



Activity 19. Building your own groundwater observation

(easy-read test well)

Aim

To show students how to make and use their own equipment.

Materials required

- 1 x 3 m length of 90 mm PVC storm water pipe
- 2 x 90 mm push-on storm water caps
- 1 x 3 m length of 12 mm dowel
- 1 x plastic bottle with a lid
- a 100 mm soil auger which can be extended from one to three metres in length. A 150 mm diameter hole is preferred
- a hacksaw

Procedure

Note: Before starting this activity check the depth of your local watertable. If it is deeper than 3 m this activity will be too difficult to do.

1. Dig a hole 3 m deep with the soil auger.
2. Use a hacksaw to cut slots into the PVC pipe at 10cm intervals. Make sure the slots extend to half the length of the pipe.
3. Drill an 11 mm hole through the lid of the plastic bottle. Insert the dowel into the lid, ensuring the lid seals against the dowel to prevent water entering the bottle, and then screw onto the bottle.
4. Through one storm water cap or stop end, drill a hole which will allow the dowel rod to slide freely through it. Drill three small holes in the other storm water cap or stop end to allow water into the base of the test well.
5. Push the stop end with three small holes onto the slotted end of the pipe. Insert the dowel with the bottle attached into the opposite end

of the pipe. The remaining stop end with the single hole is then placed over the dowel and onto the top of the pipe.

Cover the bottom half of the pipe with a suitable material to keep dirt out of the test well. An old stocking or panty hose leg works very well. The test well is now ready for installation (see Figure 1).

6. Throw a handful of gravel into the bottom of the hole before putting in the test well as this prevents silting. Place the completed well into the hole, then backfill it with sand or gravel to a level just above the slots. Fill in the remainder of the hole with loose soil.
7. Ensure the top of the well is mounted to prevent surface water from filling the well and giving a false reading.
8. The test well works when water from the saturated soil enters the well through the slots on the bottom of the pipe. The gravel or sand acts as a filter preventing dirt entering the test well with the water. As the level of the watertable rises, the bottle begins to float and pushes the dowel rod further out of the well, thus giving an easy reading of the watertable level.
9. Use your *easy-read test well* and bailer and plopper to monitor the watertable level at regular intervals over a period of time.