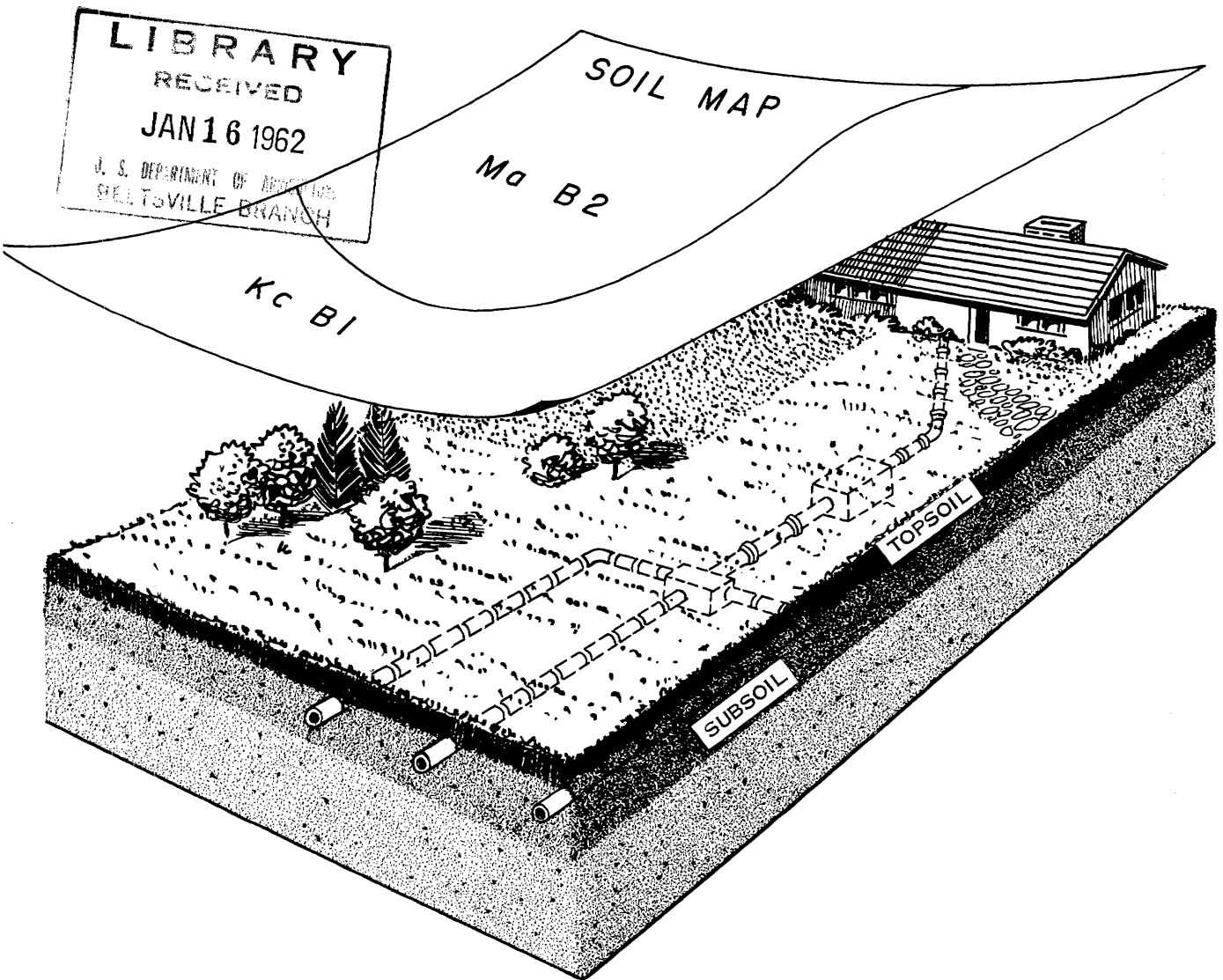


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SOILS Suitable for SEPTIC TANK Filter Fields

A Soil Map Can Help You



SOILS SUITABLE FOR SEPTIC-TANK FILTER FIELDS

A Soil Map Can Help You

By William H. Bender, *soil scientist, Soil Conservation Service*

Septic tanks have been used for sewage disposal by some farmers and suburbanites for several decades. But the electrification of farms plus the rapid expansion of residential areas to rural communities within recent years have greatly accelerated the number of private sewage disposal systems now being installed.

If you are one of those who must have a private sewage disposal system, doubtless you would like to have one that will give many years of trouble-free service. The most satisfactory system probably will be one that has the sewer line leading to a septic tank in the yard with the overflow from the tank dispersed over a fairly large area through subsurface drain tile or perforated pipe (1). The tile or pipe may be laid in trenches or in a seepage bed (3). In either case, the septic tank and tile or pipe will be covered with soil and planted to grass, leaving no visible evidence of their existence.

You should not assume, however, that you have necessarily buried all your sewage problems. You should have no serious trouble if the soil in the disposal area is satisfactory and the system properly installed. But if the soil is not satisfactory, you are likely to have trouble regardless of how well the sewage disposal system was constructed.

Soil Absorptive Ability Is Important

The first thing you should find out when planning a sewage disposal sys-

Note.—Italic numbers in parentheses refer to References, p. 11.



