



The University of New Mexico

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MSC03 2020  
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## Bosque Ecosystem Monitoring Program

*Science, Education, and Stewardship*



BOSQUE SCHOOL  
4000 Learning Rd NW  
Albuquerque, NM 87120  
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### The Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA) and the Storm Water Team

#### 2012-2013 BEMP Stormwater Science Education Overview

The main objective of the *Stormwater Science* outreach education program is to teach students that the health of the Rio Grande is directly related to the health of the surrounding watershed. The *Stormwater Science* presentation is integrated into our series of 9 BEMP classroom programs that are shared with students throughout the year. The one and one-half hour classroom program was delivered to **616 students** in **29 classrooms** at **11 different schools** in **3 cities**.

The main portion of the program uses a model of the Rio Grande Basin watershed constructed inside the classroom. The watershed has 5 different communities along the river: a cattle ranch, up-and-downstream eco-friendly towns, an urban city, and agricultural fields. Students add different 'runoff cards' to the river downstream of the community where they came from. Some of the runoff is naturally occurring (turbidity), and others are human caused (pesticides, oil). Other cards such as macro-invertebrates and fish species are changed from pollution sensitive species to more pollution tolerant species where the water quality is degraded. The program runs through two different scenarios, a *before-the-storm* and *after-the-storm* river. They demonstrate the harmful effects stormwater contamination can have on aquatic organisms and downstream communities. The program also encourages students to change their daily behavior in ways that can help to keep their watershed clean. Educators help to provide solutions as well as having students come up with ideas on their own. The handout to accompany this activity is included below.

The field portion of the program involves a trail/arroyo survey which examines and categorizes the amount of visible pollutants (plastics, paper, dog poop, animal scat, etc...) in the San Antonio arroyo which empties into the Rio Grande. This is followed by an activity where the students guess how long it takes for different materials to decompose. When the students arrive at the bank of the Rio Grande they examine the water using a LaMotte water quality monitoring kit. Students share their results and discuss what they could mean in terms of river health. Several high school participants took on a third portion of the *Stormwater Science* program, which was a community outreach tool used to educate Albuquerque citizens about the importance of keeping a clean watershed. Some students created a children's book about a class that goes for a hike in the bosque and discovers the negative impact trash has had on several animal's habitats. Another group created a poster about the accumulation of cigarette butts in the drainage of overpasses. By allowing the students to share what they feel is important, it allows the message of keeping a healthy watershed to spread throughout a broader community.

# Classroom Handout – Mid/High School

(Hydrologist) Name: \_\_\_\_\_ Date: \_\_\_\_\_

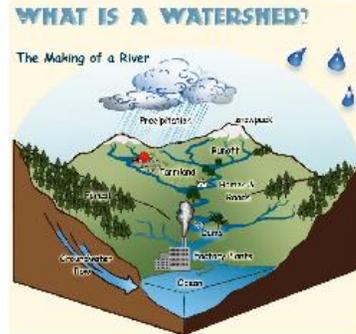


## stormwater Science

What 2 sources does Albuquerque get its drinking water from? What % comes from each?

1. \_\_\_\_\_ %
2. \_\_\_\_\_ %

A watershed is an area of land where all of the water that falls on it, or that is under it, drains to the lowest point.



### Draw a line from the word to its definition

Turbidity	◆ A stream or arroyo that brings water to the main channel of the river
Nonpoint source pollution	◆ Water that has drained from man-made non-porous surfaces in urbanized areas
<i>E.coli</i>	◆ Types of nutrients found in fertilizers that can lead to excess algae growth
Point source pollution	◆ A single location where pollution is being leaked into the environment
Nitrates and phosphates	◆ A type of <i>bacteria</i> found in warm blooded animal's intestines that can make people sick
Impervious surface	◆ A surface material that does not allow water to soak through it
Tributary	◆ Tiny 'water bugs' whose species are an indication of water quality
Macro-invertebrates	◆ Any type of pollution that comes from <i>many different</i> sources
Urban runoff	◆ A measure of water clarity based on the amount of suspended solids

**Upstream Eco-friendly town**  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Cattle Ranch**  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Agricultural Fields**  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Urban City**  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Downstream Eco-Friendly Town**  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Write the main type(s) of runoff that come from each of the 5 communities along this river. Are they naturally occurring or not?

Write down a few things that **YOU** can do to help keep our watershed clean!

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

