Name(s)	Project Number
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Project Title

Chosen for Erosion

Abstract

Objectives/Goals

To determine how the addition of different materials help control the erosion of sand caused by water.

Methods/Materials

Materials:

300 cm segment of metal rain gutter.

2 ladders and bricks to create a slope.

40kg playground sand.

Water

2 graduated cylinders.

Funnel.

Gravel and small rocks.

Stopwatch.

1. Assemble 300cm long, 7 cm wide rain gutter with higher end 70 cm above lower end.
2. Place a funnel at lower end to catch drainage into a graduated cylinder
3. Spread 1000ml sand evenly across the bottom of the gutter
4. Pour 600 ml water over 2 minutes into top of gutter and collect water/sand for one hour
5. Ten trials were done with each of four variables of erosion: dry sand/wet sand/gravel over dry sand/rocks over dry sand.

Results

Sand was eroded in all trials: gravel best prevented erosion, letting an average of 15ml of sand erode. Rocks were next most effective, allowing on average 54ml of sand erosion. With dry sand alone an average of 253ml of sand eroded, and with wet sand 443ml of sand eroded.

Conclusions/Discussion

My hypothesis was incorrect; the largest rocks did not keep the greatest amount of sand from being eroded. Instead, gravel held back the most sand, but both gravel and rocks reduced erosion by quite a bit. The wet sand eroded a lot more than the dry sand. My conclusion is that physical barriers (gravel and rocks) helped reduce the amount of erosion, and wet sand had a lot more erosion, suggesting that drainage is also a key factor in erosion control. Next time I would add man-made objects to the gutter, and run repeated tests over the same set-up, and investigate different flows of water.

Summary Statement

How the addition of different objects effects the erosion of sand by water.

Help Received

Father purchased materials and helped construct my design