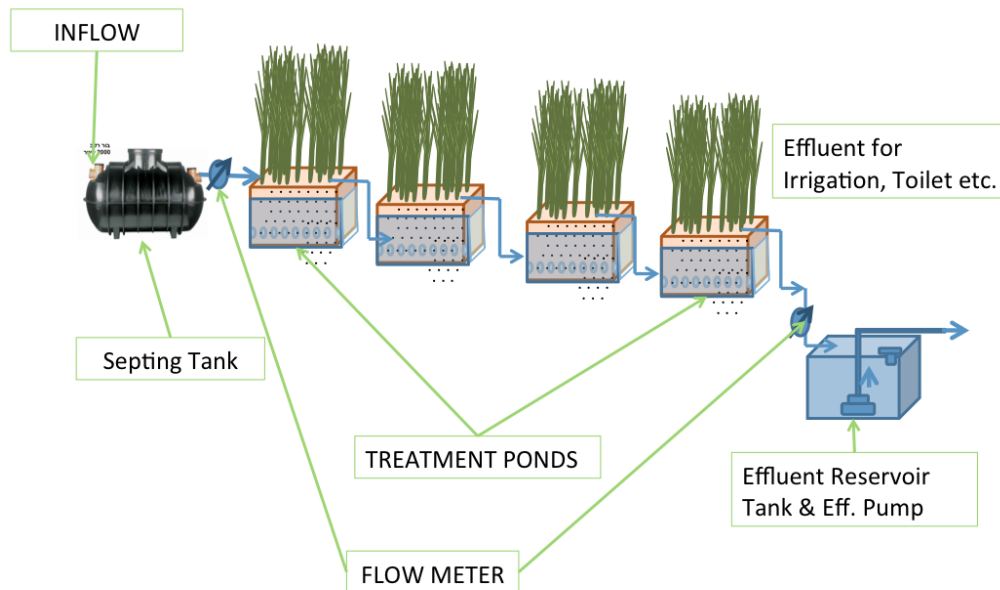


## Halhul Grey Water System

### System Flow Diagram



Halhul is a Palestinian city located 5 kilometers north of Hebron in the West Bank. The city has a predominantly Muslim population of 22,108 as of 2007. While the urban town has a water network, there is no centralized wastewater treatment network.

The Center for Transboundary Water Management has recently completed a fully functioning grey water recycling system in Halhul, serving 7 individuals.

1. Treats between 0.5 and 1.0 m<sup>3</sup> of greywater daily
2. Produces 1.0 m<sup>3</sup> treated greywater every three days
3. Produces approximately 10 m<sup>3</sup> treated greywater every month for use in irrigation

The septic tank is connected to the greywater pipe from the home. The septic tank is the first stage in the treatment that allows for the settling of organic material in the greywater. The septic tank has a volume of 1 m<sup>3</sup>.

From the septic tank the greywater flows through three gravel-filled containers that treat the greywater through aerobic bacterial action. The gravel containers have a volume of 1 m<sup>3</sup>.

The tanks are connected to each other with a flow meter so that the amount of greywater treated can be accurately monitored.

## **Cost-Benefits of the Grey Water System**

This system is built in a 7 person household, generating an average monthly salary of 2,000 NIS (\$570). This family uses on average 35 m<sup>3</sup>/ month (15 m<sup>3</sup> for domestic use and 20 m<sup>3</sup> for irrigation) of water in warmer months - irrigation is not practiced in the winter, so water usage in colder months is approximately 15 m<sup>3</sup>/month. Families in Halhul pay 5 NIS/m<sup>3</sup> for the first 10 m<sup>3</sup>/month (considered the domestic price for water) and 7 NIS/m<sup>3</sup> for more than 10 m<sup>3</sup>/month (considered the irrigation price for water). So in summer months, the water bill for this family can exceed 225 shekels, accounting for over 11% of their monthly income.

The USAID funded greywater system in Halhul treats between 0.5-1.0 m<sup>3</sup>/day of water produced in the home. The system produces approximately 1 m<sup>3</sup>/three days of treated greywater than can be used for irrigation. The area under irrigation is approximately 600 m<sup>2</sup>. This system thus produces approximately 10 m<sup>3</sup>/month, saving 70 NIS per month as this irrigation water would have cost the homeowner 7 NIS/m<sup>3</sup>. This saving reduces the percent of household income on spent on water by 3.5%