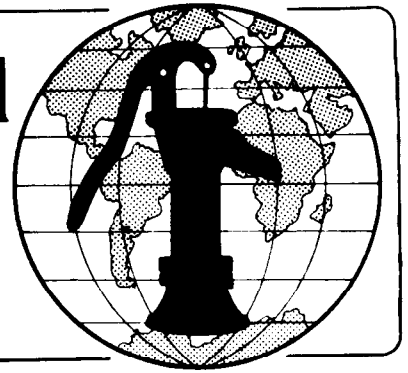


# Water for the World



## Operating and Maintaining Aqua Privies Technical Note No. SAN. 1.0.4

An aqua privy is an underground watertight vault filled with water that receives excreta and washwater from a drop-pipe, allows solids to settle to the bottom, and discharges effluent to a soakage pit. Maintaining an aqua privy involves keeping the liquid level at the flow line, cleaning the slab once each week, checking the sludge depth once each year, and emptying the vault and disposing of septage as needed.

Routine maintenance of an aqua privy is important, because a poorly maintained privy will become unsightly, smelly, unsanitary, and a breeding place for insects. This technical note describes how to operate and maintain an aqua privy. Read the entire technical note before beginning operation or maintenance.

### Useful Definitions

**EFFLUENT** - Settled sewage; in an aqua privy, liquid flowing from the vault to a soakage pit.

**FLOW LINE** - The highest level to which liquid can rise in an aqua privy.

**SEPTAGE** - The combined contents of the aqua privy vault; all of the liquid and sludge.

**SLUDGE** - Solids settled from water-carried wastes.

### Materials Needed

For Operating an Aqua Privy:

(1) anal cleansing materials; (2) bucket of water or washwater.

For Cleaning the Slab:

(1) brush, broom, mop, or palm frond; (2) bucket of soapy water.

For Checking Sludge Depth:

(1) a pole 2m long; (2) a light-colored cloth or towel 0.3m x 1.0m; (3) string or twine 1m long.

For Emptying Vault and Disposing of Septage:

(1) bucket with handle; (2) two ropes 3-4m long; (3) scoop shovel; (4) several barrels, drums, or other large containers; (5) vehicle to haul containers; (6) two shovels; (7) pair of gloves for each worker; (8) pair of boots for each worker.

For Repairing the Vault:

(1) concrete mix; (2) trowel.

### Operating an Aqua Privy

Before using the privy, make sure the vault is filled to the flow line with water. The drop-pipe must extend down into the water. After each use of the privy, pour in about a liter of water or washwater. This will ensure that the liquid level in the vault remains at the flow line.

### Caution!

Do not allow the liquid level in the vault to fall below the bottom of the drop-pipe or the aqua privy will become smelly, unsanitary, and a breeding place for flies and mosquitoes. Keep adding enough water or washwater to maintain the liquid level. See Figure 1.

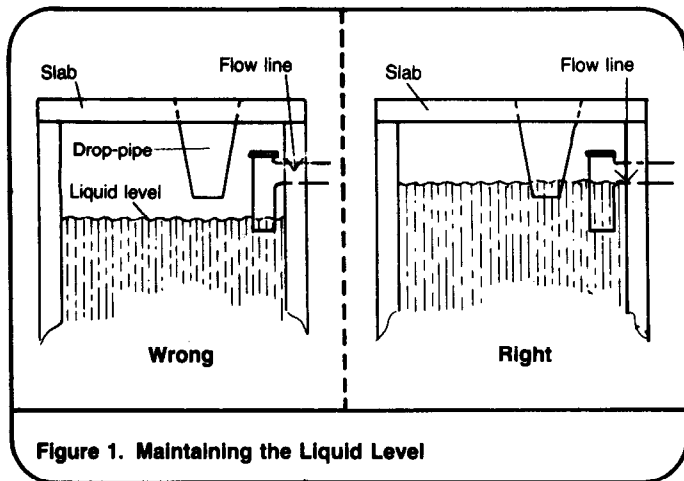


Figure 1. Maintaining the Liquid Level

Do not throw trash such as food scraps and broken dishes into the privy or the vault will fill rapidly and require frequent emptying.

