



Environmental Stewardship

Lesson 1: Field Trip to Landfill/Water Treatment Facility

Grade Level: 9-12

Time Required: 2 hours + depending on travel time.

Summary:

This lesson is designed to introduce students to how humans have a great impact on the environment, namely our water sources. Because of our waste, both municipal solid waste and sewage, our water systems can be greatly affected. To mitigate our contamination of water sources, a great deal of engineering must be done to treat our water. This particular lesson serves as a “hook” to get students engaged in the process of water treatment. Students will play the role of engineers in subsequent lessons.

Objectives:

Water Treatment Facility:

The purpose of this field trip is to introduce students to wastewater. More specifically, how wastewater is generated & how it is treated.

Landfill:

The purpose of this field trip is to introduce students to municipal solid waste and how that waste can potentially contaminate groundwater. Further, students will gather information about how that contamination is/can be mitigated.

Engineering Connections : Environmental Engineering & Civil Engineering

Testing water quality requires several fields of engineering. The design and problem solving that goes into water treatment is vast. Likewise, landfills also require several aspects of engineering. Students will learn that they are not just large open spaces where waste gets piled.

I Can:

- Define and correctly use functional vocabulary related to water quality, landfills, and contamination of the water supply. *(For Landfill trip)*
- Explain how groundwater contamination might occur as a result of leachate leakage from a landfill. *(For Landfill trip)*
- Define wastewater *(For Water Treatment Plant trip)*
- Describe the process/steps of water treatment. *(For Water Treatment Plant trip)*
- Describe how human choices and activities can impact the environment and the quality of our water supply.

Standards

HS-LS2-7 Ecosystems: Interactions, Energy, and Dynamics

Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

HS-ESS3-4 Earth and Human Activity

Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.

Keywords

Wastewater, Municipal Solid Waste (MSW), leachate, groundwater.

Assessment

[Field Trip Questionnaire](#)

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Acknowledgements

This curriculum was developed under National Science Foundation RET grant # 1953102. However, these contents do not necessarily represent the policies of the National Science Foundation, and you should not assume endorsement by the federal government.

Name: _____
Period: _____

Field Trip Questionnaire

1. How big is this landfill?
2. Where does the waste in this landfill come from?
3. Can you describe the process of how a landfill works?
4. Why don't you just burn the waste?
5. Are there any types of waste that are not permitted to be dumped in this landfill?
6. Is there any process of examining what is being dumped?
7. How old is this landfill?

8. What types of careers are associated in working with municipal solid waste? What kind of education is needed?

9. Is the land ever repurposed for other uses?

10. What practices are in place to reduce pollution of this area?

11. How do you keep animals from being impacted by the landfill?

*Come up with at least 3 of your own questions you'd like to ask during the field trip.

1.

2.

3.