

Predicting Groundwater Flow

The water table is the surface of the saturated zone. The saturated zone is the point at which all pores in soil and rocks are completely filled with water. Wells need to be drilled to this depth in order to provide a constant source of water.

Ground water moves through the zones in the ground in much the same way it travels on the surface - it just flows much slower. In this activity you will be creating a water table contour map to predict the direction of groundwater flow.

On the map provided the direction and flow of a stream are included for you. Each of the dark circles represents a well that has been drilled. The number next to the well indicates how deep the well is in order to reach the saturated zone.

To Do:

- Use only a pencil for this activity! Lightly sketch in your prediction by drawing 3-4 arrows to show the direction of groundwater flow.
- Using a contour interval of 50 feet, draw in the contour lines of the water table. (Remember that the shoreline along the ocean is sea level, or 0 feet.)
 - To do this, find all of the locations where wells are 50 feet deep - you might have to make some estimates between other wells.
 - Then connect all of these points. (Remember: contour lines do not break or cross each other!)

Follow-Up Questions:

1. On your map, draw in the direction of groundwater flow using arrows. If your prediction was right, make sure they are dark enough to see.
2. Why is it important for communities to know which direction the groundwater is flowing? Think of at least two reasons this is important.
3. Groundwater and surface water share a strong connection. Have you ever noticed a stream that is flowing vigorously even though it hasn't rained for a week? This happens when the water table gets closer to the surface water as the stream flows. This is called a *gaining stream*. When the opposite happens, the water table gets deeper as the stream or river flows, is called a *losing stream*. Based on your map, is this a gaining stream or a losing stream? Justify your answer.
4. Why might it be important for a community to know if their stream or river is gaining or losing?
5. In what ways would understanding the direction of groundwater flow help in community planning?

