Week 2 Laboratory – Water Quality Analysis for the Buffalo Creek Watershed

Date: Tuesday, September 3, 2019
Due Date: Tuesday, September 10
Prelab Quiz: When you get to lab I will give you 5 minutes to write down what you have to do in lab.
Topic: Measuring total carbon, chemical oxygen demand, total nitrogen, nitrate, dissolved oxygen, absorbance, turbidity, pH, and microorganisms.

 Assignments:
1. **In class**—Analysis and data recording on the Google Drive Spreadsheet
2. **A memo with analysis results for the Buffalo Creek Watershed Alliance (one memo per table).**

The sampling location is in the town of Mifflinburg (Figure 1), which is west of Lewisburg along Rt. 45.

Figure 1. Mifflinburg is approximately 10 miles west of Lewisburg.

Each lab section will analyze one water sample from one of the sampling locations shown in Figure 2. The objective of these measurements is to determine if the wastewater treatment plant is negatively affecting the water quality of Buffalo Creek in the town of Mifflinburg.

OBJECTIVES
1. Describe important water quality parameters,
2. Conduct suite of water quality analysis for a community organization,
3. Analyze and interpret data you collect in lab,
4. Provide BCRA with a clear and concise description of results.

1. Experimental Procedures

As a class we will measure total organic carbon (TOC), chemical oxygen demand (COD), total nitrogen (TN), microorganisms (bacteria and *E coli)*, pH, dissolved oxygen (DO), and turbidity for the two sites shown in red (Figure 2).

Figure 2. Two sampling locations along Buffalo Creek. Point 2 is downstream from the wastewater treatment plant, which is downstream from Point 1.

Each table in lab is responsible for one of the following sets of measurements:

Table 1: TOC and COD
Table 2: TN and NO_3-N
Table 3: Microorganisms,
Table 4: pH, DO, and turbidity.

Instructions for each analysis method will be provided at each lab table in writing or orally. All data must be entered into a Google Spreadsheet before you leave lab.

Deliverables:
One memo per table addressed to BCRA with data for **both sampling locations**. Your memo should report mean values ± standard deviations for all parameters analyzed at your lab table. In addition, describe each water quality parameter you measured, what it represents and why it is important. Finally, discuss the significance of the values measured in lab.