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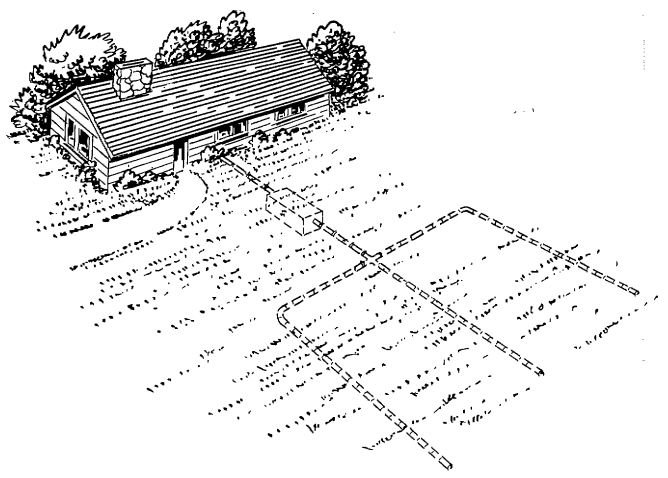
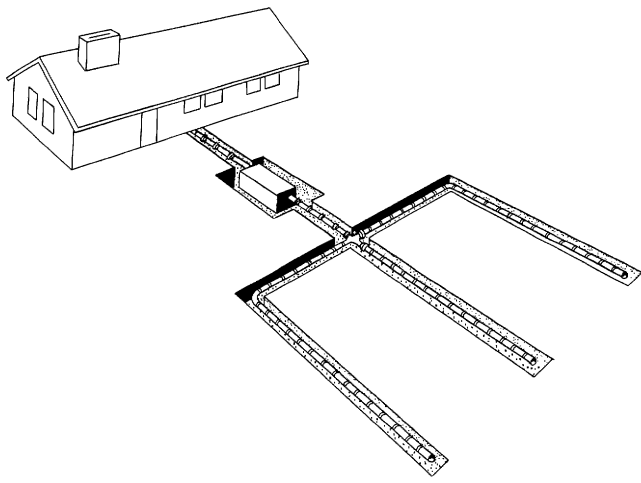
The recent rapid expansion of residential areas to rural communities has led millions of people to build homes beyond existing sewer lines, and private sewage disposal systems have become necessary.

tem is whether the soil is suitable for absorbing and filtering the liquid sewage (the effluent) that flows from the septic tank. Some soils absorb the effluent rapidly; other soils absorb it very slowly.

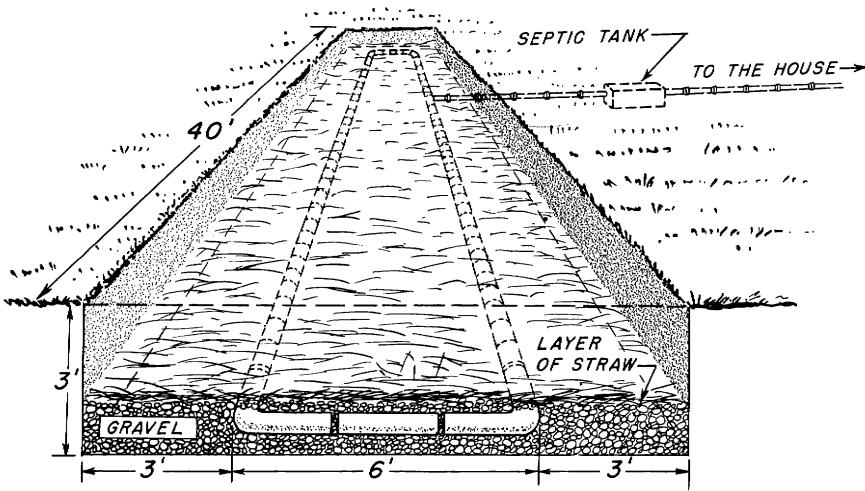
How long and how well a private sewage disposal system works depends largely on the absorptive ability of the soil. The septic-tank effluent must be absorbed and filtered by the soil. This is the filtering process that removes odors, prevents contamination of ground water, and prevents a concentration of unfiltered sewage that may reach the ground surface. Improperly filtered sewage that reaches the ground surface will result in of-

fensive odors, fly-breeding areas, and the spread of diseases traceable to unfiltered sewage.

You also should know the absorptive ability of the soil in order to know the size of filter field you need. Soils with a slow rate of absorption require a larger field than those with a rapid rate. Hence, the size of building lot you need may depend on the kind of soil you have. If the filter field required is larger than your building lot will allow, local ordinances may prohibit you from installing a sewage system and thus prevent you from building your home. And some soils are not suited for septic-tank filter fields regardless of their size.



The conventional type septic-tank filter field has drain tile laid in trenches (above, left). The tank and tile are covered with soil and the area planted to grass (above, right). The effluent from the tank is carried through the drain tile to all points of the field where it is absorbed and filtered by the surrounding soil (right).



A seepage bed may be a satisfactory substitute for conventional trenches in some places. It operates on the same principles as a conventional filter field, except that it does not disperse the effluent over as large an area.

Why Filter Fields Fail

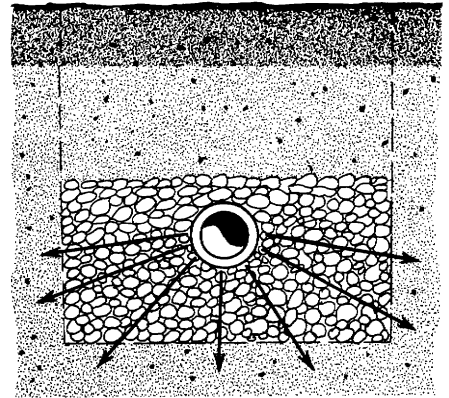
Numerous inspections by sanitary engineers show that most sewage filter fields that have failed to work properly were either on poorly drained soils or on soils so compact that the absorption rate was very slow.

Poorly drained soils are filled with water during wet weather and sometimes for long periods after heavy rains and there is no available space left for absorption of septic-tank effluent. Filter fields that function well

during dry weather may fail to function during wet periods on such soils.

Where there is a layer of soil with a very slow absorption rate near the surface the septic-tank effluent often rises to the ground surface even during dry periods. And during wet weather the filter field usually becomes a boggy mess.

Other septic-tank filter fields have failed where the land was too steep, where there was a seasonal high water table, where there was only a shallow layer of soil over bedrock, where



there was a cemented soil layer near the surface, or where the area was flooded from a nearby stream.

Seepage Pits

In some situations the septic-tank effluent may be disposed of by having it flow into a seepage pit instead of being dispersed through a subsurface-tile filter field. A seepage pit is a covered pit with a porous lining through which the effluent seeps into the surrounding soil.

Ordinarily, seepage pits will not be approved by local health inspectors except where subsurface-tile systems cannot be constructed. But if you should use a seepage pit, you should keep in mind that the effluent must be absorbed by the surrounding soil. Hence, the soil properties are fully as important in planning for a seepage pit as for subsurface-tile systems; the soil depth is even more important because of the greater depth of the seepage pit.

Soil Surveys Show Areas Suitable for Filter Fields

Soil-survey reports contain soil maps and soil descriptions and interpretations. The soil maps show the location of each kind of soil. The soil descriptions and interpretations in all reports indicate the suitability of each kind of soil for various agricultural purposes; the interpretations in most reports give information useful for many nonagricultural purposes. The newer reports contain interpretations useful for highway engineering, building-foundation construction, trenching operations for pipelines and power cables, subsurface sewage disposal, and so on.

