

WETLANDS & WATER CHEMISTRY

STEP 1: THE PROBLEM

You are an **aquatic biologist** working in Aiken County, SC. Your job is to sample the **water quality** of three local **wetlands** to determine whether these water bodies can support plant and animal life. The wetlands you will sample today include:

- Upper Three Runs Creek
- a Carolina bay
- a coal pond ash basin runoff pool

Working with the other aquatic biologists at your table, you will conduct water quality tests on water samples collected from one of these wetlands. The tests you will conduct today include:

1. pH
2. iron
3. nitrate
4. phosphate

In addition, tests for **dissolved oxygen** and **total hardness** will be conducted as a demonstration.

STEP 2: DATA COLLECTION

A) pH

1. Two of the aquatic biologists at your table will test water from your habitat to determine the **pH**, or whether the water is **acidic**, “neutral” (pH = 7), or **alkaline**.
2. If you are conducting the pH test, use a pipette to add 10 ml of sample water to a clean test tube.
3. Add one pH TesTab (provided by your instructor) to the test tube. Cap the tube and mix until the tablet dissolves.
4. Compare your tube to the pH color chart and record the result as pH.
5. If you did not conduct the pH test, be sure you also record the results in your data table.
6. Place the test tube back in the test tube rack.

B) Iron

1. Two of the aquatic biologists at your table will test water from your habitat to determine the amount of **iron** in the sample.
2. If you are conducting the iron test, use a pipette to add 5 ml of sample water to a clean test tube.
3. Add one Iron TesTab (provided by your instructor) to the test tube. Cap the tube and mix until the tablet dissolves.
4. Wait 5 minutes for the color to develop.
5. Compare your tube to the Iron color chart and record the result as ppm Iron.
6. If you did not conduct the iron test, be sure you also record the results in your data table.
7. Place the test tube back in the test tube rack.

C) Phosphate

1. Two of the aquatic biologists at your table will test water from your habitat to determine the amount of **phosphate** in the sample.
2. If you are conducting the phosphate test, use a pipette to add 5 ml of sample water to a clean test tube.
3. Add one Phosphate TesTab (provided by your instructor) to the test tube. Cap the tube and mix until the tablet dissolves.
4. Wait 5 minutes for the color to develop.
5. Compare your tube to the Phosphate color chart and record the result as ppm Phosphate.
6. If you did not conduct the phosphate test, be sure you also record the results in your data table.
7. Place the test tube back in the test tube rack.

D) Nitrate

1. Two of the aquatic biologists at your table will test water from your habitat to determine the amount of **nitrate** in the sample.
2. If you are conducting the nitrate test, use a pipette to add 5 ml of sample water to a clean test tube.
3. Add one Nitrate TesTab (provided by your instructor) to the test tube. Cap the tube and mix until the tablet dissolves.
4. Add one Nitrate #2 CTA TesTab (provided by your instructor) to the test tube. Cap the tube and mix until the tablet dissolves.
5. Wait 5 minutes for the color to develop.
6. Compare your tube to the Nitrate color chart and record the result as ppm Nitrate.
7. If you did not conduct the nitrate test, be sure you also record the results in your data table.
8. Place the test tube back in the test tube rack.

STEP 3: COMPARE HABITATS

Now that you have tested your habitat using tests that provide several different measures of water quality, compare your results with other groups of aquatic biologists who also tested water from your habitat and from the other two habitats. Answer the questions below the data table on the student data sheet.

School: _____ Teacher: _____ Name: _____

Activity 3
WETLANDS & WATER CHEMISTRY
Student Data Sheet

Circle the habitat you are testing:

Upper Three
Runs Creek

Carolina
Bay

Industrial Pond
Ash Basin

Water Quality Test Conducted	Test Results
Dissolved Oxygen	
Total Hardness	
pH	
Iron	
Phosphate	
Nitrate	

A) Now compare your results to the results of other groups who also tested water from your habitat.

1. Did your group get the same results on all the tests as other groups testing the same habitat? _____

2. If not, which tests were different? (circle the test(s) that produced different results):

pH Iron Phosphate Nitrate

B) Now compare the results from your habitat to the results of the other habitats tested today.

1. Did any of the water quality tests differ among habitats? _____

2. If so, list the habitat(s) and the test(s) that were different from the habitat you tested:

HABITAT

WATER QUALITY TESTS
