

UNIVERSITY OF COLORADO BOULDER

Team Project 1 Report

MCEN 5151-001

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This purpose of this report is to provide a thorough explanation of the second assignment and first group project (Team Project 1). The intent of this experiment is to simulate a sea wave using Flume, water and food coloring. The intention was to induce waves and have them deflected using a blockage. Then, capturing the moment when the deflected waves hit the water level. Also, introducing food coloring to the wave has added a great look to the picture. To execute this experiment perfectly, our team collaborated to obtain the best results. I would like to thank Eli Kopp-Devol for taking care of the lighting, Hana Kieger for taking great pictures using her camera and Chet Roe for creating the wave.

In this project, we used the Flume which is a device that circulate water through a channel that is around 15 cm wide and 1.5 m long. We kept filling half of the channel with water until the water height reached 12 cm. Once the water level reached that height, we would remove the barrier creating a turbulence flow that would hit the blockage at the end and be deflected (Figure 1). At the moment where the wave is being deflected, we released a drop of red food coloring.

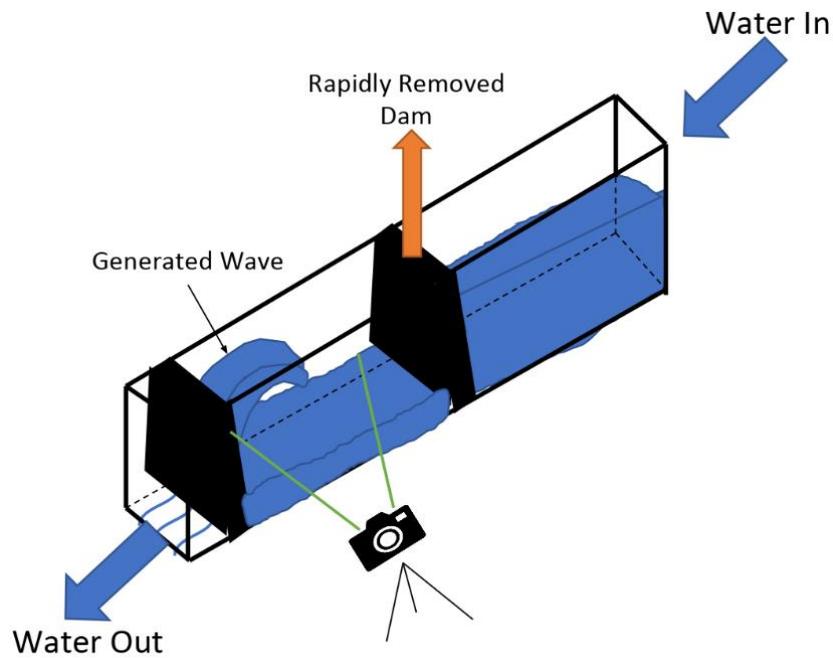


Figure 1: Experiment setup "made by Eli Kopp-Devoi"

To obtain ideal pictures we used many materials to optimize lighting, contrast and resolution. We used an LED light and we placed a white layer at the background which provided better lighting and increased the visibility of the picture. We added a drop of red food coloring to enhance contrast and to add a unique color to the photo. A Nikon D80 camera was used to capture the photos. The flash light on the camera was turned off intentionally as flash light reflections on the glass could not be avoided.

To take the picture, we used a NIKON D80 camera. The focal length was 85 mm on the camera and it took the image in 3872 pixels width and 2592 pixels height. the camera was set 20 cm away from the object. This picture was taken using the following specs: Exposure time: 1/2000 sec, ISO speed: 1250, Aperture: 5.6.



Figure 2: Team project 1 raw picture

Windows Photo application was used to crop the images and enhance the colors and contrast.

Below are the images after manipulations.

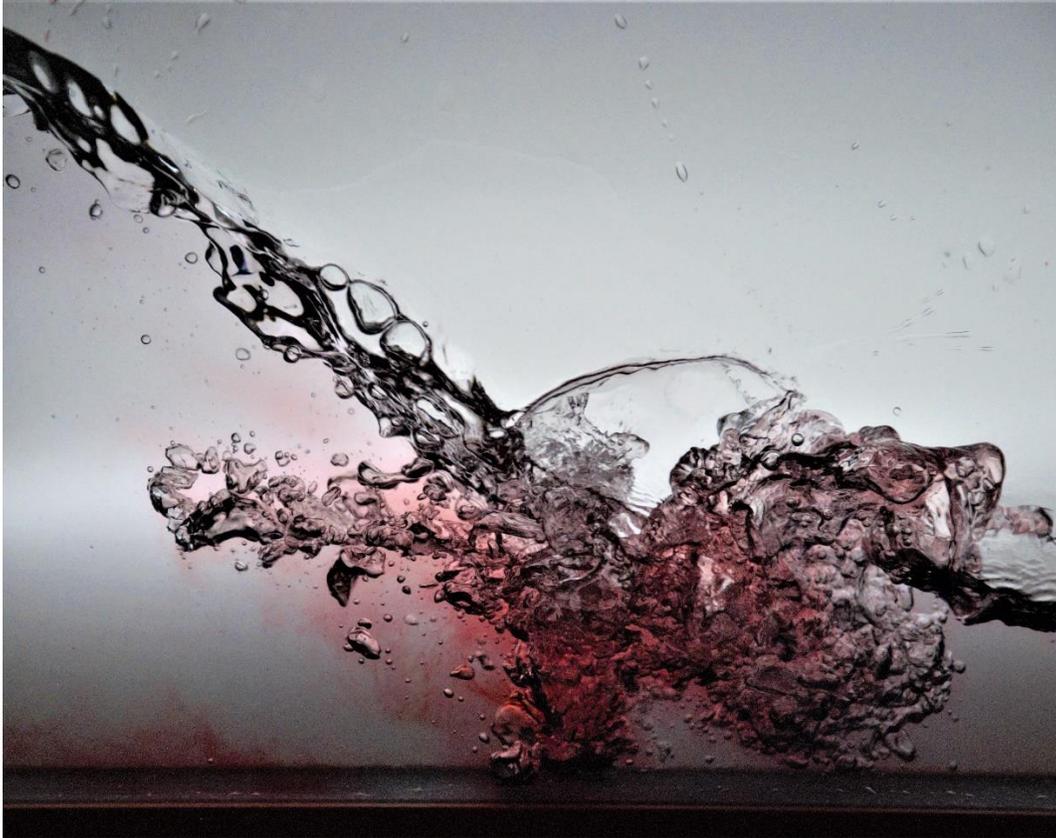


Figure 3: Team project 1 picture after manipulation

The image shows how the water collision providing some interesting and beautiful colors and phonomimes.