Soil-survey reports have been published for more than 1,800 areas in the United States. Most areas include an entire county. Most of the older reports do not contain interpretations on soil suitability for septic-tank filter

fields, but the soil descriptions contain the basic information necessary for making such interpretations. If you do not feel qualified to interpret the significance of the various soil properties described in a report, you should consult someone experienced in this line of work. Usually, you can get assistance from the person or agency from which you got the soil-survey report.

Soil-survey reports are published by the Soil Conservation Service of the U.S. Department of Agriculture in cooperation with State agricultural experiment stations. For information on whether a soil survey has been issued for your county and where a copy may be obtained or consulted, check with the local or county office of the Agricultural Extension Service, the Soil Conservation Service, or the

soil conservation district or with your State agricultural experiment station.

Soil maps and reports can be used to predict the behavior of a sewage filter field with a reasonable degree of accuracy. The soil map is reliable for predicting the general suitability of an area of several acres, but it may not contain sufficient detail to predict the suitability for a specific site. Soil variations may occur within short distances, and most maps are not detailed enough to supply the precise information as to where on a building site you should locate your filter field. Therefore, onsite evaluation by a soil scientist or measurements of the water-movement rate may be needed. The rate of water movement is measured by a percolation test as described on page 11. A percolation test will not only indicate whether the soil is suitable but will also enable you to calculate the size of the filter field you need.

Some Typical Soil Descriptions

The soil map at the lower left and the soil descriptions below for Dakota and Clyde soils were taken from a recent soil-survey report from a North Central State. The soils described may be located on the map by the symbols (De) and (Cg). In the descriptions below, the items that particularly apply to soil suitability for septic-tank filter fields are in *italics*.

Dakota Soils

The Dakota soils are dark-colored, level to undulating prairie soils on glacial outwash plains. Their slopes range from 0 to 17 percent. The soils have developed on sandy or gravelly material under prairie grasses.

The Dakota loams have finer textured surface soils and subsoils than the sandy loams. The loams are *well drained*, and the sandy loams are *somewhat excessively drained*.

Dakota loam, 0 to 1 percent slopes (De)—This soil lies on glacial terraces *above overflow*. The surface soil is very dark brown and *fairly high in organic matter*. At depths of 30 to 42 inches are stratified layers of loose porous sand and gravel of varying thickness.

Runoff is medium, and *internal drainage is medium to rapid*. The soil is *easy to work* and can be plowed



Soil map on aerial photograph of about 1 square mile in a North Central State.

throughout a wide range of moisture content.

Clyde Soils

The dark-colored Clyde soils occur in very poorly drained depressional areas on the glacial till plain. Clyde soils have formed from low glacial till under a cover of swampgrass. The black color and organic matter content have resulted from the decay of sedges and rank sloughgrass.

Because of their low position the Clyde soils are periodically flooded, especially after heavy rains. Except during dry periods, the water table is often very high and the soils are excessively moist. A few areas are saturated most of the time. Artificial drain-

age is needed for successful crop production.

Clyde silty clay loam (Cg)—This soil, to depths of about 12 to 20 inches, is very dark gray plastic silty clay loam, high in organic matter. This layer is underlain by a dark grayish-brown very plastic silty clay. Sand and gravel occur in varying amounts in the lower layers. In some places many boulders are on the surface.

This soil is fertile, but because of its heavy texture and wetness, it is often difficult to work. It is generally too moist to plow early in spring.

By studying the soil descriptions given above it becomes obvious that Dakota loam is suitable for a septic-

tank filter field. It is well drained, with medium to rapid permeability. It is generally well above the flood plains. It is usually on gentle slopes and easy to work so that construction is simple.

It becomes equally obvious, however, that the Clyde silty clay loam is not suitable. These soils are periodically flooded, have a high water table most of the time, and are very poorly drained. Furthermore, they have a considerable amount of plastic clay that will absorb septic-tank effluent very slowly when wet.

Soil Factors That Affect Filter Fields

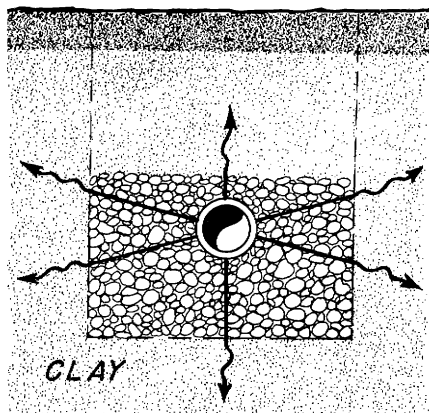
How satisfactorily your sewage disposal system works depends largely on the rate at which the septic-tank effluent moves into and through the soil. But there are several other soil characteristics that may affect the soil suitability, such as ground-water level, depth of soil, types of underlying material, slope of the land surface, proximity to streams or lakes, and so on. You should consider all these characteristics in determining the location and size of your filter field.

Soil Permeability

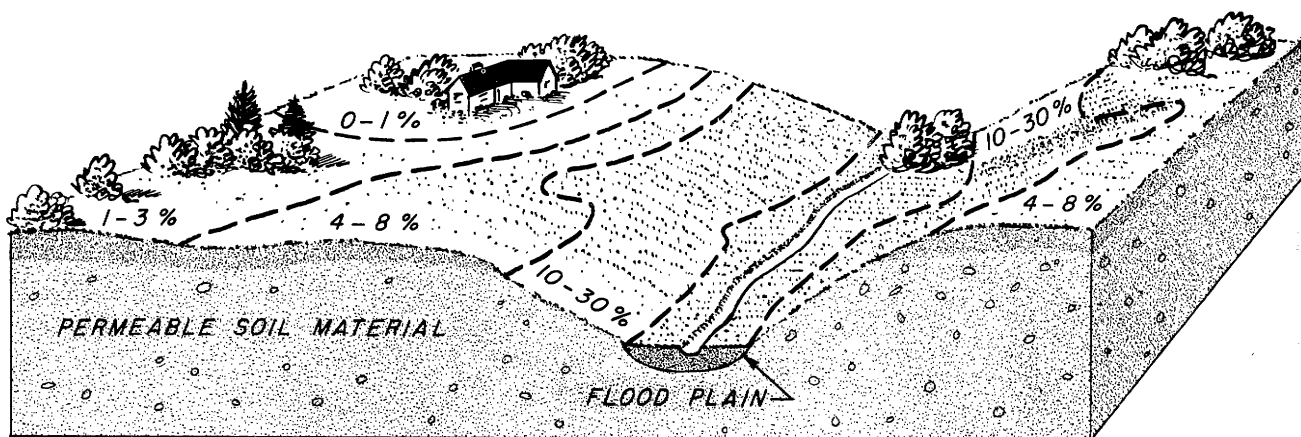
The rate of water movement through the soil is called its permeability. This is influenced by the

amount of gravel, sand, silt, and clay in the soil, the kind of clay, and other factors. Water will move faster through sandy and gravelly soils than through soils with a large amount of clay.

