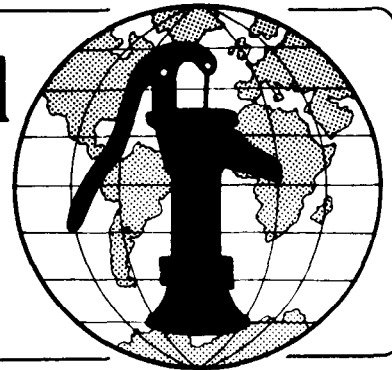


# Water for the World



## Planning Simple Excreta and Washwater Disposal Systems Technical Note No. SAN. 1.P

Simple systems of excreta and washwater disposal are appropriate where moderate or small quantities of washwater are generated. The advantages of these systems are sanitary protection and low capital costs. The main disadvantage is their inability to handle greater water use in the future. The purpose of planning for these systems is to determine their specific nature and suitability.

Planning involves setting goals, then establishing step-by-step procedures to meet those goals. There are eight major actions involved in project development for which planning is important. It is necessary to: 1) recognize the problem, 2) organize community support and set objectives, 3) collect data, 4) formulate alternatives, 5) select the most suitable method, 6) establish the system, 7) operate and maintain the system, and 8) evaluate the system.

This technical note discusses planning and implementation of these eight activities. Read the entire technical note before beginning the planning process. Worksheet A may be adapted for use in cataloging information collected as planning proceeds.

### Recognize the Problem

This is done by gathering information from regional and national governments, questioning villagers and village leaders, and observing actual conditions in the field. Decide if the present methods of excreta and washwater disposal pose a health hazard to the people in the community. That is, determine whether the people suffer from diseases caused by poor sanitation (see "Means of Disease Transmission," DIS.1.M.1). In general, the village should consider simple systems of excreta and washwater disposal if the answer is "yes" to the following questions.

- Yes/No Are wells, springs, or community standpipes the major sources of community water?
- Yes/No Does the community generate less than 50 liters of washwater per person per day?
- Yes/No Are present methods of excreta and washwater disposal creating health hazards?
- Yes/No Do children or adults suffer from illnesses related to water supply or sanitation?

When the problem has been identified as unsanitary, improper, or inefficient disposal of excreta or washwater, then goals can be set to solve the problem.

### Organize Community Support and Set Goals

The main goal is to establish an effective system of excreta and washwater disposal. This is a major step toward improving the health of the community.

This goal cannot be met without strong community support (see "Methods of Initiating Community Participation in Water Supply and Sanitation Programs," HR.2.M). Establish close working relations with community leaders and organizers. Actively solicit their ideas and suggestions. The people in the community should be involved from the start of the project, because all stages of the project must be understood and accepted by them.

**Worksheet A. Planning a Simple Excreta and Washwater System**

1. Problems indicating a need for action are:

- (1) \_\_\_\_\_
- (2) \_\_\_\_\_
- (3) \_\_\_\_\_

2. Community support will be organized and oriented by (name and position):

- (1) \_\_\_\_\_
- (2) \_\_\_\_\_
- (3) \_\_\_\_\_

2. a. Major objectives of the program are:

- (1) \_\_\_\_\_
- (2) \_\_\_\_\_
- (3) \_\_\_\_\_

3. Data which will influence decisions are:

- (1) Need: \_\_\_\_\_
- (2) Present Methods: \_\_\_\_\_
- (3) Community Acceptance: \_\_\_\_\_
- (4) Resources: \_\_\_\_\_
- (5) Geography: \_\_\_\_\_

4. Alternatives to be considered are:

- (1) \_\_\_\_\_
- (2) \_\_\_\_\_
- (3) \_\_\_\_\_

**Worksheet A. Planning a Simple Excreta and Washwater Disposal System (continued)**

5. The method(s) selected is (are):

- (1) \_\_\_\_\_
- (2) \_\_\_\_\_
- (3) \_\_\_\_\_

6. The system will be established by:

- (1) Ensuring public acceptance by building demonstration models or by: \_\_\_\_\_
- (2) Submitting plans to (government or lending agency): \_\_\_\_\_  
\_\_\_\_\_
- (3) Obtaining financing from (local sources, government, lending agency, or other): \_\_\_\_\_
- (4) Planning the construction within \_\_\_\_\_ weeks.
- (5) Constructing the system within \_\_\_\_\_ months.

