____ % Unused/abandoned                 |                        |
| ____ % Pasture     | ____ % Overgrown shrubs and small trees |                        |
| ____ % Residential |   |                        |

\_\_\_\_ % **Total (100%)**

**Date** \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

**Site ID #** \_\_\_\_\_

## Water Monitoring Field Data Sheet *(p 6 of 13)*

**Stream Flow Volume or Discharge** Check to see if the United States Geological Survey (USGS) has the information for Stream Flow Volume or Discharge for your site. Check this Internet address:

**water.usgs.gov/**

“USGS Water Resources of the United States”

Look under “Water Data”; “Real-time”

IF stream discharge data is available for your site, you can use this information rather than performing the procedures on the following pages (stream width, depth, and velocity). Make sure to check for this information BEFORE you go out to the stream site.

If the USGS does not have this information for your site, make sure to do all of the physical assessments and all of the math for the web host.

**Stream Width** Determine the average width of wadable streams by measuring at 5 places within your sampling area and dividing the total by 5. For the purpose of converting feet to meters use: feet x 0.3048 = meters.

$$\begin{array}{ccccccccc} \underline{\hspace{1cm}} & + & \underline{\hspace{1cm}} & + & \underline{\hspace{1cm}} & + & \underline{\hspace{1cm}} & + & \underline{\hspace{1cm}} & = & \underline{\hspace{1cm}} & \div 5 = & \underline{\hspace{1cm}} \\ \textit{meters} & & \textit{meters} & & \textit{meters} & & \textit{meters} & & \textit{meters} & & \textit{meters} & & \textit{meters} \\ \textit{Sample 1} & & \textit{Sample 2} & & \textit{Sample 3} & & \textit{Sample 4} & & \textit{Sample 5} & & \textit{Total} & & \textit{Average Width} \end{array}$$

\_\_\_ Non-wadable Stream

For non-wadable streams, if you have recorded stream width, note WHAT you have done below.

Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Stream Depth** Determine the average depth for wadable streams by measuring at 5 equal intervals along the width of the stream and dividing the total by 5. For the purpose of converting use: inches x 2.54 =centimeters centimeters ÷ 100 = meters.

$$\begin{array}{ccccccccc} \underline{\hspace{1cm}} & + & \underline{\hspace{1cm}} & + & \underline{\hspace{1cm}} & + & \underline{\hspace{1cm}} & + & \underline{\hspace{1cm}} & = & \underline{\hspace{1cm}} & \div 5 = & \underline{\hspace{1cm}} \\ \textit{meters} & & \textit{meters} & & \textit{meters} & & \textit{meters} & & \textit{meters} & & \textit{meters} & & \textit{meters} \\ \textit{Sample 1} & & \textit{Sample 2} & & \textit{Sample 3} & & \textit{Sample 4} & & \textit{Sample 5} & & \textit{Total} & & \textit{Average Depth} \end{array}$$

\_\_\_ Non-wadable Stream

For non-wadable streams, if you have recorded stream depth, note WHAT you have done below.

Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Date** \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
**Site ID #** \_\_\_\_\_

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## Surface Velocity

Complete the following steps to determine the surface velocity of wadable streams:

1. Measure and mark a 10 meter distance at your stream site, using the depth management line as the up stream mark. Each of the 5 intervals marked off to measure stream depth should be used as starting points for the weighted bobber.
2. Release the bobber at each of the 5 intervals, and time how long it takes the bobber to travel from the upstream mark down 10 meters to the downstream mark.
3. Divide the 10 meter distance by the travel time of the bobber to determine the stream's surface velocity.
4. Run the test 5 times, once at each of the 5 intervals you used for measuring depth along the transect, and take the average.

Trial #1: \_\_\_\_\_ meters ÷ \_\_\_\_\_ time (seconds) = \_\_\_\_\_ meters per second

Trial #2: \_\_\_\_\_ meters ÷ \_\_\_\_\_ time (seconds) = \_\_\_\_\_ meters per second

Trial #3: \_\_\_\_\_ meters ÷ \_\_\_\_\_ time (seconds) = \_\_\_\_\_ meters per second

Trial #4: \_\_\_\_\_ meters ÷ \_\_\_\_\_ time (seconds) = \_\_\_\_\_ meters per second

Trial #5: \_\_\_\_\_ meters ÷ \_\_\_\_\_ time (seconds) = \_\_\_\_\_ meters per second

Total = \_\_\_\_\_ ÷ 5 = \_\_\_\_\_ meters per second

*Average Velocity*

\_\_\_\_\_ Non-wadable stream

For non-wadable streams, if you have recorded surface velocity, note WHAT you have done below.

Notes: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Date** \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

**Site ID #** \_\_\_\_\_

# Water Monitoring Field Data Sheet *(p 8 of 13)*

## Stream Flow Volume or Discharge

Calculate the streamflow volume (cubic meters/second - cms) using the above measurements.

Check here if stream discharge data was obtained from the USGS. \_\_\_\_\_

Enter this data below as the Stream Flow Volume in cubic meters/second.

