A. Perc test procedure from the Arizona Administrative Code R18-9-A310F:

1. Planning and preparation. The investigator shall:
   a. Select at least two locations in the primary area and at least one location in the reserve area for percolation testing, to provide adequate and credible information to ensure proper location, selection, design, and installation of a properly working on-site wastewater treatment facility;
   b. Perform percolation testing at each location at intervals in the soil profile sufficient to:
      i. Establish the wastewater absorption capability of the soil under R18-9-A312(D), and
      ii. Use in determining that a sufficient zone of unsaturated flow is provided below the disposal works to achieve necessary wastewater treatment. The investigator shall perform percolation tests at multiple depths if there is an indication of an obvious change in soil characteristics that affect the location, selection, design, installation, or disposal performance of the on-site wastewater treatment facility;
   c. Excavate percolation test holes in undisturbed soil at least 12 inches deep with dimensions of 12 inches by 12 inches, if square, or a diameter of 15 inches, if round. The investigator shall not alter the structure of the soil during the excavation;
   d. Place percolation test holes away from site or soil features that yield unrepresentative or misleading data pertaining to the location, selection, design, installation, or performance of the on-site wastewater treatment facility;
   e. Scarify smeared soil surfaces within the percolation test holes and remove any loosened materials from the bottom of the hole; and
   f. Use buckets with holes in the sides to support the sidewalls of the percolation test hole, if necessary. The investigator shall fill any voids between the walls of the hole and the bucket with pea gravel to reduce the impact of the enlarged hole.

What it means: The person responsible for the perc test must dig at least three discovery holes and three perc test holes in otherwise undisturbed soil (no fill) for application of a conventional septic permit. The primary and reserve leach field must be placed inside a 30’ radius of the discovery holes. Additional testing is required if 3 discovery holes do not provide adequate area for primary and reserve installation or if soil or site conditions warrant such. It is recommended that discovery holes be 50’- 60’ apart. Perc testing must be done in the layer(s) of soil where the disposal will actually occur. This is why it is generally not acceptable to do the perc testing at grade. If there are two or more distinct layers of soils where the disposal will occur, additional testing may be required.

Perc holes must be 12” by 12” if square, or 15” across if round and 12” deep with vertical sidewalls. These measurements must be maintained at both the top and the bottom of the perc hole. Avoid doing perc tests in areas that are not representative of the soil in which disposal is to occur (testing the only area where the discovery hole was 12’ deep is not representative of the site). Digging the perc hole typically results in smearing the soil surfaces of the hole, if this is not corrected, it will adversely affect your results. Smeared surfaces should be removed (scarified) by gently prying the smeared material off the walls with a tool of some sort (screw driver, wire brush, etc.).
If the walls of the perc hole cave in, you will need to support the perc hole by placing a bucket with holes bored into the sides into the perc hole. The holes are to be drilled ½” in diameter, 2” on center all over the bucket sidewalls and bottom. Pea gravel is then used to fill in the space between the outside of the bucket and the perc hole side walls.

2. Presoaking procedure. The investigator shall:
   a. Fill the percolation test hole with clean water to a depth of 12 inches above the bottom of the hole;
   b. Observe the decline of the water level in the hole and record time in minutes for the water to completely drain away;
   c. Repeat the steps specified in subsection (F)(2)(a) and (b) if the water drains away in less than 60 minutes.
      i. If the water drains away the second time in less than 60 minutes, the investigator shall repeat the steps specified in subsections (F)(2)(a) and (b).
      ii. If the water drains away a third time in less than 60 minutes, the investigator shall perform the percolation test by following subsection (F)(3); and
   d. Add clean water to the hole after 60 minutes and maintain the water at a minimum depth of 9 inches for at least four more hours if it takes 60 minutes or longer for the water to drain away. The investigator shall protect the hole from precipitation and runoff, and perform the percolation test specified in subsection (F)(3) between 16 and 24 hours after presoaking.