7. The operation and maintenance of the system will be supervised by (name and position):

- (1) \_\_\_\_\_
- (2) \_\_\_\_\_
- (3) \_\_\_\_\_

8. The system will be evaluated during (month and year) \_\_\_\_\_, by (name and position):

- (1) \_\_\_\_\_
- (2) \_\_\_\_\_
- (3) \_\_\_\_\_

Another part of the main goal is setting secondary goals such as a time span for establishing the system (for example, three months or one year). Secondary goals should be set with the participation and agreement of community leaders. Be realistic when setting goals. Consider local customs and resources such as money, material, and talent. Do not set goals that may be impossible for the community to reach. Set goals that are definite and can be measured, so people will know when they have reached them. For example, build ten privies within six months; or provide effective excreta disposal methods to half the families in the village within one year.

Your goals must: 1) clearly state what the project will accomplish, 2) state the methods that will be used, and 3) specify when these accomplishments will be made. At the end of the specified length of time, it should be possible to determine if your goals have been met.

When the goals have been set, proceed with the next step in planning: data collection.

## Collect Data

To plan the system you must have correct data. The data can be roughly divided into five categories: (a) environmental conditions in the village, (b) present methods of excreta and washwater disposal, (c) attitude of the people, (d) resources, and (e) geography. Collecting data will be an ongoing process; some of the data will be used now, some later.

Keep a written record of all data collected. Some data will be specific (for example, number of persons living in a dwelling or a family's source of drinking water). Other data will be more general (for example, villagers' attitudes toward new methods of excreta disposal). Use the following checklist to help organize data collection.

### (a) Environmental Conditions in the Village

1. Determine the incidence of disease associated with poor sanitation (see "Means of Disease Transmission," DIS.1.M.1) by personal observation, questioning villagers and village leaders, and checking health records if available. Local health clinics may have this information.

2. Observe and record evidence of excreta or washwater on the surface of the ground.

3. Determine whether excreta or washwater is being disposed of in or near sources of drinking water. Do this by questioning villagers and by personal observation.

4. Determine whether there are bothersome numbers of flies or mosquitoes.

5. Determine whether there are foul odors.

### (b) Present Methods of Excreta and Washwater Disposal

1. List the present methods of excreta and washwater disposal.

2. Determine how many of each method are in use.

3. Determine how many persons use each facility.

4. Determine if the present methods can be upgraded or converted to those methods listed in "Simple Methods of Excreta Disposal," SAN.1.M.1 and "Simple Methods of Washwater Disposal," SAN.1.M.2.

### (c) Attitude of the People

1. Question the villagers and village leaders about their attitudes toward excreta and washwater disposal in general.

2. Question villagers and village leaders about their preferences concerning specific excreta and washwater disposal methods.

3. Identify local customs and taboos.

(d) Resources

1. List sources of money (private sources, local funds, government grants, taxes, general fund, and so on) and amounts available.

2. List types and quantities of available tools and equipment.

3. List types and quantities of available materials.

4. List names and special skills of available skilled workers.

5. List the names of available unskilled workers.

(e) Geography

1. Record the type (well, spring, stream, standpipe, piped into dwelling), number, and location of all drinking water supplies.

2. Test and record soil conditions for suitability for excreta and washwater disposal (see "Determining Soil Suitability," SAN.2.P.3).

3. Determine and record groundwater levels for the wettest season.

4. Record the number of villagers and the physical size of the village.

5. Record the number of family lots, the size of each lot, and the number of persons per lot.

### Formulate Alternatives

Use the collected data and the information in "Simple Methods of Excreta Disposal," SAN.1.M.1, and "Simple Methods of Washwater Disposal," SAN.1.M.2, to formulate alternative systems of excreta and washwater disposal. Each alternative may be a

combination of one or more methods of excreta disposal or one or more methods of washwater disposal, or it may be a single method of disposal. When formulating alternatives, use only those that are practical for your community and are basically acceptable to the community members. Reject those methods which, for any reason, are inappropriate, impractical, or unacceptable.

