PERCOLATION TESTS

If a field textural analysis indicates a perc range of less than one inch per hour or greater than 12 inches per hour, a percolation test may be conducted to determine a stabilized perc rate. The results will determine the type of system that can be designed. It will not be necessary to perform a percolation test if the reason for failure is high groundwater.

NOTE: ONLY INDIVIDUALS WHO HAVE BEEN CERTIFIED AS PERC TESTERS CAN PERFORM THIS TEST IN THE FIELD. A LIST OF QUALIFIED PROFESSIONALS IS AVAILABLE UNDER THE COUNTER.

Percolation Procedures:

These procedures have been modified from the Manual of Septic Tank Practice to meet the Napa County requirements for soil percolation tests. Old percolation tests may require supplemental information before they can be accepted. Questionable perc tests may require a site evaluation or an additional perc test.

(See building clearance guidelines to determine if an old perc test is valid)

1. Choosing a perc site: An area of sufficient size must be selected to handle the proposed septic system. This area must meet all setbacks from roads, creeks, buildings, wells, property lines, reserve area, etc.

2. Percolation Holes: Perc holes will be spread out over the area of the proposed septic system. They should be at least 20 to 30 feet apart. Reserve area is not presently required to be tested. The number and depth will depend on the size of the proposed system as well as site conditions. If the site evaluation failed from top to bottom and the perc test is being done establish rates for design or to challenge our call, a minimum of 6 shallow holes and 2 deep holes must be done. If the sub-soil is in question (3 feet below the trench bottom), then only the deep perc test is required. Perc holes may be entirely dug by a 6 inch clamshell post hole digger or hand auger if a shallow test is run (18 inches). Deeper holes should be partially dug with a backhoe and the bottom 12 inches dug with a post hole digger or hand auger.

Perc holes are to be 6-8 inches in diameter and the sidewalls scarified in order to break up any smearing which may have resulted from digging the holes.

3. Pre-soak:

-The purpose of the pre-soak is to saturate the soil.
-Inadequate pre-soak may require the perc test be extended to achieve stabilized perc rate.
-Fill the perc holes with 12-18 inches of water, wait a few minutes then refill.
-This must be done at least three times in a 24 hr., period

-Some soils (e.g. Clearlake Clay) may require up to a week of pre-soaking. The adequacy of the pre-soak will be determined by the EHS. The perc must be run within 24 hours of the pre-soak.

-Call our office at least 24 hours in advance to verify adequacy of the pre-soak.
-Do not begin the test until the pre-soak has been approved by the EHS. If you do not confirm the pre-soak adequacy with the EHS, we will cancel the perc test.

4. Performing the Perc Test

-Hand clean the perc holes of any material that has sloughed off in to the bottom. Do not deepen the hole.
-Place 1-2 inches of pea gravel in the bottom of the hole.
-Place a flat stick across the hole, number it and mark an arrow where you will be measuring to. Secure the stick to the ground over the hole (with rocks or nails).
-Measure 6 inches above the top of the pea gravel and place a 16 penny nail into the sidewall. This is only a reference point for filling the water up each time and is not to be used for measuring the water level drop.
-Fill the hole with water to the top of the nail.
-Record the drop of the water level at half hour intervals by measuring from the top of the water level to the mark on the stake. Take readings to the nearest 1/8 inch.
-After measuring the level of drop, refill each hole up to the top of the nail and measure the water level.
-If the holes go dry before the half hour, refill the holes and take 15 minute readings until they do not empty for a half hour.
-At the end of 4 hours, if the test has not yet stabilized it must be continued until the half hour readings are stable (2 consecutive readings that do not vary by more than 1/4 inch).
-Slow perc rates may be read hourly (rates less than 1"/hour)
-The stabilized rate in inches per hour is the perc rate.
-The EHS will be at the site for at least two stabilized readings.

5. Gravel and Pipe

When a uniform perc hole cannot be maintained, 3" perforated pipe and pea gravel must be used. This would be decided at the presoak. After filling the pipe with water, wait one minute for the hole to stabilize, then refill to the top of the nail. After the allotted time, take the reading as usual. The perc rate will be reduced by 40% due to the alteration in water to sidewall ratio. Perc rate X .6 = adjusted perc rate.

6. Percolation Rates

Percolation rates will be used to determine the amount of leachline required for a system. Perc rates are described in Table 13.48.010 of the Napa County Sewage Ordinance.

1. Low Perc Rates: Perc rates of less than 1 inch per hour require a special design

system, which may be installed if a minimum perc rate of 1/8 "/hour can be established.

Soils with perc rate of less than 1/8" / hr. cannot support any type of on-site sewage disposal system and will be considered unbuildable (off site sewage disposal may be possible by easement/agreement).

2. Fast Percolation Rates: Any stabilized perc rate which exceeds 12 inches per hour (or less than 5 minutes per inch) will require a special design sewage disposal system. However, when soils below the trench zone are between 1 to 12 inches per hour and do not indicate seasonal high groundwater or anaerobic conditions, a standard septic system may be permitted. When reviewing perc tests for excessive perc rates, deep perc rates should be reviewed and where very sandy soil or gravelly layers are noted, a deep perc test should be required.

3. Subdivision Perc Rates: Perc tests have been conducted in various subdivisions over the years and may be used to assess the suitability of a particular site (see page 45 in this manual for rates).