Also important is the kind of clay in a soil. Some kinds of clay are very plastic and expand so much when wet that the pores of the soil swell shut. This slows water movement and reduces the capacity of the soil to absorb septic-tank effluent. Other kinds of clay expand very little when wet and therefore have little influence on the rate of water movement. Soil survey reports indicate the plasticity of a soil where it is important by giving the shrink-swell potential.



Septic-tank effluent moves into compact, plastic soil very slowly. Such soils should not be used for filter fields.



Septic-tank filter fields should operate very well in the deep, permeable soil above. Layout and construction problems may be encountered on slopes over 10 percent. Filter fields should not be constructed on the flood plain.

Soils can be rated on the basis of permeability into groups that are good, fair, poor, or unsuitable for septic-tank filter fields. Some soil-survey reports show the permeability or percolation rates in inches per hour for the different kinds of soil. Other reports give a rating of very rapid, rapid, moderate, slow, or very slow permeability. Some of the older reports do not give the permeability or percolation rating, but it can be estimated from the soil characteristics described in the report.

Ground-Water Levels

Some soils have a ground-water level within a foot or a few feet of the surface the year round. Other soils have a high ground-water level during certain seasons, usually during the winter and early spring. Still others may have a high water level during periods of prolonged rainfall. A sewage filter field will not operate properly under any of these conditions.

When the ground-water level rises to the height of the subsurface tile or pipe, the soil becomes saturated and there is no room in it for septic-tank effluent. Hence, the effluent must remain near or rise to the surface of the ground, and you have an ill-smelling, unhealthy bog in your filter field.

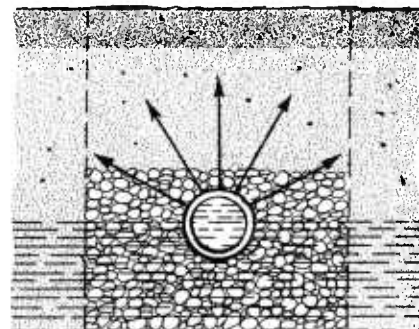
Soil-survey reports usually contain



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The septic tank and filter field for the suburban home (background) is located just beyond the wire fence (foreground). The soil is Iredell silt loam, which has a very plastic clay subsoil that is almost impermeable when wet. The roadside ditch in the immediate foreground is filled with septic-tank effluent that has seeped from the filter field, even though this picture was taken during a summer drought.

information about soil drainage and ground-water levels, especially where the water level is near the ground surface. Some reports give the depth in feet or inches to seasonally high water tables. Other reports use such terms as "well drained," "poorly



The high water table at tile level (above) forces the sewage effluent upward to the soil surface. This creates an unsanitary condition and health hazard.



ILL-2035

The poorly drained soil on which these houses are being built will not be satisfactory for septic-tank filter fields.

drained," or "very poorly drained." Well-drained soils usually are suitable for septic-tank filter fields, while poorly drained soils are not.

Depth to Rock, Sand, or Gravel

Rock formations should be at least 4 feet below the bottoms of the trenches or seepage bed in order to provide adequate soil depth for the filtration and purification of septic-tank effluent.

In areas where water supplies come

from wells and the underlying rock formation is limestone, the soil depth may need to be greater to prevent unfiltered sewage effluent from traveling through the cracks and crevices that are commonly found in limestone.

Soil-survey reports describe the depth to rock formations or coarse gravel in areas where they are near the soil surface. The reports also describe the kind of rock and the type of soil material over the rock or gravel formations.

Slope of the Ground Surface

Slopes of less than 10 percent usually do not create serious problems in either the construction or maintenance of filter fields provided the soils are otherwise satisfactory. The trenches must be constructed approximately on the contour, however, so that the effluent will flow slowly through the tile or pipe and be dispersed properly over the filter field. And you will likely wish to use serial distribution if you use a trench system on sloping ground (2).

On steeper slopes, trench-filter fields are more difficult to lay out and construct and seepage beds become impractical. In addition, there may be a serious problem in controlling



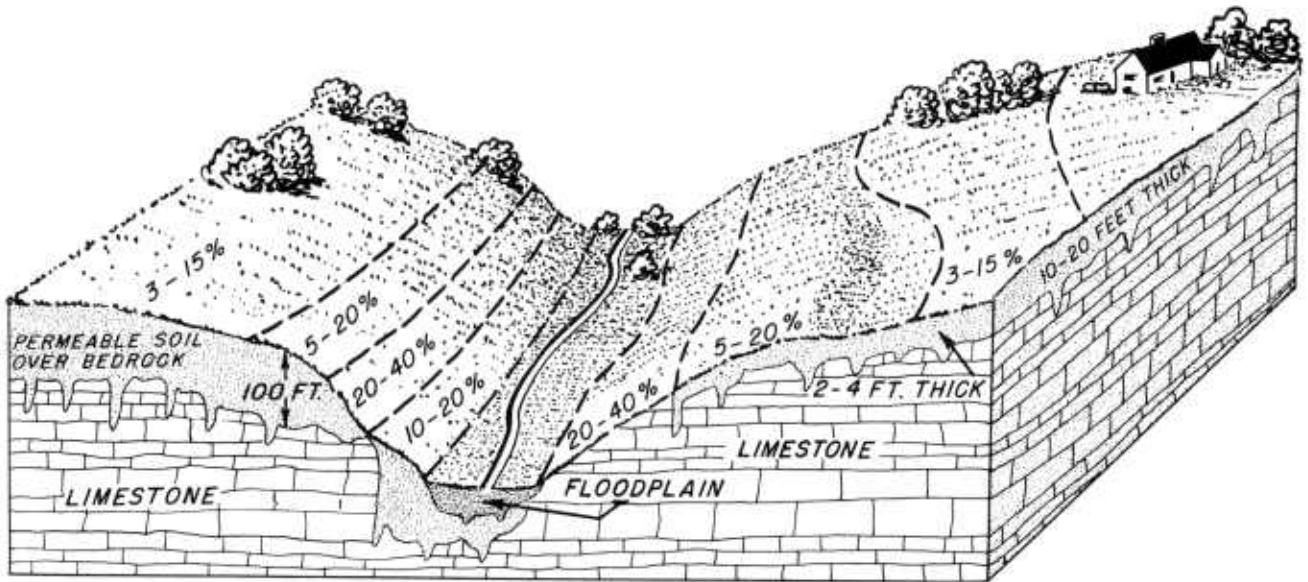
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Shallow soil over massive rock may be scenic, but it presents many problems for septic-tank filter fields. Not only will construction be difficult; it is doubtful that you will find enough soil in any location to properly filter the sewage effluent.