The remaining alternatives are possible solutions to the problem. To determine the best method for your situation, proceed to the next step: selecting a method.

### Select a Method

When selecting a simple method of excreta or washwater disposal, carefully study the features of each alternative and thoroughly analyze the collected data. The selection of a method should be based on the following considerations:

Need. Are present methods of excreta and washwater disposal inadequate? Do people in the community suffer from disease caused by poor sanitation?

Social acceptability. This is a most important consideration, for if the system is unacceptable to the people, it will surely fail. Will the method of disposal violate local customs, taboos, or preferences? Is the method likely to be maintained? Have the people indicated that they prefer this system, or at least are willing to try it?

Resources. Is the desired method practical considering available money, materials, and workers? Is the regional or national government likely to provide monetary or other assistance?

Geography. Are soil conditions and groundwater levels acceptable for the desired method?

Plot size. Is the plot large enough for two alternating pit sites (at least 0.1 hectares)?

Washwater. Is the quantity of washwater generated more or less than 50 liters per person per day?

Use the comparison charts in "Simple Methods of Excreta Disposal," SAN.1.M.1 and "Simple Methods of Washwater Disposal," SAN.1.M.2, and Tables 1 and 2 in this technical note to help select methods of excreta and washwater disposal. These decision tables are not meant to be followed strictly; they are merely aids in selecting a method. If you need more specific information on the features of any method, consult the "design" or "construction" technical notes dealing with that particular method.

## **Establish the System**

There are three steps in establishing the system: involving the public, submitting your plan for approval, and planning for construction.

Involving Public. The first step in establishing the system is gaining public acceptance. Arrange a visit for community leaders to a similar community in the area that already has a system. This will stimulate interest in the community. It may be worthwhile to build an excreta disposal method for demonstration. This will allow the people to examine, understand, and use the facility. A demonstration model can serve as a final test of community acceptance before you construct a large number of facilities.

Submitting Plan for Approval. The second step in establishing the system is submitting your plan, if required, to the regional or national government or a lending agency. Since they will have to approve the entire plan before you can proceed, your submission should include: (a) the proposed technical system, (b) costs, (c) sources of finance, and (d) an implementation schedule similar to Figure 1.

(a) Proposed system. Submit designs, complete with drawings or photographs, of the methods selected. Decide how many units will be built and where they will be located. Be prepared to explain your decisions. Draw a map, perhaps a contour map, of the village and surrounding area. Include dwellings, sources of drinking water, and present and proposed locations of excreta and washwater disposal systems. Use the design drawings and maps in a presentation to the government agency or funding source. Bring village leaders, or others who speak for the community, to help explain the need for the project.

(b) Costs. Determine how much money will be needed to pay construction workers. This will depend on salary levels, number of workers, and estimated time for construction. Determine how much money will be needed for materials, tools, and equipment. Make every effort to use locally available materials. Estimate how much money will be needed to maintain and repair the system for a specific period of time--one year, for example.

(c) Sources of finance. Funds may be available locally, nationally, and internationally. If outside funds are needed, your government can explain how to get national or international funds, which can be in the form of grants or loans. Local funds can come from taxes, user fees, or a general fund. The tax can be a special tax or an increase of an existing tax. An example of a user fee is charging families for all or part of the construction costs for individual systems. The general fund could be a health fund, with the purpose of improving water supplies and sanitation, into which everyone in the village pays a certain amount.

Determine the villagers' ability and willingness to pay for building the excreta and washwater disposal system. It may be that local funds will not take the form of money, but rather of contributions of labor or materials. For example, villagers wanting pit privies could be required to contribute