What it means: The presoak is conducted by gently pouring water into the hole to maintain a depth of 12 inches. You then determine how long it takes for ALL 12 INCHES of water to drain away. If it drains away within one hour, fill it again. If it drains completely away a second time in less than one hour, do it again. If it drains away within one hour a third time, you do not need to do anything more for the presoak and you may begin the perc test at once. If any of the 12” of water does not go away within one hour, you need to keep at least 9” of water in the hole for at least 4 hours. After the four hour presoak has been completed, you should protect the hole and then come back 16 to 24 hours later to complete the perc test.

3. Conducting the test. The investigator shall:
   a. Conduct the percolation test before soil hydraulic conditions established by the presoaking procedure substantially change. The investigator shall remove loose materials in the percolation test hole to ensure that the specified dimensions of the hole are maintained and the infiltration surfaces are undisturbed native soil;
   b. Fill the test hole to a depth of 6 inches above the bottom with clean water;
   c. Observe the decline of the water level in the test hole and record the time in minutes for the water level to fall exactly 1 inch from a fixed reference point. The investigator shall:
      i. Immediately refill the hole with clean water to a depth of 6 inches above the bottom and determine and record the time in minutes for the water level to fall exactly 1 inch,
      ii. Refill the hole again with clean water to a depth of 6 inches above the bottom and determine and record the time in minutes for the water to fall exactly 1 inch, and
      iii. Ensure that the method for measuring water level depth is accurate and does not significantly affect the percolation rate of the test hole;
   d. If the percolation rate stabilizes for three consecutive measurements by varying no more than 10 percent, use the highest percolation rate value of the three measurements. If three consecutive measurements indicate that the percolation rate results are not stabilizing or
the percolation rate is between 60 and 120 minutes per inch, the investigator shall use an alternate method based on a graphical solution of the test data to approximate the stabilized percolation rate;

e. Record the percolation rate results in minutes per inch; and

f. Submit the following information with the site investigation report:

i. A log of the soil formations encountered for all percolation tests including information on texture, structure, consistence, percentage of rock fragments, and mottles, if present;

ii. Whether and which test hole was reinforced with a bucket;

iii. The locations, depths, and bottom elevations of the percolation test holes on the site investigation map;

iv. A determination of depth to groundwater below the land surface by test trenches or borings, published groundwater data, subdivision reports, or relevant well data; and

v. A determination of the water absorption characteristics of the soil, under R18-9-A312(D)(2)(a), sufficient to allow location and design of the on-site wastewater treatment facility.

What it means: Before running the perc test, remove any loose materials which have accumulated in the hole during the presoak. Gently pour water into the hole until it reaches a depth of exactly 6 inches. Determine how long (in minutes) it takes the water level to drop one inch (from exactly 6 inches to exactly 5 inches). When this is done, immediately refill the hole to a level of 6 inches and determine how long it takes to fall one inch. Keep repeating this process until you have at least 3 consecutive readings which vary no more than 10% from each other. Your perc results should be recorded in minutes per inch. This represents the amount of time (in minutes) it took for the soil to absorb 1” of water. A record of these tests shall be kept on the official perc test recording form supplied by YCDS-EU and submitted with your site assessment paperwork. When a disposal field covers areas with multiple perc rates, the highest of the rates will be used for the whole system.

A separate set of procedures for performing percolation testing for seepage pits is outlined in R18-9-A310F. Because the percolation testing done for pits is so different from the procedures outlined above for other disposal methods, testing done for pits cannot be used for disposal trenches or beds and testing done for trenches or beds cannot be used for disposal pits.

B. Yavapai County Ordinance no. 1996-1:

WHEREAS the purpose of this Ordinance is to preserve and secure the health and welfare of the general public, to require all persons conducting percolation tests to display a level of competency, and to prevent dangerous conditions relation to open holes dug for perc testing:

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF SUPERVISORS OF YAVAPAI COUNTY, ARIZONA, AS FOLLOWS:

SECTION 1: Certification of Perc Testers: Except as provided in Section 2 below, all persons conducting percolation tests (i.e., the addition of water during the pre-wet phase, the testing phase, and the measurement of the rate at which it drops) shall be certified by the Yavapai County Department of Environmental Services. There shall be no fee for certification and such certification is valid indefinitely unless revoked for good cause by the Yavapai County Department of Environmental Services.
Examination of Perc Testers: All persons seeking to be certified must receive a score of 80 or higher on a written examination administered by the Yavapai County Department of Environmental Services and will be required to display their ability during an actual or simulated perc test in the field.

