## Preserving the Past On-Site Lesson Plan

### Time
| Time   | 4 hrs |

### Standards
**Band Theme 5-8: Science Inquiry and Application:**
- Identify questions that can be answered through scientific investigations;
- Design and conduct a scientific investigation;
- Use appropriate mathematics, tools and techniques to gather data and information;
- Analyze and interpret data;
- Develop descriptions, models, explanations and predictions;
- Think critically and logically to connect evidence and explanations;
- Recognize and analyze alternative explanations and predictions; and
- Communicate scientific procedures and explanations.

**Content Statement 6.ESS.4**
Soil is unconsolidated material that contains nutrient matter and weathered rock. CCSS.ELA-Literacy.RST.6-8.3
- Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

### Objectives
- Follow a multistep procedure to determine if the soil within an historic landscape will continue to promote optimal health and survival of its plants over time.
- Use appropriate mathematics, tools and techniques to gather data and information.
- Develop descriptions, models, explanations and predictions.

### Materials
- Student Manual
- Test kits
- Safety goggles and gloves
- Clipboard and Stopwatch
- Pencil

### Anticipatory set
- Students arrive and are reintroduced to the problem and a brief history of the Plane Tree Allee and Dell areas.
- Break the students into their experimental groups.
- As the students look at the Plan Tree Allee and Dell discuss if the area looks healthy. Based on what they observe, do they think the soil and plants look healthy?
- Have the students revisit their hypothesis. Do they wish to change or keep it based on what they have seen?

### Procedures
- Take the students to their color assigned sampling zone.
- Record a prediction of what their results may be based on their observations.
- Check that all safety precautions are being met and that materials are laid out.
- Make sure to accurately record all findings:
  - Date and time
  - Group
  - Zone
  - Test performed
  - Test results
**Teacher Note: During down time or while waiting for their tests to dissolve and develop, students can:**
- Draw a quick sketch of their surroundings.
- Perform the soil texture classifications by hand test, just like in class.

### Reflection
*(Can be done onsite or back at school)*
- Did your visual assessment match your test result?
- What was it like performing the test in the field “in person”?
- How might we use all the data we collected today? What might you guess about other test results conducted at Stan Hywet?

### Reference

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<td>Worms: <a href="http://urbanext.illinois.edu/soil/SoilBiology/earthworms.htm">http://urbanext.illinois.edu/soil/SoilBiology/earthworms.htm</a> (Soil Biology Earthworms)</td>
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| Soils | [http://earthsci.org/education/investigations/ies/Soils/Soil.htm](http://earthsci.org/education/investigations/ies/Soils/Soil.htm) - Throughout this module, students will use hands-on, inquiry-based explorations to investigate the following in 7 different modules:  
- the kinds of materials in soil  
- the arrangement of soil materials  
- the amount of water the soil can hold  
- how water flows through soil | [http://soilandwater.ohiodnr.gov/swcds/find-a-local-swcd](http://soilandwater.ohiodnr.gov/swcds/find-a-local-swcd) (ODNR Click on Soil Conservation in the left margin) |