**Table 1. Selecting a Simple Method of Excreta Disposal**

If	And	And	And	Then
Existing excreta and washwater disposal systems are creating health hazards, and quantities of washwater exceed 50 liters per person per day				Go to "Planning Combined Washwater and Excreta Disposal Systems," SAN.2.P.1
Quantities of washwater are less than 50 liters per person per day and plot size is larger than 0.1 hectares and soil is suitable for excreta disposal	Pit Privy is acceptable	Available money/materials for improvements	Convenient water source for pour-flush bowl (1-3 liters per use)	Pit privy with Pour-Flush Bowl
			No convenient water source	Pit Privy with Vent Pipe and/or Off-Set Pit
		No available money/materials for improvements	Pit Privy	
	Pit Privy is not acceptable	Reuse of excreta is acceptable	Compost toilet will be maintained	Compost Toilet
Aqua Privy				
Quantities of washwater are less than 50 liters per person per day and plot size is smaller than 0.1 hectares, or soil is not suitable for excreta disposal	Reuse of excreta is acceptable	Compost toilet will be maintained	Compost Toilet	
			Bucket Latrine	

**How To Use Decision Table 1**

1. Find the statement in the "If" column that best describes your situation.
2. Move to the adjacent boxes in the first "And" column and select the statement that best fits your situation.
3. From your statement in the first "And" column, move to the adjacent boxes in the second "And" column and select the statement that best fits your situation.
4. From your statement in the second "And" column, move to the adjacent boxes in the third "And" column and select the statement that best fits your situation.
5. From your statement in the third "And" column, move to the adjacent box in the "Then" column to find the recommended method of excreta disposal.

**Table 2. Selecting a Simple Method of Washwater Disposal**

If the Quantity of Washwater Is:	Then the Disposal Method Should Be:
More than 50 liters per person per day →	Go to "Planning Combined Washwater and Excreta Disposal Systems," SAN.2.P.1
Less than 50 but more than 5 liters per person per day** →	Soakage Pit or Soakage Trench
Less than 5 liters per person per day →	Sump

\*\*If the excreta disposal method is a privy with a pour-flush bowl, some of the washwater (1-3 liters per use) can be used to flush the bowl. The remaining washwater must be disposed of in a soakage pit or soakage trench.

If the excreta disposal method is an aqua privy, all the washwater can be poured into it, because it is connected to a soakage pit or soakage trench.

### How To Use Decision Table 2

1. Find the statement in the left-hand column that best fits your situation.
2. Move to the adjacent box in the right-hand column to find the recommended method of washwater disposal.

all of the labor and the materials for the pit linings and shelters, and an outside funding source could supply the metal vent pipes and concrete for the slabs.

(d) Implementation schedule. Assign specific, reasonable time spans to each stage of the project. Allow time to collect data, formulate alternatives, select a method, establish the system,

and train workers to operate and maintain the system. To help visualize an entire project and establish timetables for it, draw a chart similar to Figure 1 with the month number across the top and the specific tasks on the left-hand side. Figure 1 also includes tasks performed from the start of the project such as recognizing problems, consulting with villagers, and early collection of data.



