

FLOODING LESSON PLAN

Objective: Children of all ages will learn about the effects of flooding and how it connects to the community in Wilmington.

Overview: Kids will be split into two groups based on grade and work on the following highlighted activities about flooding, the issues it brings, and working towards resiliency.

Activity 1: Watersheds (20-30 min)

Kids will work together (can be in groups if there are a lot) to work on the following activities. This gives the kids an understanding of how and where water flows before they move onto the hands-on approach in the next activity.

Group 1 (younger kids) - Branching Out Activity:

Overview: Ideally for ages K-2, kids will use pipe cleaners to make a branching system that goes from streams to rivers. For older students, they can also help name creeks that are local to Wilmington.

Materials needed:

- Pipe cleaners
- Colored pencils, markers, crayons, pencils
- Lined and blank sheets of paper

Directions:

1. Starting with one pipe cleaner, explain to students how this represents a body of water called a creek. Help them understand that this one creek is a small part of the system.
2. Before moving on, relate the creek location to a nearby location (school, community, park, etc.)
3. Continue the branch system by adding another pipe cleaner to the original, making another creek. Help students imagine water flowing from the multiple creeks into the same place.
4. Add more pipe cleaners until you've created a stable center connection. Have students guess what this could represent. If they aren't able to guess correctly, let them know it is a river.
5. Discuss some of the following questions upon completing:

- a. What do you think the river flows into? (ocean)
 - b. Do you think the creeks and river would look the same in a thousand years? Have them think of natural and human-related effects.
 - c. What would happen if it started to rain a lot?
6. If time permits, students can write a story about or draw a picture of how or where the river flows.

Group 2 (older kids) – Land Coverage Maps

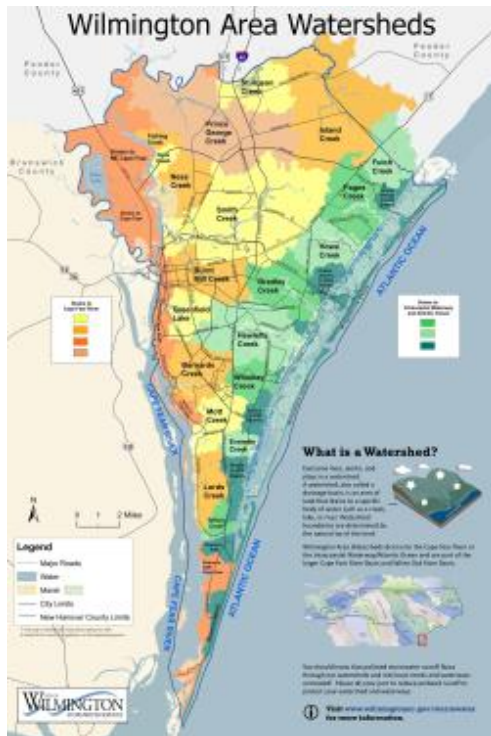
Overview: Students will have maps of Wilmington from two time periods to compare how much land coverage has changed over time and how that can affect runoff in watershed.

Materials:

- Maps of Wilmington from different years
- Wilmington Area Watersheds page

Directions:

1. Ask kids what some major cities might have been like 100 or 50 years ago and how growth has changed those communities today.
2. Present kids with copies of Wilmington from *past year* and present time. Have them look for schools, businesses, restaurants, or others new buildings that didn't exist in the first picture.
3. Once they have pinpointed a few locations, have the kids look to see if they are near water.
4. Introduce the watersheds of this area and have kids compare the locations they have focused on to which watershed that building is a part of.



5. After giving them a few minutes, ask the kids how they think the growth of the city has affected creeks and the river over the years.
 - a. How would this affect the watersheds?
6. Other questions to ask:
 - a. How could the proximity to water affect the condition of the buildings?
 - b. How could these factors contribute to flooding? Have them think about land loss and possible resiliency.
 - c. How could more greenery reduce flooding?
 - d. What are other human impacts on water? (ex- trash, runoff)
 - e. Would you have handled development differently?