### Cleaning the Slab

Clean the aqua privy slab at least once each week. Use a bucket of soapy water and a palm frond or other material to scrub the slab and the inside of the drop-pipe.

Inspect the drop-pipe every six months. Be sure that it is not rusting or rotting and that it reaches below the liquid level.

### Checking Sludge Depth

Check the sludge depth in the vault at least once each year to determine if the vault needs to be emptied.

1. Wrap a light-colored cloth around a pole 2m long and fasten it with string or twine as shown in Figure 2.
2. Lower the measuring pole down through the drop-pipe to the bottom of the vault as shown in Figure 3.

3. After a few minutes, slowly and carefully remove the pole. The depth of the sludge can be distinguished from the effluent by dark particles clinging to the cloth.

4. Estimate the depth of the sludge by looking at the cloth. If the depth of the sludge is less than one-half the liquid depth of the aqua privy vault, the vault does not need cleaning at this time. Remember that the liquid

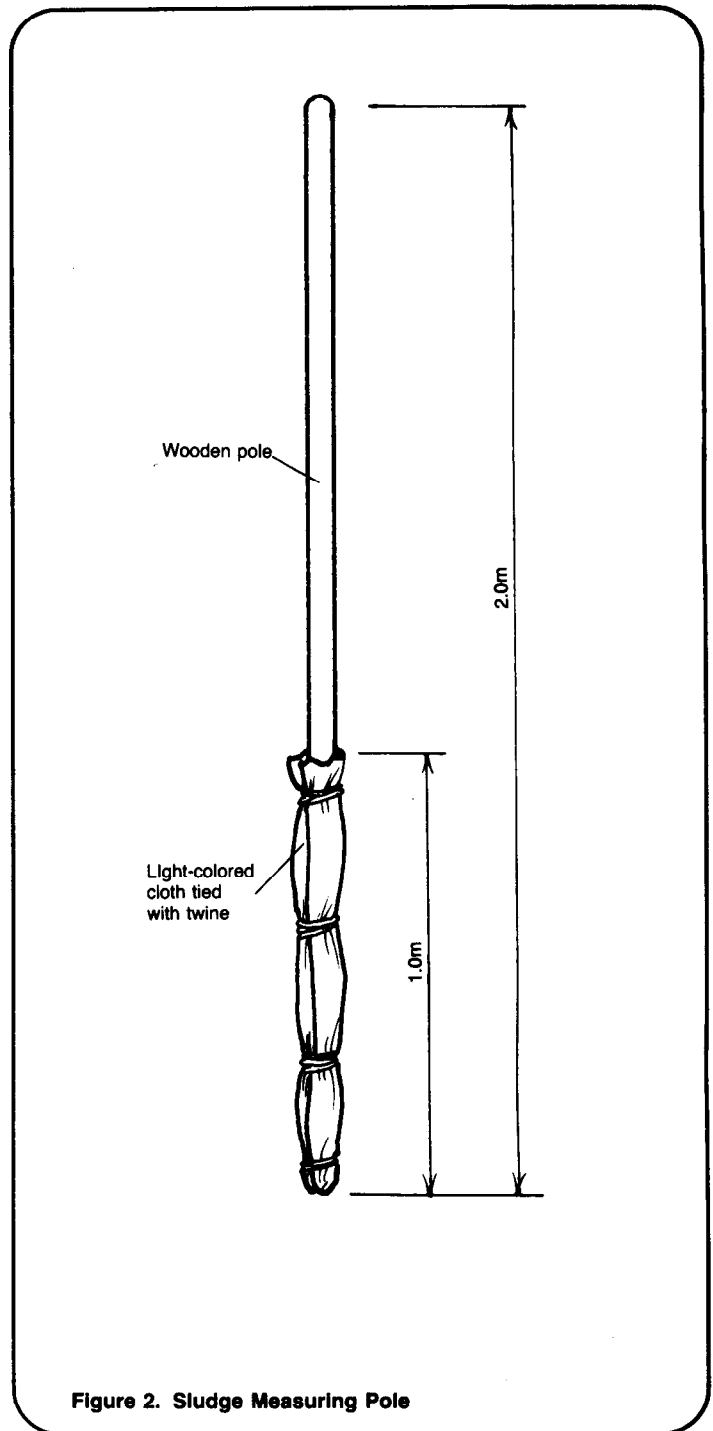


Figure 2. Sludge Measuring Pole

depth is the distance from the flow line to the floor of the vault. If the sludge depth is equal to or greater than one-half the liquid depth of the vault, the vault must be emptied.