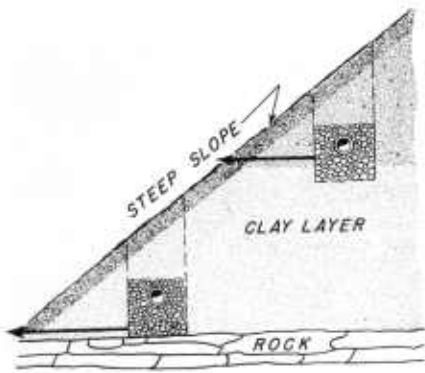
the lateral flow of the effluent to the downhill soil surface. This downhill flow may reach the soil surface before the effluent is properly filtered on steep slopes because of the short distance from the trenches to the soil surface down the slope. Wet, contaminated seepage spots may result.

The lateral flow of effluent to the soil surface on steep slopes is often a serious problem if there is a layer of dense clay, rock, or other impervious material near the soil surface and especially so if the soil above the clay or rock layer is sandy.

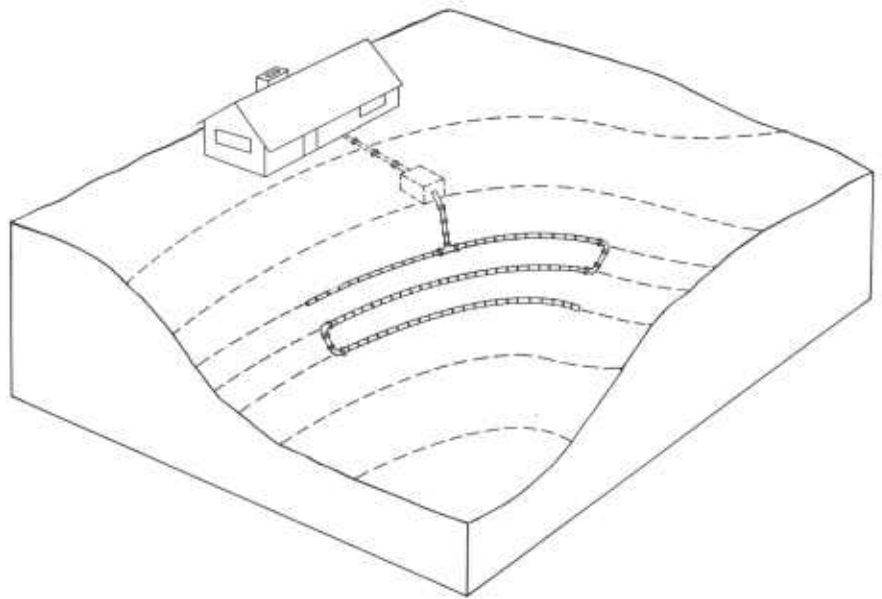
Soil-survey reports describe these



The deep soil over limestone, at the left, makes this area suitable for septic-tank filter fields, except that layout and construction may be difficult on the steeper slopes. The soil area 10 to 20 feet thick, at extreme right, is questionable for filter fields if water supplies come from wells. The shallow soil, 2 to 4 feet thick, is unsuitable for filter fields and might result in stream pollution if fields are placed there.



A filter field on a steep slope where there is a layer of dense clay, rock, or other impervious material near the surface is unsatisfactory. The effluent will flow above the impervious layer to the hillside soil surface and run unfiltered down the slope.



In constructing a septic-tank filter field on sloping land, the tile lines should be laid on the contour. Serial distribution, as depicted above, should be used on most sloping fields or in fields where there is a change in soil type.

various conditions of slope, soil texture, clay or rock layers, and other conditions that may affect proper sewage filtering. By studying these descriptions you should be able to make correct interpretations as to the suitability of an area for a filter field.

Nearness to Streams or Other Water Bodies

Local regulations will probably require it, and certainly you will want to keep your filter field at least 50 feet from any stream, open ditch, lake, or other watercourse into which

unfiltered and contaminated effluent can escape and spread.

Never place a filter field on the flood plain near a stream that is subject to flooding. An occasional flood over the filter field impairs its efficiency; frequent floods soon destroy its effectiveness.

Soil maps show the location of

streams, open drainage ditches, lakes, ponds, and those alluvial soils subject to flooding. The reports usually indicate the probability of flooding for alluvial soils.

Changes in Soil Type

Soil types sometimes change within a distance of a few feet. A change in the kind of soil within a filter field is not important if the soils have about the same absorptive ability. It may be significant, however, if the soils differ greatly. You should use serial distribution of the effluent in fields where there is a considerable difference in the soils, so that each kind of soil may absorb and filter the effluent according to its capabilities (2).

The boundaries shown on soil maps that separate one kind of soil from another are approximate. At the scale normally used in published maps (1:20,000) these lines may not be accurate enough to locate a suitable filter field. This is especially true if some soils not suitable for filter fields occur in the area. Hence, it is advisable to have a soil scientist examine the area or have a qualified person run percolation tests. In some cases it may be advisable to do both.



