GetWET Presentation Outline

Introduction – Prior to Data Collection

1. Welcome to the GetWET Observatory. It was designed to give students a hands-on experience studying the environment. It is unique in that it shows how soils, groundwater, and surface water are interconnected.
2. Science is no longer done by individuals working alone in a lab. Sciences is now done by teams of experts from different fields. They work together to help solve a part of a big problem. The problem only gets solved if many different teams around the world cooperate to solve the problem.
3. Today we are going to model how real science is done by working in teams and collecting different types of data that will then be shared back to the larger group.
4. If we want our data to be useful, we need to record the time, date and location of our measurement. [**demonstrate GPS use here**]
5. Each group will be able to decide where to collect data, we have access to many different types of water [**show locations on site map here**]
6. We also need to write clearly so that others can read out notes and we need to write useful descriptions of our sample sites. [**demonstrate field notebook use here**]
7. We need to follow the instructions for collecting data EXACTLY so it will be useful. Pages 2-3 in the field notebook has information about the measurement you will be doing and then pages 4-5 have the instructions. Ask if you aren't sure about something.
8. We need to be safe while out in the field. Be very careful along the creek between the yellow bridge and Center Avenue bridge as the bank is steep and slippery, making it easy to fall in. Stay to the side of the path when going through the tunnel under the road as bikes go through there very fast and they aren't expecting large groups of students to be in there.
9. [**demonstrate how to use the well bailers here**] Ask: Would this water be safe to drink – why or why not? {*parking lot, animal waste, road nearby, cultivated field of alfalfa, etc. could contaminate the water with bacteria and pollutants*}
10. Get into teams of no more than 4, get a backpack, read pages 1 – 5 out loud to the group and then find the first blank datasheet (don't skip any) to start collecting data. Groups need to be back at the wells by **XXX** (choose a time that works for you).

Wrap-up – After Data Collection

Each team should report out where they collected, how they collected and any interesting observations they may have made about the data. Go in this order:

1. **Dissolved Oxygen**
   How do you get dissolved oxygen into the water? {*turbulent water and photosynthesis*}

   Show the graph comparing DO in the creek vs. the wells. Why is the dissolved oxygen lower in the wells as opposed to the stream? {*no fast moving water or photosynthesis happening underground*}

   Show the graph comparing DO in the creek to well #5. Why is the DO in well #3 higher than that of well #5? {*the water under ground is moving away from the creek and towards well #5 and bacteria in the water will consume the oxygen as it moves farther from the creek and there is nothing that will replace it like there is in the creek*}

2. **Water Table Mapping**
   Can you confirm in which direction the water is moving underground?

   How do you think the water table changes throughout the year?

   How deep do you think the water table is near your home?

3. **Electrical Conductivity**
   Show the graph of EC over the course of the year. Why do we have these valleys each June? {*the snow melt dilutes the creek water, causing the EC numbers to go down in June and then pop right back up by August*}

   Where does the salt come from? {*fertilizers from farmed field, road salt on bridge in winter*}

   How would the electrical conductivity change after a heavy rain storm? {*it would got down as rain water is typically low in salt content*}

4. **Soils & Sediments**
   Show the Soil Textures graph and explain how scientists use it.

   Why would the soil be less (or more) permeable closer to the creek? {*lots of variables go into this one, depending on if it has rained lately or not and how high the creek is*}

   Is the stuff on the bottom of Spring Creek soil? {*it is sediment carried by the water that has settled*}

   How has land used by humans changed in this area over the last 200 years? How do you think this would affect the soils?

5. **Water Transparency**
   Why would the ground water be less (or more) transparent than the creek? {*answers will vary depending on which is less transparent at the particular point in time*}

6. **Stream Velocity & Discharge**
   If the amount of water in different places of the stream is relatively equal, why does it move faster in spots and slower in others? {*cross-sectional area changes – like putting your finger over the end of the hose to spray the water harder – same amount of water, but less area for it to go through means faster water flow*}

   How does the stream velocity relate to how transparent the water is in different spots? {*sediments will settle in slower moving water, making it clearer than faster moving water*}