### Emptying the Vault

If the sludge depth indicates that the vault needs to be emptied, you should do it as soon as possible. Delay may cause the overflow pipe and soakage pit to clog with solids.

1. Remove the slab from the vault. Depending on the design of the shelter, this may require moving the shelter and disconnecting a portion of the vent pipe. Workers should wear gloves and boots during this entire process.

**Caution!**

Gases will be present in the vault and there will be little or no oxygen. Anyone entering may lose consciousness or die. When the slab is removed, allow a few hours for the vault to air out to renew oxygen and allow dangerous gases to disperse.

2. Dip out the septage with a bucket tied to a rope and empty it into containers on a cart. Have a worker continually stir the septage with a shovel or pole. This will bring sludge off the bottom and leave less to be shoveled out later. See Figure 4.

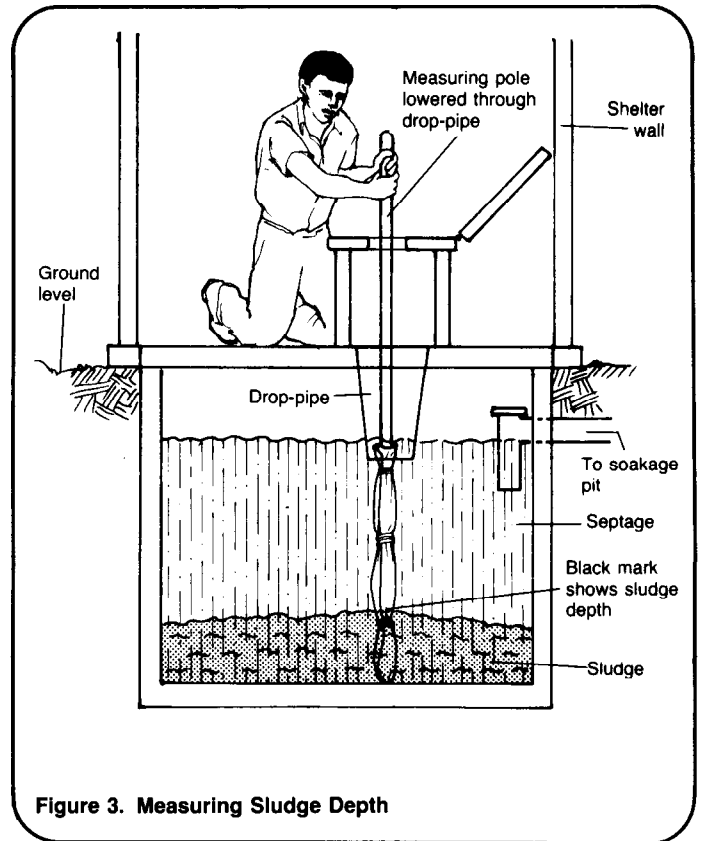


