

## Rain Garden Design Exercises

**ESTIMATED TIME:** 45 minutes

### **OBJECTIVES:**

Students will be able to:

- Understand how to manage stormwater runoff through the use of rain gardens
- Identify the possible locations where you can put rain gardens
- Understand the design of a rain garden

### **MATERIALS:**

- Downspout Disconnection Poster
- One "Design Your Rain Garden" Poster for each group of students
- One "Design Your Rain Garden" Worksheet for each group of students
- One "Rain Garden Native Plant" Worksheet to return to each student from the "Rain Garden Native Plant Considerations" module
- Rutgers Native Plant Information Sheets
- Markers
- Colored Pencils
- Glue sticks or transparent tape
- Scissors
- Reference materials (books, websites, etc.)

### **PROCEDURE:**

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##### ***Part 1: Pre-Test***

***Estimated Time:*** 10 minutes

##### ***Preparation:***

1. Prepare the Stormwater Management in Your Schoolyard journal for each student to complete for this module (Before Lesson and After Lesson).

##### ***Directions:***

1. Distribute a pencil and a Stormwater Management in Your Schoolyard journal to each student.
2. Read the questions on the "Before Lesson" page and have the students complete.
3. Have the students hold onto their pencil and Stormwater Management in Your Schoolyard journal until the end of the module.

## **Part 2: Rain Garden Design**

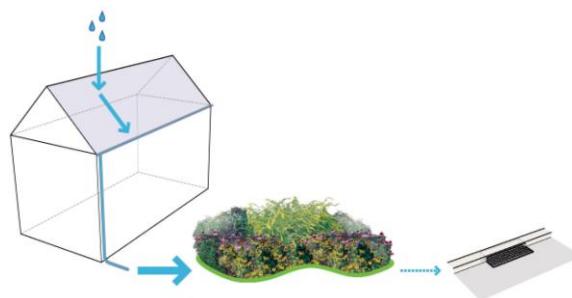
**Estimated Time:** 25 minutes

### **Preparation:**

1. Separate students into pairs or groups.
2. Your students will be designing their group's rain garden based on the "Rain Garden Native Plant Considerations" module's native plants that each group of students researched.
3. Be sure to have enough materials (markers, colored pencils, scissors, glue, tape, etc.) for the students to use.
4. Gather resources for students to be able to research native plants of New Jersey. Some good resources to consider are:
  - a. [www.npdc.usda.gov](http://www.npdc.usda.gov)
  - b. [www.npsnj.org/lists\\_njplants.htm](http://www.npsnj.org/lists_njplants.htm)
  - c. <http://www.plantnative.org/>
  - d. *The Encyclopedia of North America Wild Flowers* by Joan Barker
  - e. *Wetland Planting Guide for the Northeastern United States: Plants for Wetland Creation, Restoration, and Enhancement* by Gwendolyn A. Thunhorst
  - f. Rutgers Native Plant Information Sheets

### **Directions:**

1. Discuss with students the following:
  - a. While showing the Downspout Disconnection poster, explain to the students that rain gardens are dependent on the surface area in which the runoff would be collected from (i.e., rooftop, driveway, and roadway). Place a rain garden between two impervious surfaces such as a ROOFTOP and a ROADWAY.
  - b. Why do you think rain gardens are dependent on the surface area? *To be able to determine the best way to collect stormwater in order to reduce runoff.*



2. Using the "Design Your Own Rain Garden" poster and a Rutgers Native Plant Information Sheets, discuss with students how they will be designing their rain garden. Begin with the side-view image of the rain garden by placing the Native Plant pictures in the appropriate zone. Then use the aerial image of the rain

- garden to show the different ways in which you can organize the native plants in each zone.
3. Divide the students into their groups and have each group discuss the following topics from their Design Your Rain Garden Worksheet:
    - a. Water Flow – identify what impervious structure the rain garden will be capturing runoff from.
    - b. Soil & Vegetation – based on the native plant’s worksheet, identify the best soil type for your rain garden, the different zones within a rain garden and the best native plants for those zones (based on moisture level).
      - i. When will each native plant in the rain garden bloom?
    - c. Wildlife – based on your native plant’s worksheet, identify what kinds of wildlife you expect to find in your rain garden.
  4. Within the groups, students should be putting together their rain garden sketch which should include a drawing and information about each native plant within the rain garden that they did the previous lesson and soil type.
    - a. *Teachers should be walking around each group and help facilitate the discussion to ensure that the students understand the information and are headed in the right direction.*

**Part 3: Putting it All Together and Post-Test**

**Estimated Time:** 10 minutes

**Preparation:**

1. Prepare the Stormwater Management in Your Schoolyard journal for each student to complete for this module (Before Lesson and After Lesson).

**Directions:**

1. Moderate a brief class discussion to help pull the module content together. Ask the students the following questions:
  - a. What do you do to determine what soil type you have and how to make it better for a rain garden?
  - b. What plants would you use in a rain garden and why?
2. Ask the students to answer the prompt in their journal.

Names: \_\_\_\_\_

## Design Your Rain Garden

### 1. Water Flow

Identify what impervious (hard) surfaces the rain garden will be capturing runoff from.

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### 2. Soil & Vegetation

The best soil type for your rain garden: \_\_\_\_\_

Which native plants are you placing in the **base** of your rain garden? What months of the year do these plants produce flowers?

Plant	Flowering Period
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____

Which native plants are you placing in the **slope** of your rain garden? What months of the year do these plants produce flowers?

Plant	Flowering Period
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____

Which native plants are you placing in the **buffer** of your rain garden? What months of the year do these plants produce flowers?

Plant	Flowering Period
1. _____	
2. _____	
3. _____	
4. _____	

3. Wildlife

Identify what kinds of wildlife you expect to find in your rain garden.

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# DESIGN YOUR RAIN GARDEN!

