**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_**

**Organization of the Natural Environment**

**Field Trip**

Environmental Science

Science is as much about observation as it is about running experiments, using fancy, expensive equipment or publishing your work in elite scientific journals. This is particularly true in environmental studies and ecology where many studies are based upon data gathered by field observation. Yet, observation is the one part of science that is often excluded, cut short, or minimized even at the highest levels of science as pressures of teaching, other research or publication take up our time. The value of observation can’t be overstated though. We only need to look as far as some of the greatest works of ecology and biology to see its importance.

Careful observation led Rosalind Franklin to key understanding of the structure of the DNA molecule; knowledge later used by Watson and Crick to decipher the double helix structure of DNA which began the revolution of molecular biology. In ecology, Charles Darwin’s *On the Origin Of Species* was based upon incredibly detailed journal observations he collected during the five year voyage of the HMS Beagle. Thus, it’s fitting that as we chart our course into Environmental Science we should hone our abilities of observation.

Today we will begin to explore how natural systems are organized by making our own detailed observations of the terrestrial (land), aquatic (water) and riparian (transition from water to land) environments of the Palouse River. Much as Darwin did not fully develop his theories until after he returned to England you may not fully understand what your observations mean until later. Your notes are important however. They will form the basis of a final PowerPoint presentation on organization of species and the natural environment that your group will present to the class at the end of this unit.

Knowing this, here are a few pointers about scientific note taking. The key to good scientific observation is to record *everything* you find interesting, and anything that comes to mind. Don’t hold back, you never know when a scribble in the margin might become a key point when you present your data. Don’t worry if you don’t know how to explain something in scientific terms. No one will be reading your notes, just record it in whatever terms make sense to you. As the unit progresses you will learn the vocabulary you need to explain your observations in scientific terms.

**Objective**

Today we are observing and recording our observations about how the natural environment is organized on the banks of the Palouse River. This includes both the living and the non-living things that make up the environment. These can be directly visible or be based on evidence of their presence from any of your senses. Remember that organization isn’t only in terms of distance in space. Time can also be a way of organizing and categorizing the natural world.

**Materials**

* **Notebook –** you will need your own notebook to record observations.
* **Digital Camera –** You may use the digital camera(s) provided or the camera on your phone. (If you use your phone be sure you know how to get your images off the phone and onto a computer for later use!!)
* **Your senses –** Use all your senses, not just sight, to make observations. How does the dirt feel, is the air cool or warm…etc.

This lab provides an outline for how to proceed with your observations but should not be all of your observations. You should be recording additional observations and details in your notebook for later use as well. Remember, you will be using the data you collect today throughout the unit.

You will be working in groups but the best science comes from having your own observations. You might catch something the rest of your group didn’t. You should answer each numbered question in the handout in your own notebook, but you are free to work as a group to discuss and collect data.

We will provide enough time in class to make all the observations you need as long as you remain focused and on task so be sure to use your time wisely.

Here are some questions to guide your observations.

Are objects/organisms grouped or spread out?

Are objects/organisms far from the aquatic or riparian areas?

Are objects/organisms permanent?

Are objects/organisms common or rare?

Are objects/organisms above or below ground?

What is unique about the objects/organisms?

**Have Fun!**

**1) Terrestrial (Land)**

1.1 – Find five types of non-living things within the terrestrial environment. List them and explain where they are found within the environment.

1.2 – Find five types of living things within the terrestrial environment. List them and explain where they are found within the environment.

1.3 – Do any of the living things often seem to occur in the same places as one of the non-living? Do some non-living things rarely occur in the same place as one of the living things? Elaborate.

1.4 – Do any of these living or non-living things appear in the aquatic or riparian environment? Explain.

1.5 – Give two broad definitions that you think separate the terrestrial environment from the riparian and aquatic environment.

**2) Riparian (Transition between water and land)**

2.1 – Find five types of non-living things within the riparian environment. List them and explain where they are found within the environment.

2.2 – Find five types of living things within the riparian. List them and explain where they are found within the environment.

2.3 – Do any of the living things seem to often occur in the same places as one of the non-living? Do some non-living things rarely occur in the same place as one of the living things? Elaborate.

2.4 – Do any of these living or non-living things appear in the aquatic or terrestrial environment? Explain.

2.5 – What do you think the riparian environment is? Give two broad definitions that you think separate the riparian environment from the terrestrial and aquatic environment.

**3) Aquatic (Water)**

3.1 – Find five types of non-living things within the aquatic environment. List them and explain where they are found within the environment.

3.2 – Find five types of living things within the aquatic environment. List them and explain where they are found within the environment.

3.3 – Do any of the living things often seem to occur in the same places as one of the non-living? Do some non-living things rarely occur in the same place as one of the living things? Elaborate.

3.4 – Do any of these living or non-living things appear in the terrestrial or riparian environment? Explain.

3.5 – Give two broad definitions that you think separate the aquatic environment from the riparian and terrestrial environment.