Activity 2: Envirosapes (30-40 min)

Overview: Children will work with Envirosapes to simulate how flooding works. Ideally, they can split into groups depending on size and age, with each station focusing on something geared more towards the age.

Materials:

- Enviroscape (2)
- Spray bottles (4)
- “Pollution”
 - Plastic
 - Pet waste (cocoa puffs)
 - Oil (soy sauce)

- Chemicals (Kool aid)
- Natural barriers
 - Clay or Lego

Directions:

Group 1:

1. Before starting, discuss what flooding is, how it happens, and why it can be dangerous.
2. Start with water filled up in the river and strategically set up buildings and other props to have a better simulation of flooding effects.
3. Have kids observe the water line and building locations close to the river.
4. Students will spray the enviroscape with multiple bottles to simulate a heavy storm for 30 seconds to one minute until an appropriate amount of time has created flooding.
5. Children will then observe the water line again and if any “damage” has occurred.
6. If time permits, sprinkle a pollutant or two around and have the kids spray again. Have them observe where the pollutants go.

Group 2:

1. Before starting, discuss what flooding is, how it happens, and why it can be dangerous. Additionally, discuss the issues pollution and erosion can cause during flooding events.
2. Start with water filled up in the river and strategically set up buildings and other props to have a better simulation of flooding effects.
3. Have kids observe the water line and identify pollutants and/or building locations close to the river.
4. Children will spray the enviroscape with multiple bottles to simulate a heavy storm for 30 seconds to one minute until an appropriate amount of time has created flooding.
5. Children will then observe the water line again and if any “damage” has occurred. They should indicate where pollutants ended up and how much is left in the original location.
6. Next, put up “natural barriers” to simulate shoreline greenery. Explain to students that this strengthens the soil to prevent erosion in addition to providing a barrier to the amount of water getting through.
7. Have kids spray water again and discuss the differences observed versus not having the barriers. If time permits, further discuss real life barriers that could provide solutions to flooding resiliency.

Activity 3: Post Flood Drawing (1 hour)

Overview: Using available tools, kids will choose from the following topics to express their thoughts on one of the given prompt options. Kids can choose to spend their time with just one or move through multiple if they desire. Topics/prompts are bulleted with prompts listed beneath.

*Can be on one large sheet or provide smaller individual one if preferred? Or could be split based on topic

Materials:

- Sheets of paper (medium-large)
- Colored pencils, markers, crayons, pencils
- Prompt cards?

Directions:

Group 1:

- How does flooding make you feel?
- Where have you seen or experienced flooding before? If you haven't, talk to someone who has.
- How can you stay safe if it's going to flood?
- What does your nearest river or creek look like?

Group 2:

- Where have you seen or experienced flooding before?
- What did it feel like after a flooding event occurred?
- How can flooding be prevented in the future? Choose one to focus on.
 - Living shorelines
 - As the name implies, this is a naturally made barrier that provides a habitat for living animals. It creates additional support between land and water to reduce the impact of water and wind hitting the shoreline.
 - Land acquisition
 - This process involves taking over land to turn it into conservation or preservation areas that provide important greenery to the environment.
 - Stormwater drainage systems
 - These systems include installing permeable pavement and strategically placed drains to prevent the water from building up quickly.
 - Wetland restoration

- In addition to protecting these wetlands, we can plant trees and other native plants near bodies of water to control erosion and store water in their roots
- Rain gardens
 - These gardens are built at a lower elevation to collect water from places like gutters, roads, or driveways to reduce runoff and filter pollution. Shrubs and flowers are often used to create one of these gardens.

Conclusion/Take home:

- flood kit sheet
 - aimed towards younger children, can realistically be given to anyone who wants to complete
 - ICE – have one available for each kid to take home



In case of an emergency

My family name: _____

My phone number: _____

My address: _____

Mother's phone: _____

Father's phone: _____

Other (relationship): _____

Out of town contact Name: _____

Out-of-Town Contact Phone Number: _____

Meeting Place (high ground): _____

Emergency Phone Numbers (doctor, veterinarian, other family members, etc.): _____

My Emergency Kit is located: _____

Additional Important Information (medicine I need, address of my school, etc.): _____