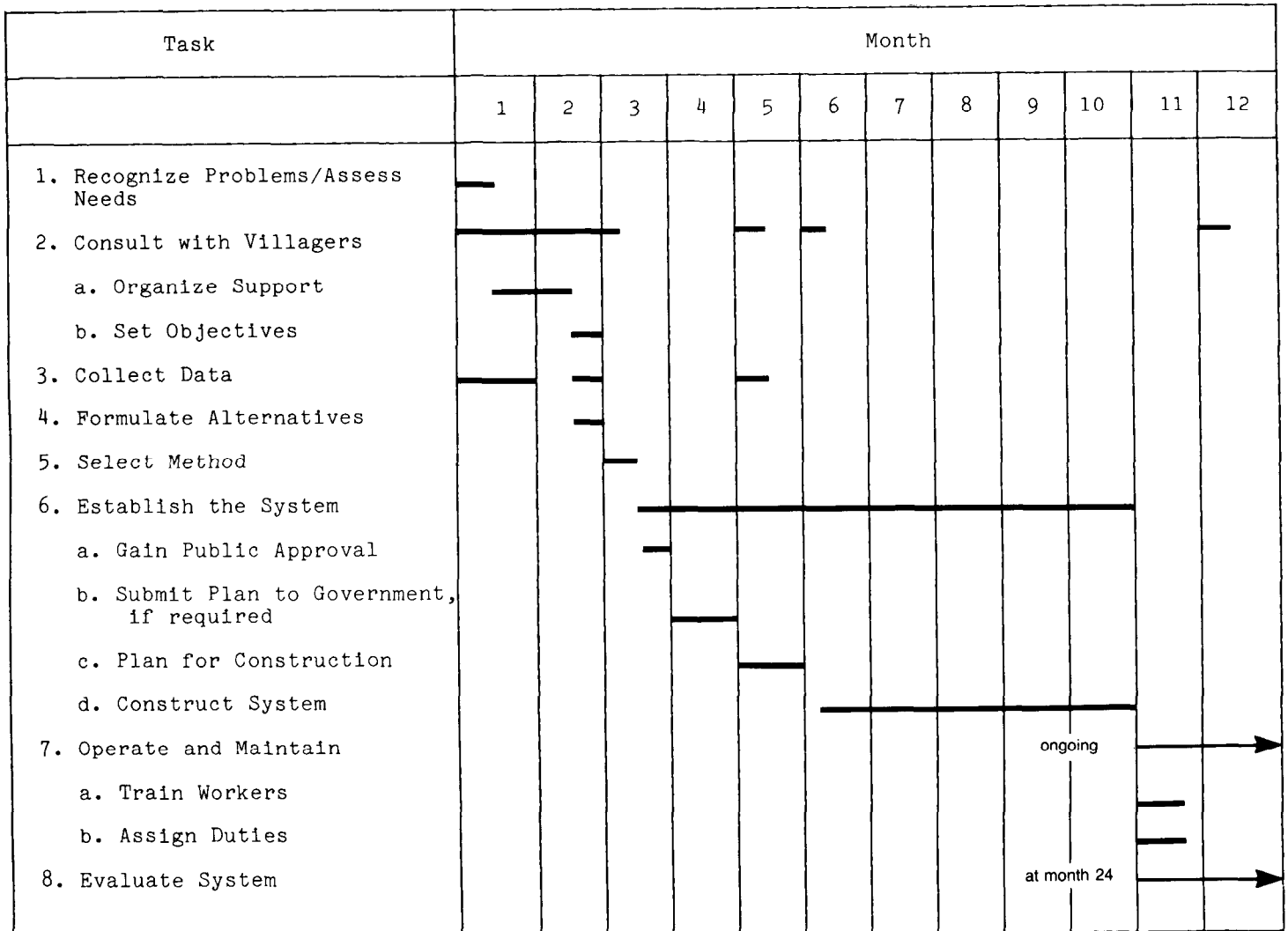


Figure 1. Sample Scheduling for a Simple Excreta and Wastewater Disposal Project

**Planning for Construction.** The third step in establishing the system is planning for construction. Determine which components of the excreta disposal system can be constructed in the community, perhaps the privy shelter, and which components will have to be purchased from outside the community, perhaps the pour-flush bowl.

Decide who will do the work, the type and amount of training they will require, and how much they must be paid. Determine which tools, equipment, and materials are needed for construction, and be prepared to assemble them. Organize construction. Be prepared to assign specific duties, set up time schedules, and designate someone to oversee the work.

## Operate and Maintain the System

Plan for the continued use of the facilities after they are built. This includes routine cleaning of privy slabs and inspection of shelters, and periodic removal of compost from compost toilets and sludge from aqua privies.

Establish a system of cleaning, maintenance, and repair. Workers must be trained, and money and materials must be made available to maintain the system. If these systems are not routinely maintained, they can become unsanitary and may pose a health hazard.

## Evaluate the System

Evaluate the project one year and five years after completion to determine whether project goals have been achieved. Determine the success of the project by: 1) questioning villagers on their use or neglect of the facilities, 2) comparing before and after health aspects (examine individuals and study health statistics, if available), and 3) comparing the conditions of the facilities with the conditions existing

before the project. Determine if old problems have been eliminated, and decide if any new problems have arisen. Perhaps the village now needs and can afford a more advanced system of excreta and wash water disposal, such as septic tanks and absorption fields.

Sanitation improvements in rural villages are usually made one step at a time. Therefore, your evaluation of this project should be the first step in planning the next sanitation improvement.