MINN-1693

Sewage filter fields will not operate properly when flooded and for some time after the floodwater recedes. Filter fields should never be placed on land that floods frequently.

Using a Soil Map to Select a Site for a Filter Field

The soil map below is typical of the Piedmont region of the Southeast. The lines on the map show the general boundaries between the different kinds of soil. The symbols, such as (MbB2), show the kind of soil that predominates within each area outlined. The soils are fully described in the soil survey report from which this map was taken.

The hypothetical building lot of about 3 acres outlined in the upper right center of the map has three different kinds of soil, Davidson, Mecklenburg, and Iredell. These soils commonly occur close together in the Piedmont region.

The *Davidson clay loam, gently sloping phase* (DbB) is a deep (6 to 25 feet), well-drained soil with moderate permeability and a high water-holding capacity. It is rated as *good* for septic-tank filter fields.

The *Mecklenburg loam, eroded gently sloping phase* (MbB2) is moderately deep (4 to 15 feet) with good drainage and slow to moderate permeability. It is rated as *poor* for septic-tank filter fields.

The *Iredell loam, eroded gently sloping phase* (IaB2) has a depth of 2 to 8 feet to bedrock. Its permeability is very slow. It has a very plastic subsoil that swells and closes soil pores when wet. This soil is *unsuitable* for filter fields.

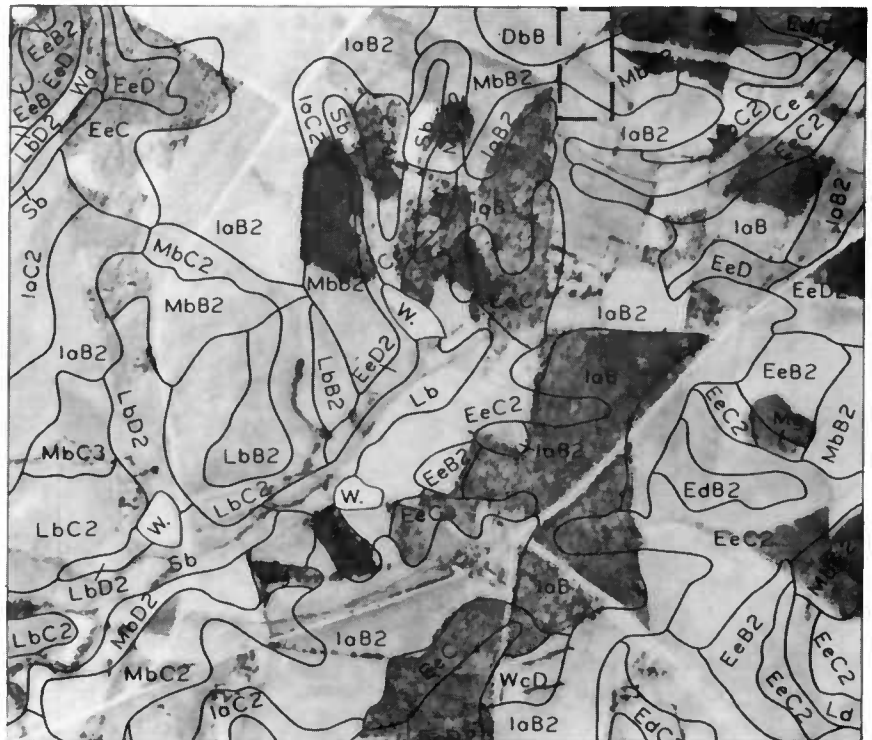
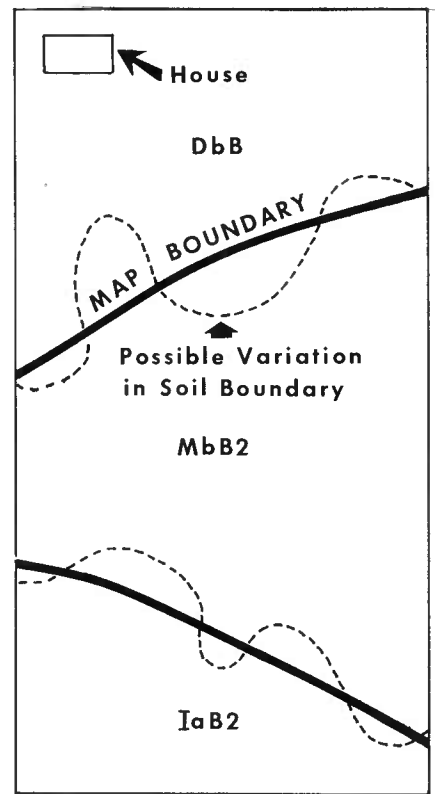
The owner of this hypothetical lot can tell by looking at the soil map that the upper part of the lot has *Davidson* soil that is suitable for a filter field. The central part, with *Mecklenburg* soil, is questionable. The lower part, with *Iredell* soil, is unsuitable.

Assuming that he wishes to build a home on the high point of the lot (upper left corner), he would doubtless try to locate the septic-tank filter field on the Davidson soil. But if he plans to drill a well near the house, he should place the filter field at least 100 feet downslope from the well (1). This places it near the boundary line, as shown on the map, between the *Davidson* and *Mecklenburg* soils.

And since this is a small scale map he cannot be sure that the soil change at any specific point is exactly on this boundary line.

The sketch at the right illustrates how actual soil changes might vary from the soil-change boundaries shown on a soil map. The heavy solid lines show the soil boundaries for this lot, as given on the map. The dotted lines indicate possible variations in these boundaries if the map was drawn in sufficient detail to pinpoint each small area the size of a filter field.

Hence, the owner of this lot should have an experienced soil scientist determine the soil boundaries more accurately or have percolation tests run to locate the site and size of his filter field. In many areas local regulations require percolation tests prior to installing septic-tanks.



Soil map from the Piedmont region, with a hypothetical building lot outlined at upper edge of the map.

Calculating the Size of Filter Field Needed

The size of filter field needed depends mainly on the amount of sewage to be filtered and the absorptive ability of the soil. The amount of sewage depends largely on the number of people living in a home. Most public health agencies set standards for size of filter fields on the basis of the number of bedrooms in a home, the best general guide to the probable number of occupants.

Standard Trenches. In calculating the size of filter field needed where subsurface tile or perforated pipe is laid in trenches, first determine the percolation rate of the soil. Then

look at the chart below to determine the square feet of absorption area needed per bedroom. Multiply this figure by the number of bedrooms in your home. This gives you the total square feet of absorption area needed.

