

TECHNICAL BULLETIN



MEASURING THE EVAPORATION SAVINGS FROM WATERGUARD

There are 5 ways in which the level in a water storage can change:

- Evaporation
- Seepage
- Rainfall on the water surface
- Inflows to the reservoir
- Outflows from the reservoir.

To measure the performance of WaterGuard, all of the variables except evaporation must be excluded.

It is useful if a Pressure Sensitive Transducer (PST) is available to monitor the changes in the water level, but reasonably accurate readings can be taken with a graduated measuring pole fixed firmly in the water near the edge.

Seepage can be estimated by measuring the drop in the water level overnight, and then by scaling up the figure for a 24 hour period. Evaporation during the night is usually very low, which means that the fall in the water level can be attributed to seepage (provided that there is no rainfall, inflows or outflows). Measurements should be taken over a few nights.

Rainfall can be measured with a simple rain gauge.

Preferably, there should be no Inflows or Outflows during the period of the trials. This isn't usually a problem unless the water storage is being actively used as the water supply for a town or a farm. If there are Inflows or Outflows, the volumes must be estimated so that evaporation can be identified.

To provide the base level of evaporation from the storage, the drop in the water level should be measured over a two week period prior to the application of WaterGuard. The results must be adjusted for seepage, rainfall, inflows and outflows as described above.

Maximum daily temperatures should be recorded, as well as wind speeds (evaporation is greater on windy days). Ideally, the trial should be conducted over a month of fairly stable weather conditions, so that they are similar for both the pre-application period and the post-application period.

After the application of WaterGuard, measurements of the water level should be taken daily for at least two weeks. After adjustment for rainfall etc, the evaporation can be compared with the base period.

Evaporation Pans

If a more accurate assessment is required, the performance of WaterGuard can be measured with two evaporation pans – one of them treated with WaterGuard and the other as a control.

A standard Class A evaporation pan is a cylinder with a diameter of 120 cm and a depth of 25 cm.

The pan rests on a level base, and may be enclosed by a chain link fence to prevent animals drinking from it, and possibly a bird mesh. Each pan is filled to a marker level about 5 cm from the top, and the volume evaporated is measured daily, by measuring the volume of water required to refill the pan to the marker level. Knowing the dimensions of each pan, the evaporation rate in mm can be calculated.



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