(You will need to convert cubic feet/second to cubic meters/second.)

For the purpose of converting cfs (cubic feet/second) to cms use: cfs x 0.0283 = cms

**w x d x v x k = cms**

$$\frac{\text{Avg. Width}}{\text{(meters)}} \times \frac{\text{Avg. Depth}}{\text{(meters)}} \times \frac{\text{Avg. Velocity}}{\text{(meters sec.)}} \times \frac{1}{k^*} = \text{Streamflow Volume cms}$$

\*k = stream bottom constant (0.8 if it's rubble/gravel or 0.9 if it's sand, mud, silt or bedrock or 1.0 when using velocity meter)

**Date** \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
**Site ID #** \_\_\_\_\_

## Water Monitoring Field Data Sheet *(p 9 of 13)*

### CHEMICAL AND TEMPERATURE PARAMETER ASSESSMENT

**Quality Control (QC):** The Colorimeter and Digital Titrator procedures are performed as a method to assure the quality of the data being recorded. The Colorimeter and Digital Titrator tests should be performed every six months (twice a year) as a means of checking the precision and accuracy of the field test kit readings.

- Tests to be performed with the colorimeter: Total Phosphates, Nitrates, and Sulfates.
- Tests to be performed with the Digital Titrator (included in the colorimeter kit):  
Dissolved Oxygen and Total Alkalinity.

Other quality control checks for the visual test kits include: Field Duplicates, Calibration Standards, Field Blanks, and Standard Checks.

**Tip:** When monitoring for the first time with the visual kits, use the lowest range and move to the higher range, if needed. The next time you monitor, test each parameter in the range in which you expect your results to fall.

**Temperature** *(This test is always performed in the field.)*

**Quality Control (QC):** (Take the air and water temperature twice each monitoring visit.)

Result	Air _____ °C or _____ °F	Water _____ °C or _____ °F	
Field Duplicate	Air _____ °C or _____ °F	Water _____ °C or _____ °F	

**Average Temperature** (Take the average Air Temperature and Water Temperature and record this data in the database.)

Average	Air _____ °C or _____ °F	Water _____ °C or _____ °F	
---------	--------------------------	----------------------------	--

**Dissolved Oxygen** *(This test is always performed in the field.)*

QC:

- Every 6 monitoring visits take a **field duplicate** (repeat the test twice on two different samples of water).
- Every 6 monitoring visits, perform the test with a **digital titrator**

Result	_____	<i>Results can range from 0.2 to 20 mg/L, but anything &lt;5 mg/L should be questioned.</i>
Field Duplicate	_____	
Digital Titrator	_____	

**Date** \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
**Site ID #** \_\_\_\_\_

## Water Monitoring Field Data Sheet *(p 10 of 13)*

### pH *(This test is always performed in the field.)*

QC:

- Every 6 monitoring visits take a **field duplicate** (repeat the test twice on the same sample of water).
- Each visit, test the meter with a **calibration** standard and recalibrate as necessary (detailed instructions for calibrating can be found in Appendix B).

**NOTE:** Immediately before testing, calibrate the Oakton pH Testr2 streamside with a pH 7.0 standard.

Result	_____	<i>Results can range from 0 to 14, but anything &lt;5 or &gt;9 should be questioned.</i>
Field duplicate	_____	
Calibration standard	_____	

**Care of pH Testr2:** After you record the pH, rinse the Oakton pH Testr2 with distilled water or tap water. If possible, keep a small piece of paper or sponge in the protective cap moistened with clean water (not deionized) to prevent the glass bulb from drying out. Replace the plastic cover and remember to turn the pH Testr2 off! Check here upon completion of this task. \_\_\_\_

### Specific Conductance *(This test is always performed in the field.)*

QC:

- Every 6 monitoring visits take a **field duplicate** (repeat the test twice on the same sample of water).
- Every 6 monitoring visits do a field **blank** - test deionized water as a sample to identify errors or contamination in sample collection and analysis.
- Each visit test the meter with a **calibration** standard and recalibrate as necessary (detailed instructions for calibrating can be found in Appendix B).

**NOTE:** Immediately before testing, calibrate the conductivity tester streamside with the Sodium Chloride calibration standard solution. The Oakton Conductivity ECTestr meter measurement is in milli Siemens (mS). The EASI database requires the result of the Specific Conductance tests listed below to be input in micro Siemens (µS). Multiply the mS test result by 1000 to reflect the µS value.

Result	_____	<i>Your meter reading can range from 10 to 1,990 µS/cm. Anything &gt;600 µS/cm should be questioned. The conductivity of PA's waterways normally ranges from 20-600 µS/cm, however normal is specific to the stream and its geological makeup.</i>
Field duplicate	_____	
Calibration standard	_____	
Field blank	_____	

**Date** \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
**Site ID #** \_\_\_\_\_

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**Care of the Conductivity Meter:** After you record the Conductivity, rinse the Oakton Conductivity ECTestr off with distilled water. Conductivity ECTestr should be stored dry. After drying make sure to replace the ECTestr’s dry protective cap. Remember to turn the Conductivity ECTestr off!