You count only the bottoms of the trenches as the effective absorption area. Thus, to find out the total length your trenches and drantile or perforated pipe should be, divide the square feet of absorption area needed by the width (in feet) of the trenches you plan to use.

Since the trenches should be spaced 6 to 8 feet apart, multiply the total

trench length by the distance between the trench center lines to get the total area, in square feet, to be occupied by the filter field.

A Sample Calculation. For a 2-bedroom home where 24-inch wide trenches are used.

Percolation tests show 1-inch drop in 30 minutes. This is equivalent to a percolation rate of 2 inches per hour.

Chart at left shows the required absorption area as 250 square feet per bedroom.

Absorption area required for 2 bedrooms = 500 square feet.

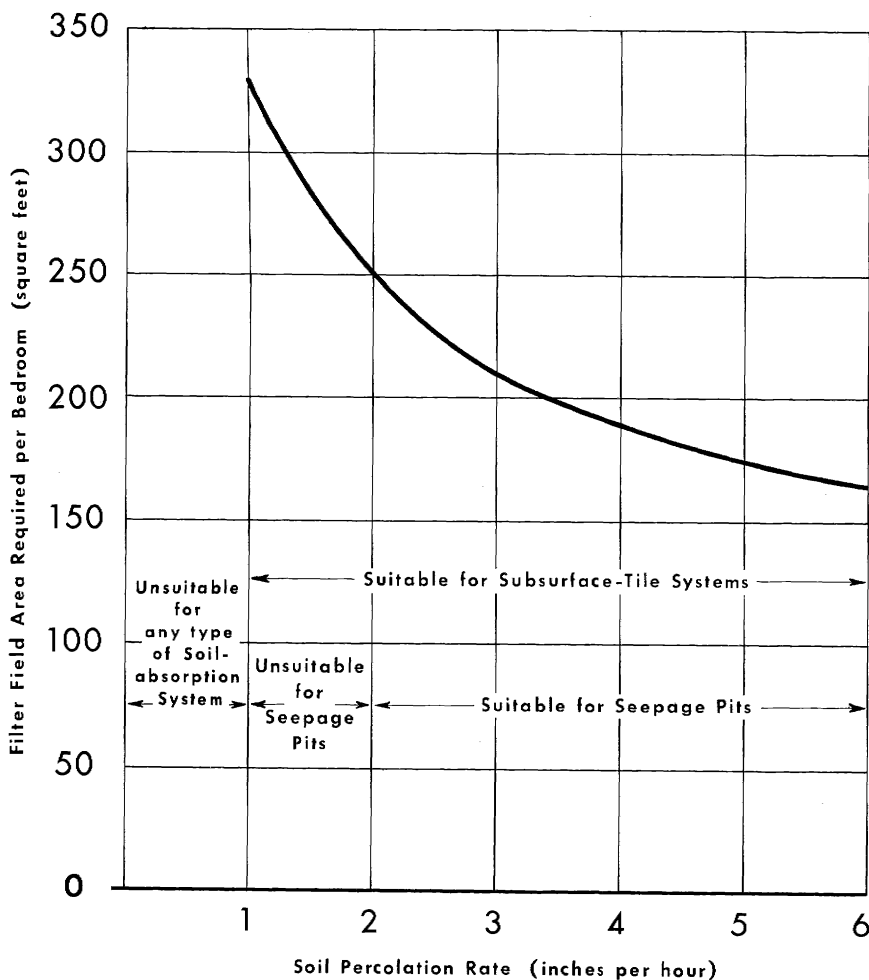
500 square feet ÷ by 2 feet (trench width) = 250 feet — total length of trench and tile or pipe required.

For this system you should, preferably, use 4 trenches about 62 feet long. You may use 3 trenches about 84 feet long if such a layout best fits your space. You should not use trenches more than 100 feet long (1).

Seepage Beds. To calculate the size of seepage bed needed, determine the absorption area needed in the same way as for a trench system. You count the entire bottom of the bed as effective absorption area. Thus, for a 2-bedroom house where the percolation rate is 2 inches per hour, you need 500 square feet in the bottom of the seepage bed. A bed 10 feet wide and 50 feet long or a bed 12 feet wide and 42 feet long would meet the requirements.

Seepage Pits. To calculate the size of seepage pit or pits needed, determine the absorption area needed in the same way as for standard trenches.

You count only the vertical walls below the inlet as the effective absorption area of a seepage pit. Do not count the area on the bottom of the pit. Thus, to find out the size of pit or pits needed divide the total square feet of absorption area needed by the effective depth (in feet) you can safely dig your pit. This will give you the circumference required. Divide the required circumference by 3.14 to get the diameter of the pit needed.



Filter-field area needed for private residences. [Adapted from Manual of Septic Tank Practice, (1, p. 7)]

How To Make a Percolation Test

If there is any doubt about the absorptive ability of the soil where you plan to locate a filter field, you should have a percolation test made (1). Most local regulations require that trained personnel make the percolation test. From the test findings you can calculate the size of the filter field needed. The test is made as follows:

1. Dig six or more test holes 4 to 12 inches in diameter and about the depth that you plan to make the trenches or seepage bed. Space them uniformly over the proposed filter area. Roughen the sides of each hole to remove any smeared or slickened surface which might interfere with water entry into the soil. Remove

loose dirt from the hole bottoms, and add 2 inches of sand or fine gravel to protect the bottoms from sealing.

