

**MAUKA-MAKAI CONNECTION****MODEL-BUILDING INSTRUCTIONS**

NAMES _____

DATE _____



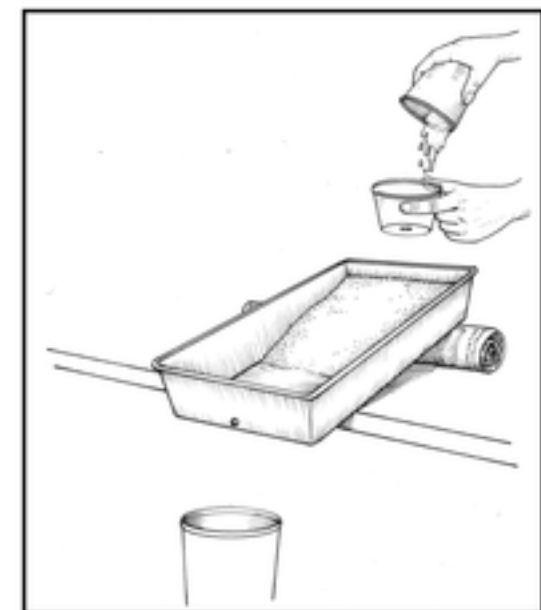
Essential Question: How did the Hawaiian system of irrigating *lo'i* allow people to use water wisely in their *ahupua'a*?

**Create and analyze a model
of water distribution in old Hawai'i!**

1. **Instructions:** In your group, decide who will be responsible for each job:
 - one person gathers supplies
 - one person completely clears off the desktops or table
 - one person spreads newspaper on the desktops or table and on the floor
 - one person gets water at the sink as needed
2. As a group, decide what "earth material" you will use to build your model. **List your "earth materials" below and give a reason why you chose the materials.**
3. Start setting up when the teacher says, "Go!"
4. Before you begin making your model, make sure you have all your supplies and that the desktops and floor are covered with newspaper!
5. Steps to build your model (use the illustration as a guide):
 - a) Mix the earth material inside the pan.
 - b) Push the earth material against one end of the pan—NOT the end with the hole in it because that's where the water comes out!
 - c) Form a gentle "mountain slope" with the earth material.
 - d) When you are satisfied with the slope, carve a stream into the slope.

Supplies

- ✓ Earth material
- ✓ Handful of gravel
- ✓ Large pan
- ✓ Styrofoam™ cup with hole poked in the bottom
- ✓ Container for pouring water
- ✓ Bucket or pan to catch water that comes out of the pan
- ✓ Wood blocks or rolled up newspaper to prop up one end of your pan a little
- ✓ "digging stick" (chopstick)





- e) Try running water through the stream! **MAKE SURE YOU HAVE A BUCKET or PAN UNDER YOUR MODEL TO CATCH THE WATER!** Place the Styrofoam™ cup at the top of the slope above the stream and slowly pour water into the cup. A small stream of water will begin to flow out of the hole in the cup. (Be sure to hold the cup in place so water flows only in the stream.)
 - f) After observing how water flows through your stream, make any adjustments you think the model needs.
 - g) Now decide where to build your *lo'i* and start digging out a little of the earth material to create shallow ponds where the *lo'i* will be.
 - h) Dig *'auwai* from the stream to the *lo'i* and back to the stream.
 - i) Now place small rocks to make a dam in the stream, and line the *'auwai* with small rocks.
 - j) When you think your *lo'i* and *'auwai* are complete, try running water through the system. (Follow the same procedure as in “e” above.)
 - k) How does your model work? Does it accurately show how water was distributed in old Hawai'i? Make any adjustments you need.
6. Save your models for discussion!
 7. Follow your classroom clean-up procedures.

On an index card, write a reflection about what you learned from this model-building activity. Place the index card next to your model.

Work with your team to present your model to the class. Be sure to answer the essential question for this lesson when you present.