\_\_\_\_\_ Check here upon completion of this task.

**Nitrate** *(If not done in field, the water sample must be taken in plastic bottle, immediately refrigerated in dark, and test must be done within 48 hours.)*

QC:

- Every 6 monitoring visits take a **field duplicate** (repeat the test twice on the same sample of water).
- Every 6 monitoring visits do a **field blank** - test deionized water as a sample to identify errors or contamination in sample collection and analysis.
- Every 6 monitoring visits perform a **standards check**. To test with the Nitrate-Nitrogen Standard Solution, use the standard as though it is the sample of stream water and run the test as normal, making sure to use the appropriate test range. Your results should be close to the concentration on the bottle!
- Every 6 monitoring visits perform the test with the **colorimeter**.

When instructed to shake in the Nitrate test, it is very important to shake vigorously!

**NOTE:** Store the waste in a container marked “Toxic Waste - Nitrate” to be disposed of at a later date. DO NOT dispose of this waste in the sink!

\_\_\_\_\_ Check here after having disposed of the waste properly.

Result	_____	<i>Your test kit reading can range from ND</i>
Field duplicate	_____	<i>(non-detectable) to 10 mg/L Nitrate-Nitrogen;</i>
Field blank	_____	<i>multiplied by 4.4, your results can range from ND</i>
Standards Check	_____	<i>(non-detectable) to 44 mg/L Nitrates. Anything</i>
Colorimeter	_____	<i>&gt;8 mg/L Nitrates should be questioned.</i>

**Date** \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_  
**Site ID #** \_\_\_\_\_

## Water Monitoring Field Data Sheet *(p 12 of 13)*

**Total Phosphate** *(if not done in field, water sample must be taken in a plastic sample bottle, immediately refrigerated in dark and test must be done within 48 hours.)*

QC:

- Every 6 monitoring visits take a **field duplicate** (repeat the test twice on the same sample of water).
- Every 6 monitoring visits do a **field blank** - test deionized water as a sample to identify errors or contamination in sample collection and analysis.
- Every 6 monitoring visits perform a **standards check**. To test with the Phosphate Standard Solution, use the standard as though it is the sample of stream water and run the test as normal, making sure to use the appropriate test range. Your results should be close to the concentration listed on the bottle!
- Every 6 monitoring visits perform the test with the **colorimeter**.

Result _____	<i>Results can range from ND (non-detectable)</i>
Field duplicate _____	<i>to 50 mg/L, but anything &gt;0.1 mg/L</i>
Field blank _____	<i>should be questioned.</i>
Standards check _____	
Colorimeter _____	

- Tips:**
1. After you have established the test range likely needed for your site, mark the Hach instructions for that range so you won't use the procedure for the wrong range.
  2. Remember that the Acid Persulfate Digestion procedure comes before all other parts of the Total Phosphate test procedure.

**Date** \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**Site ID #** \_\_\_\_\_

# Water Monitoring Field Data Sheet *(p 13 of 13)*

**Sulfate** *(if test not done in field, water sample must be taken in a plastic sample bottle, immediately refrigerated in dark and test must be done within 28 days.)*

QC:

- Every 6 monitoring visits take a **field duplicate** (repeat the test twice on the same sample of water).
- Every 6 monitoring visits do a **field blank** - test deionized water as a sample to identify errors or contamination in sample collection and analysis.
- Every 6 monitoring visits perform a **standards check**. To test with the Sulfate Standard Solution, use the standard as though it is the sample of stream water and run the test as normal, making sure to use the appropriate test range. Your results should be close to the concentration listed on the bottle!
- Every 6 monitoring visits perform the test with the **colorimeter**.

Result \_\_\_\_\_  
 Field duplicate \_\_\_\_\_  
 Field blank \_\_\_\_\_  
 Standards check \_\_\_\_\_  
 Colorimeter \_\_\_\_\_

*Results can range from 50 to 200 mg/L.*

**NOTE:** Store the waste in a container marked “Toxic Waste - Sulfate” to be disposed of at a later date. DO NOT dispose of this waste in the sink!

\_\_\_ Check here after having disposed of this waste properly.

**Total Alkalinity** *(if not done in field, water sample must be taken in a plastic sample bottle, immediately refrigerated in dark and test must be done within 14 days.)*

QC:

- Every 6 monitoring visits take a **field duplicate** (repeat the test twice on the same sample of water).
- Every 6 monitoring visits, perform the test with a **digital titrator**

Result \_\_\_\_\_  
 Field Duplicate \_\_\_\_\_  
 Digital Titrator \_\_\_\_\_

*Results can range from 5 to 400 mg/L, but anything <20 mg/L should be questioned. (Note: sometimes natural conditions will be less than 20 mg/L due to the geology of the local area.)*

**Date** \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_  
**Site ID #** \_\_\_\_\_