Figure 3. Measuring Sludge Depth

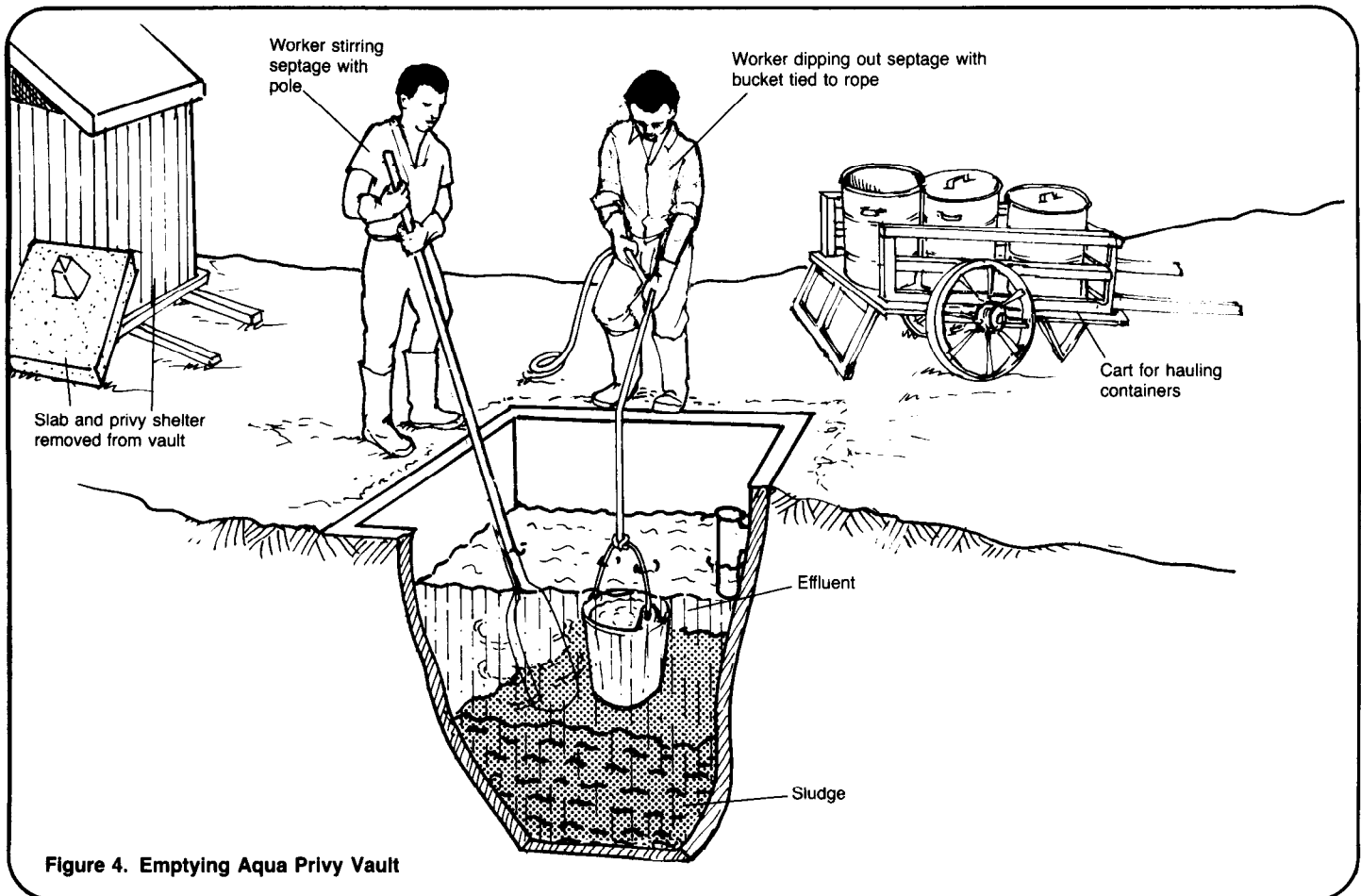


Figure 4. Emptying Aqua Privy Vault

3. When no more septage can be dipped out with the bucket, it will be necessary to enter the aqua privy vault. Wear a safety rope tied to the cart or other secure object outside the vault. Remove sludge from the bottom of the vault with a scoop shovel. Fill the bucket tied to a rope and have a worker outside the vault empty the bucket into the containers. See Figure 5.

4. When the vault is empty, check the walls and floor for cracks or other damage. Repair at once with cement mortar.

5. Refill the vault to the flow line with water.

6. Replace the slab and waterproof around the edges with tar or some other material. Replace the shelter.

### Disposing of Septage

1. Select a disposal site downhill and at least 60m from any water supply or dwelling. Preferably, the site should be outside the village in a remote or little-used area.

