



# City of Malibu

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## SEEPAGE PIT PERCOLATION TESTING POLICY

1. Seepage pit percolation tests shall be performed under the direction of a California Certified Engineering Geologist, a California Registered Professional Geotechnical Engineer, a California Civil Engineer, or a California Registered Environmental Health Specialist.
2. Seepage pit percolation test boreholes shall be two feet in diameter, and a minimum of 10 feet deep below the capping depth/elevation. A seepage pit percolation test may be conducted in a legally constructed seepage pit with prior approval from City of Malibu Environmental Health. Percolation test boreholes, and/or seepage pits, shall be located by GPS or other means of accurate location on subject property.
3. Prior to percolation testing, each seepage pit percolation test borehole shall be examined by a California Certified Engineering Geologist. The project geologist shall write a supporting geology report, which shall be submitted with the percolation test report to City of Malibu Environmental Health. A supporting geology report including the following items must be prepared in coordination with the percolation test report (contact the City of Malibu to obtain a complete description of the supporting geology report requirements).
  - a. Map showing the accurate locations of all test borings.
  - b. Geologic log of the subsurface soil/rock strata found in all test borings.
  - c. Recommended cap depth/elevation for each seepage pit.
  - d. Statement of the depth/elevation of seasonal high groundwater.
  - e. Discussion of the anticipated path of effluent with cross-section drawing(s).
  - f. Statement in regard to the geologic stability of the work site, the property, and adjacent properties.
4. A groundwater boring shall be excavated within the immediate vicinity of the seepage pit percolation test borings, and observed by the project geologist to determine the existing groundwater level and the seasonal high groundwater level. The groundwater boring may be tested for percolation if properly backfilled and sealed 10 feet above the bottom of the boring (e.g., backfill with the material removed from the boring during drilling and seal by adding 1½ feet of dry Bentonite pellets, which are then hydrated for least 24 hours before beginning the percolation test). The minimum vertical separation between the bottom of any percolation test boring and seasonal high groundwater shall be 10 feet, or as required by the Malibu Municipal Code Chapter 15 for seepage pit construction.
5. Seepage pit percolation tests shall be performed over a period of three consecutive days. Metered/static head percolation test procedures shall be used for all tests. The percolation test



meter used must have been calibrated for accuracy within the previous 12 months before the percolation test is conducted.

6. A minimum of two seepage pit percolation test boreholes shall be excavated on each site, one for the proposed active seepage pit, and one for the proposed future seepage pit dedication, as required by the Malibu Municipal Code Chapter 15. If the percolation test results indicate the need for more than one active seepage pit, and/or if more than one future seepage pit is required, then more percolation testing shall be conducted. All proposed active seepage pit locations, and all proposed future seepage pit locations, shall be tested to assess the water absorption capacity.
7. On the first day of the percolation test, the seepage pit percolation test borings shall be filled with clear water to the capping depth/elevation recommended by the project geologist so as to presoak the boreholes prior to performing water absorption measurements on the second day. If any seepage pit percolation test boring cannot be filled to the capping depth/elevation as a result of a rapid absorption rate, then the quantity of clear water introduced into the boring shall be determined at the discretion of the percolation test professional based on the minimum requirements of the project. After presoaking, no more water shall be introduced into the percolation test boreholes for a period of not less than 24 hours.
8. On the second day of the percolation test, prior to the beginning of metered water addition(s), the amount of water remaining in the percolation test boreholes following the presoak period shall be observed, and recorded as both: (a) the depth below existing grade to the free water surface and (b) the water column height above the bottom of the borehole. The depth/elevation of the free water surface in all percolation test boreholes must be recorded at both the beginning and the end of the 24 hour presoak period. Any borehole where, during this presoak period, the water surface does not drop at least 10 feet below the capping depth/elevation recommended by the project geologist shall be deemed to have failed the seepage pit percolation test. The accurate location(s) of all failed seepage pit percolation test boreholes must be provided on a map included as part of the percolation test report.
9. A 1½ inch diameter water hose shall be the minimum size hose acceptable for use in filling boreholes for presoaking and percolation testing. A totalizing flow meter shall be used to record the quantities of water introduced into each borehole. For each test borehole, an initial meter reading shall be recorded prior to any water additions. Thereafter, the borehole shall be filled with clear water up to the capping depth/elevation recommended by the project geologist. Subsequently, the test borehole may be refilled with clear water (not to exceed the cap depth), as necessary, for a period not to exceed eight hours beyond the initial filling. A meter reading and the time of day shall be recorded after each refill. The borehole total depth, and the minimum depth to the free water surface maintained in the borehole during the test, shall be reported. All depths shall be reported as depth below ground surface referenced to the ground surface elevation existing at the time of the test.
10. On the third day of the percolation test, the final depth/elevation of the free water surface remaining in all percolation test boreholes must be recorded. This final water level recovery measurement shall be taken no more than 24 hours after the beginning of the second day of testing. At this time the amount of water remaining in each borehole shall be recorded as both: (a) the depth below existing grade to the free water surface and (b) the water column height above the

bottom of the borehole. Any borehole where, during this final recovery period, the water surface does not drop at least 10 feet below the capping depth/elevation recommended by the project geologist shall be deemed to have failed the seepage pit percolation test. The accurate location(s) of all failed seepage pit percolation test boreholes must be provided on a map that is included as part of the percolation test report.

11. For purposes of calculating daily water absorption capacity, the water volume remaining in the test boring (i.e., difference between the beginning water volume and a larger water volume remaining at the end of the presoak period, if any) shall be deducted from the water volume metered into the boreholes during the percolation test period. The net water volume absorbed between the beginning of metered water additions (on the second day) and the conclusion of the final recovery period (on the third day) shall be used to calculate the daily water absorption capacity in gallons per day and in gallons per square foot per day.
12. For purposes of private sewage disposal system design, it is acceptable to the City of Malibu Environmental Health office for the percolation test professional and/or system designer to mathematically scale the daily water absorption capacity obtained in a two foot diameter test borehole by the ratio of surface areas of a design seepage pit and the test borehole. [Note: the constructed seepage pit must use the same total depth/elevation, and same cap depth/elevation, as the corresponding test borehole.]
13. The percolation test report shall communicate the percolation test data in a manner easily understood by any reader. The percolation test report shall contain the following information:
  - a. The dates on which the percolation test was conducted, i.e. the presoak date, the test date, and the final observation date.
  - b. A map showing where the percolation test boreholes and the groundwater excavation(s) were located on subject property. The map shall be to scale, and easily readable; locations of the test borings on subject property may be determined by survey, GPS, or other means of reasonably accurate location.
  - c. The dimensions of each percolation test borehole (i.e. the total depth/elevation of each borehole and the capping depth/elevation used for testing each borehole).
  - d. If any percolation test borehole was backfilled prior to percolation testing, then the backfilling shall be noted, and the method of backfilling shall be noted.
  - e. The percolation test data, including the times of day the percolation test holes were filled, and refilled, and the volume of water used for each fill, and refill.
  - f. The observation of any groundwater level in any groundwater excavation.
  - g. The percolation rate expressed in both gallons per day, and in gallons per square foot per day.
  - h. Any other information deemed appropriate by the professional conducting the percolation test, or requested by the City of Malibu.
14. Variations to these guidelines may be approved on a case-by-case basis by City of Malibu Environmental Health as warranted by particular site conditions.