Effective Date: Certification in accordance with this Ordinance shall be required of all persons conducting perc tests as of February 28, 1996, and thereafter. Yavapai County Environmental Services will not accept results of any percolation tests after February 28, 1996, unless the test has been conducted in accordance with this Ordinance.

Exceptions: Certification shall not be required for Arizona Registered Engineers, Sanitarians or Geologists.

SECTION 2: Site Surveys: Site Surveys will either be conducted by Yavapai County or by an Arizona Registered Engineer or Sanitarian in good standing. The Yavapai County Department of Environmental Services will accept a signed, properly filled out “Request for Individual Liquid Waste Disposal Site Survey” form from an Arizona Registered Engineer or Sanitarian in good standing along with a processing fee of $35*. The perc test must be conducted in accordance with this Ordinance. All information relating to setbacks, soil suitability, and perc rate necessary to design a septic system must be included on the Site Survey. The form must be stamped, signed, and dated, if submitted by an Engineer and signed, dated and the Sanitarian registration number listed, if submitted by a Sanitarian.

SECTION 3: Site Surveys and Percolation Test Holes: In order for the Yavapai County Department of Environmental Services to evaluate percolation discovery holes, the discovery hole must have a point of approach which is safe from cave-in. A reinforced chain link gate of 4’ by 8’ spanning the hole is recommended. If a discovery hole is to be considered to be unsafe for approach by the Yavapai County Inspector, he or she may decline to conduct the Site Survey and require a reinspection when the site is made safe.

Notification by County: The Yavapai County Department of Environmental Services will notify the contractor or other involved individuals within one hour, if possible, after completing the Site Survey. Property owners and contractors must ensure that all discovery and percolation test holes are filled-in within forty-eight hours of notification by the County pursuant to this section.

SECTION 4. Abatement: If a property owner or contractor fails to fill in the discovery or percolation test hole, within twenty-four hours of notification the Yavapai County Department of Environmental Services shall issue a written order to such contractor or property owner to comply with the provisions of the Ordinance and shall serve such person with the order by certified mail or hand-delivery. Failure to comply with the written order within forty-eight hours shall result in prosecution.

Penalty Clause: Any person who violates any provision of this Ordinance shall be guilty of a Class 1 misdemeanor.

SECTION 5. Unconstitutionality Clause: Should any section, paragraph, sentence, clause, or phrase of this Ordinance be declared unconstitutional or invalid for any reason, the remainder of said Ordinance shall not be affected thereby.

EFFECTIVE DATE: This Ordinance shall be effective February 28, 1996.

PASSED AND ADOPTED BY THE YAVAPAI COUNTY BOARD OF SUPERVISORS this 29th day of January 1996.
What it means: Yavapai County requires all site suitability testing for septic systems to be performed to certain standards by qualified individuals. Only Arizona Registered Engineers, Sanitarians or Geologists may do perc testing AND submit site suitability determinations to YCDS-EU. Persons specially certified by YCDS-EU (“Certified Perc Testers”) are allowed to do perc testing but not the complete site suitability inspection. Once the perc test is done, the results must be submitted to YCDS-EU. Sites with perc tests performed by Certified Perc Testers will be inspected and a Site Suitability Report written by YCDS-EU.

*New fee of $67.50 adopted by the Board on November 2006.

An individual becomes certified to do perc testing in Yavapai County by passing a written exam with a score of 80% or better AND performing a satisfactory perc test in the field witnessed by an employee of YCDS-EU.

Test holes must be properly protected for safety purposes. Property owners and/or their contractors must have the test holes filled in within 48 hours of notification from YCDS-EU that the inspection has been completed. Leaving test holes open is hazardous and anyone failing to fill in their test holes in a timely manner may be prosecuted by the county leading to conviction of a misdemeanor offense.