Group Members' Names:



Your Task:

Your family just moved into their new home along a river bank. You have been able to fish, hike, and enjoy listening to the water that runs by your house. However, a few severe thunderstorms have resulted in flooding conditions by your home. The water in the river has been flowing at a fast rate. You begin to notice that your backyard is changing due to weathering and erosion. What steps will you take to protect your home and land?

1. What is the problem that your team is trying to figure out? What are you trying to test?

Your next step is to investigate methods that are used to help control erosion along waterways. You have found several ways to solve erosion along a stream bank. Below are some of the ways which might help you solve your problem. Research each method and write down additional information that you find about each method. What are the conditions that each method works the best? Use the erosion control methods that are following to do some additional research.

Cross-Vane Weir Diversion: Large rocks are placed in a V-shaped formation in the center of the stream. This method reduces the stress along the stream bank and channels fast moving water to the center of the stream.



http://www.smr.arizona.edu/nemo/BMPdocs/StreambanksStabilizationManagementMeasures.pdf

Rip-Rap: Layers of stones are placed in areas to protect against erosion. The stones can be placed in the stream, along a streambank, or areas with poor soil structure. Stones should be large enough to avoid being washed downstream.



http://www.smr.arizona.edu/nemo/BMPdocs/StreambanksStabilizationManagementMeasures.pdf

Tree Revetment: Trees are placed horizontally along the side of the stream bank. The trees greatly slow the current along the eroding bank. The sediment is deposited along the bank between the branches of the tree. This provides a good seed bed to allow vegetation to grow along the bank.



http://www.bing.com/images/search?q=christmas+tree+revetment&view=detailv2&id=348873628C28E968FDE6C14C6248D09F8A80B6F7&selected index=9&ccid=IfFBYpuh&simid=608051122791909582&thid=OIP.M95f141629ba1aff089a7b45c0e84f7fao0&mode=overlay&first=1

Brush Mattress: A layer of branches is placed along a bank often with rocks at the base. The live branches are cut from trees such as willow. A brush mattress slows the water flowing along the stream bank and collects sediment. This allows the live branches to take root and grow into full size plants.



http://www.smr.arizona.edu/nemo/BMPdocs/StreambanksStabilizationManagementMeasures.pdf

Plan & Design Models:

Based upon the information that you learned about methods to slow erosion, your team will design and construct a model of two of the erosion control measures. You will evaluate and test the two erosion control measures to determine if one of the methods works better at controlling erosion.

2. Choose two erosion control methods that you will design, test, and compare. Which two methods will you test?

Α.	В.

3. Erosion Control Method A: Explain why your group chose this method? What materials will your team use to simulate this model?



4. Erosion Control Method B: Explain why your group chose this method? What materials will your team use to simulate this model?

5. Draw an illustration of each stream table that your group will be testing. Label the materials being used on the diagrams.



Use your illustration to construct each stream tables. Take a picture of each stream table after they are assembled. Paste pictures below.

A	В.

6. Test each design using the flood water source cup. Record the results of your experiment below.

Stream Table	Uncovered Squares before Experiment	Uncovered Squares after experiment	Number of Squares covered by eroded material
Table A			
Table B			

7. Record your observations after each trial. Describe what happened during each experiment.

Table A:

Table B:

8. Explain the results of your experiment. Which erosion control measure resulted in the least amount of sediment being eroded? Why do you think this method worked better?

9. How did your results compare to other groups who used the same control methods? Analyze the data. Were the number of covered and uncovered squares after the trial similar to your results?