2. Dig a shallow pit or trench and dump in the septage. Cover it with at least 0.5m of soil. See Figures 6 and 7.

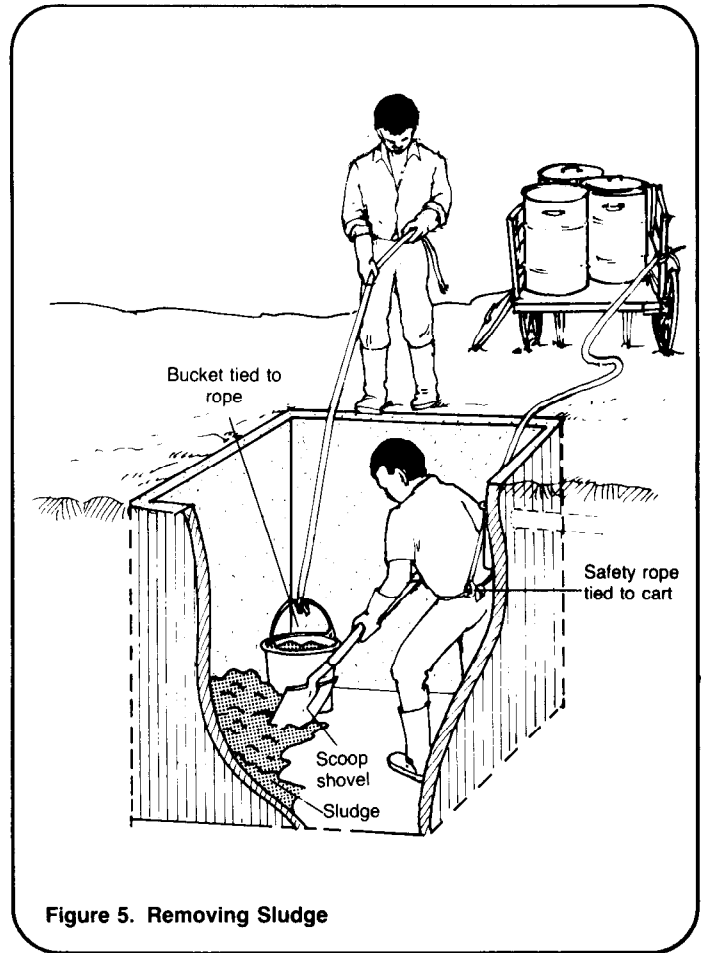


Figure 5. Removing Sludge

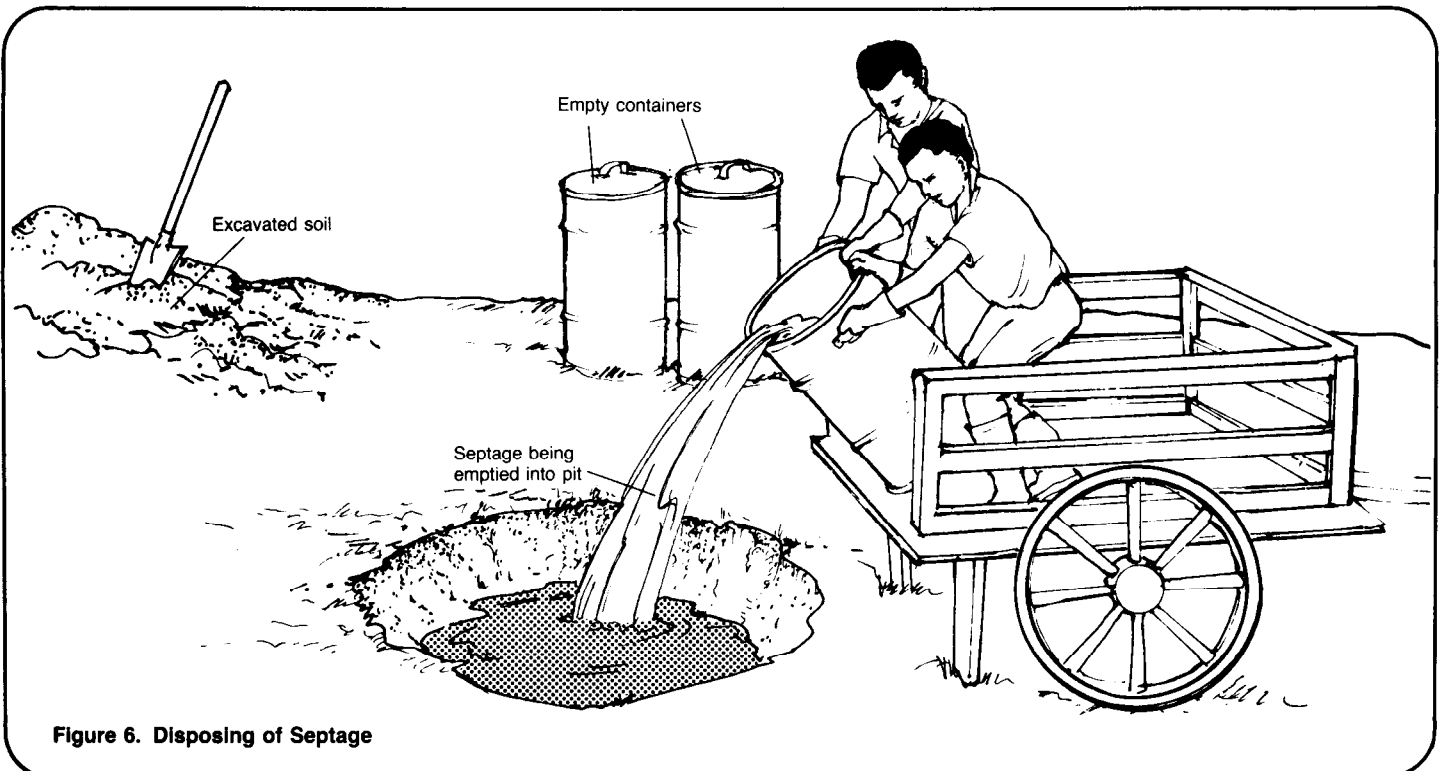


Figure 6. Disposing of Septage

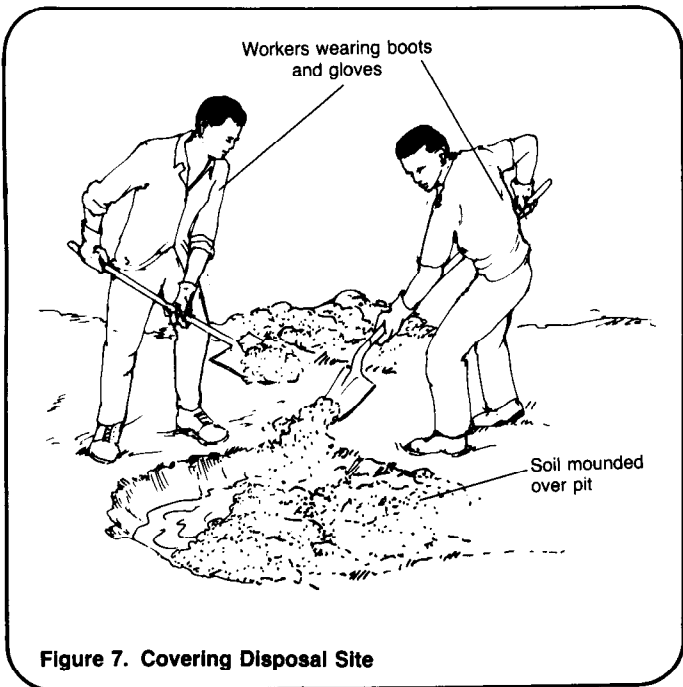


Figure 7. Covering Disposal Site

3. Wash all buckets, shovels, and containers that have come in contact with septage.

A soakage pit shows signs of failure when unusually lush growth, wet areas or puddles are seen on or near the site, or when there are continual odors. When a soakage pit fails, it must be abandoned and a new pit dug. Consult the project designer.

The cleaning and maintenance of an aqua privy may be done by the privy users or by a designated worker who cares for several privies. Have the worker keep a maintenance record similar to Table 1.

### Maintaining the Soakage Pit

This involves inspecting the pit site for erosion and system failure. If there is erosion on or near the pit site due to wind, rain or surface water, fill in the eroded areas with soil. Plant grass over the site. If surface water is a problem, build small dams or trenches to divert water.

Table 1. Sample Maintenance Record for Aqua Privy

Date	Location	Liquid Depth	Task
10/81	Perey house	1.0 m	Checked sludge depth (0.2 m).
10/81	Al. Hafar house	1.2 m	Measured sludge (0.4 m).
11/81	Statt house	1.1 m	Measured sludge (0.7 m). Emptied septage into container; refilled vault with water; buried septage south of grille.
2/82	N'Kusma house	1.1 m	Measured sludge (0.3 m). Filled in erosion at soakage pit site.
10/82	Perey house	1.0 m	Measured sludge (0.3 m).