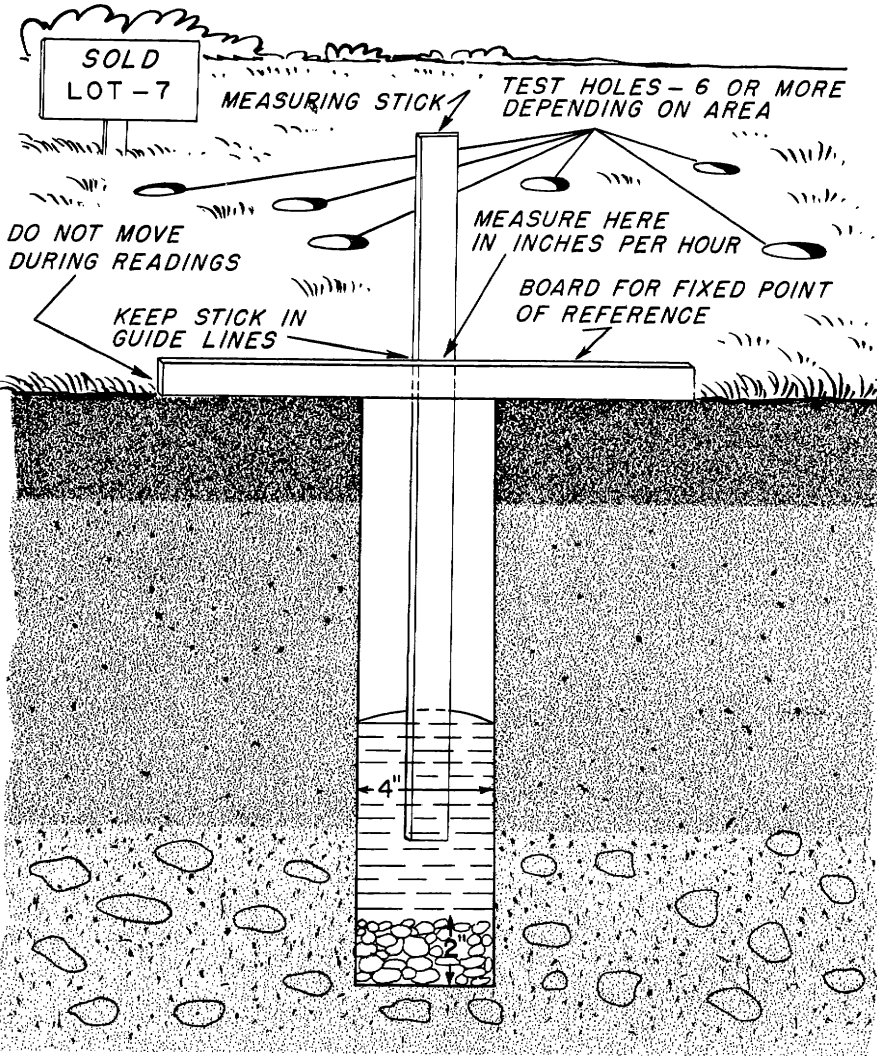
2. Pour at least 12 inches of water in each hole. Add water, as needed, to keep the water depth up to 12 inches for at least 4 hours and preferably overnight during dry periods. The soil must be thoroughly wetted so that it functions in the same manner as it will during the wettest season of the year. This allows for making the test during dry or wet seasons so that the results will be the same regardless of the season.

3. If water remains in the test holes overnight, adjust the water depth to about 6 inches. Measure the drop in water level over a 30-minute period. Multiply this measurement by 2 to convert to inches per hour. This is the percolation rate. The average rates for all the test holes is the percolation rate you should use in calculating the size of filter field you will need from the chart on page 10.

4. If no water remains in the test holes after the overnight period, add water to bring the depth to 6 inches. Measure the drop in water level every 30 minutes for 4 hours. Add water as often as needed to keep it near the 6-inch level. Use the drop in water level that occurs during the final 30 minutes to calculate the percolation rate.

5. In sandy soils where the water seeps away rapidly, the time interval between measurements may be reduced to 10 minutes and the test run for 1 hour. Use the drop that occurs during the final 10 minutes to calculate the percolation rate.

6. Percolation tests for seepage pits may be made in the same way except that each contrasting layer of soil should be tested. Use a weighted average of the results in figuring the size pit you need from the chart on page 10.



A percolation test hole with measuring stick is shown in the foreground with other test holes properly distributed over the field in the background.

REFERENCES

- (1) *Manual of septic tank practice*, U.S. Dept. Health, Educ., and Welfare, Public Health Serv. Publ. 526, 1958. For sale by Supt. Docs., Govt. Printing Off., Wash. 25, D.C. Price 40 cents, including all addendums.
- (2) *Addendum to part 1, manual of septic tank practice*, PHS Publ. 526. U.S. Dept. Public Health, Educ., and Welfare. 1959.
- (3) *Addendum 2 to part 1, manual of septic tank practice*, PHS Publ. 526. U.S. Dept. Public Health, Educ., and Welfare. In press.
- (4) *Septic tank soil absorption systems for dwellings*, U.S. Housing and Home Finance Agency, Div. of Housing Res., Construction Aid 5. 1954. For sale by Supt. Docs., Govt. Printing Off., Wash. 25, D.C. Price 25 cents.

Some Pointers in Selecting a Site for a Septic-Tank Filter Field

Soils vary so much from place to place that it is not possible to give specific recommendations on the soils suitable for filter fields that would fit all localities. Furthermore, local regulations of health authorities vary greatly.

Before you design and construct a private sewage disposal system you should become familiar with the regulations, permit and inspection systems, and penalties of the local authority having jurisdiction over your area.

You probably can get advice and planning aid from your city or county planning commission, local health department, agricultural extension specialist, or engineering and agricultural departments of colleges and universities and State boards of health.

In addition to conforming with all local regulations, you should take certain precautions for your own protection and convenience in selecting the site for your sewage filter field. Some of the more important things to keep in mind are:

Soil permeability should be moderate to rapid, with a percolation rate of at least 1 inch per hour. If there is any doubt about the absorptive rate of the soil you should have a percolation test made.

Ground-water level, during the wettest season, should be at least 4 feet below the ground surface for a subsurface-tile filter field and 4 feet below the pit floor for a seepage pit.

Rock formations or other impervious layers should be more than 4 feet below the bottom of the trenches, seepage-bed floor, or pit floor.

Slope of the ground surface is not of great importance on slopes of less than 10 percent, but trench systems and seepage beds are difficult to lay out and construct on steeper slopes. If steep slopes are underlain at shallow depths by rock or other impervious material, you may have serious problems of seepage of septic-tank effluent to the soil surface.

Distance to streams or other water bodies should be at least 50 feet. You should never install a filter field on a flood plain that is subject to flooding.

Changes in kind of soil within a filter field are important only if the soils differ greatly in absorptive ability. In such cases you should run percolation tests for the entire field, and use serial distribution of the effluent.

Soil-survey reports and maps can help you select a site where soil conditions are suitable for a sewage filter field.

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