



**LOS ANGELES COUNTY ♦ DEPARTMENT OF PUBLIC HEALTH  
 ENVIRONMENTAL HEALTH  
 Bureau of Environmental Protection  
 Land Use Program  
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**A PROFESSIONAL GUIDE TO  
 REQUIREMENTS AND PROCEDURES FOR  
 ONSITE WASTEWATER TREATMENT SYSTEMS (OWTS)**

**January 1, 2012**

These Requirements and Procedures shall apply to feasibility reports submitted on or after January 1, 2012. Previously submitted feasibility reports, all or in part, that have lapsed more than 1 year from the original date of submittal shall be subject to a review in accordance with these guidelines.

This document is a summary of requirements derived from laws applicable to OWTS. They are intended to provide standardized guidelines for preparation and submittal of feasibility reports to obtain the Department of Public Health - Environmental Health (the Department) approval for construction and installation of OWTS. This document is prepared in accordance with the requirements set forth in Los Angeles County Code, Titles 11 and 28, and is subject to amendment as deemed necessary by the Department. The Department will make every effort to notify the related industry and all interested parties of any revisions to these guidelines 30 days prior to the effective date of the implementation. This document does not represent all applicable regulations in their entirety; other requirements may apply.

All OWTS approvals for projects other than single family dwellings, such as, institutions, commercial establishments and multifamily dwellings developments shall be in concurrence with the California Regional Water Quality Control Board (RWQCB). The developers are advised to consult with the appropriate field office of the RWQCB prior to contacting the Department. Applicants may be required to obtain Waste Discharge Requirement (WDR) permit from RWQCB for such projects.

Should questions arise regarding these procedures or requirements, please contact your Environmental Health Representative:

\_\_\_\_\_, REHS Telephone: \_\_\_\_\_  
 Registered Environmental Health Specialist

Further inquiry or appeal of decisions may be made to:  
**Patrick Nejian, Chief Environmental Health Specialist at (626) 430-5380 or  
 pnejadian@ph.lacounty.gov**

**I. The Following Development Projects Require Feasibility Reports and Plan Submittal:**

- A. Land development projects, including Conditional Use Permit and land Subdivision projects where public sewer is not available.
- B. Building construction, new or remodeling of existing building, where public sewer is not available within 200 feet of the building.

**Note:**

No permit shall be issued for the installation, alteration, or repair of any OWTS or part thereof, on any property for which a connection with public sewer is available within 200 feet.

- C. Renovation of an existing building, including rebuild, remodel, addition or expansion that will increase the design flow or demand a greater capacity than the capacity indicated on the previous approval for the existing OWTS.

**Note:**

The feasibility of installing the 100% future expansion area shall be demonstrated for any expansions beyond the current footprint of the existing structure or addition of any new detached structures, including swimming pools/spas regardless whether the proposed renovation will increase the design flow or demand greater capacity than the existing OWTS.

Where previous approval is not available or does not encompass approval of the 100% future expansion area and the renovation/expansion does neither increase the design flow, nor demand a greater capacity, in addition to proving out the 100% future expansion area by a Qualified Professional (see definition), the existing present OWTS shall be evaluated by a Qualified Contractor (see definition) to ensure that the existing system has been properly installed, and currently is structurally in good repair and functional. The qualified contractor shall submit to the Department a signed report attesting to such capability for the existing OWTS.

The determination/inspection report shall certify the structural integrity of the entire system, to include tank, seepage pits, plumbing lines and any other related component, such as, distribution box, diverter valves, etc. that all components are intact and were installed/constructed in an acceptable manner (e.g., tight lines are in good repair, gravel below perforated pipes for leach lines are unclogged, seepage pits are bricked/lined, capped and are in good repair, and the tank is structurally sound and equipped with a baffle that is intact, etc.).

The report shall include a plot plan that clearly identifies and illustrates the entire OWTS to include the tank size and related details of the dispersal system. The septic tanks that are deemed inadequate shall be upgraded to meet the current departmental requirements. The Department may require other additional improvements to ensure that the minimum required standards have been met.

When the existing system is required to be exposed to establish the size and capacity of the septic tank and/or dispersal field or seepage pit, the Department staff may visit the site and verify the dimensions with the qualified contractor, when possible. The qualified contractor shall notify this Department of the date and the time of the uncovering of the OWTS, at least one business day in advance, for possible observation by the Department representative.

The approval issued by the Department will only encompass the 100% future expansion area, approving only the renovation/expansion and not the existing OWTS.

An expansion of up to 10% of the current footprint that does not increase the design flow or require greater capacity and does not take up more than 10% of the remaining available undeveloped area on the property, may be allowed without requiring to prove out the feasibility for the 100% future expansion area, when no unfavorable geological conditions, such as, bedrock formation, etc. exist, all required setbacks can be met, and the location and direction of the proposed expansion is in a manner that will not interfere with the installation of the 100% future expansion area when needed in the future. The approval for such expansion will only be allowed once and on a case by case basis. The consent granted by the Department will only encompass the proposed expansion project.

- D. Repair or renovation of the wastewater dispersal system of an OWTS where there are no records of previous approval. A septic tank replacement project does not require a feasibility report.
- E. Repair or renovation of an existing OWTS where it was discovered that the existing OWTS is nonconforming and does not meet the current requirements.
- F. Activation of the 100% future expansion area. The feasibility of installing the 100% future expansion area shall be demonstrated:
  - 1. Where the previous approval was based on soil category evaluation.
  - 2. Where the 100% future expansion area was not tested at the time of the original approval even if the plans or records refer or illustrate to a location for the future expansion area.

**Notes:**

- 1. When the previously proposed 100% future expansion area is being activated, the feasibility for a new 100% future expansion area shall be demonstrated.  
This requirement may be waived, where the new dispersal system that is being activated is equipped with supplemental treatment component; OR the property is one acre or greater in size and the geology report prepared for the 100% future expansion area that is being activated confirms no unfavorable geological conditions, such as, bedrock formation, etc. exist; OR where the geology report for the existing present dispersal system, if available, concurs with the geology report prepared for the 100% future expansion area that is being activated, confirming uniform and favorable soil and geological conditions throughout the property.
- 2. When the original approval includes that the previous percolation test results for 100% future expansion area and the percolations rates are within the acceptable range of 0.83 to 5.12 gallons per sq. ft. per day for seepage pits and 5 to 60 minutes per inch for leach fields, no additional percolation tests will be required as long as the future dispersal fields/pits are installed as originally approved.

- G. Repair or renovation of previously approved existing OWTS where geological conditions have been identified that may adversely affect the operation of the system.

**Notes:**

- 1. The Feasibility Report referred herein is defined as documents, test results, reports, etc. as described further, that are required to be prepared in order to

- demonstrate the feasibility of installing OWTS including the 100% future expansion area.
2. Rebuild due to fire or other natural disaster shall be in conformance with the Guidelines for Rebuilding Residential and Commercial Structures Following a Fire or other Natural Disaster. Applicants planning to rebuild shall be required to submit construction plans within the time limits allowed by the Building and Safety Division after natural disaster has occurred.
  3. Plan approval issued by the Department is valid for one year. The approvals that have lapsed for more than one year from the original date of the approval shall be subject to review in accordance with the current departmental guidelines. Reinstatement of an expired geology/feasibility report shall be required. Issuance of an extension is subject to additional plan check fees as follows.  
If the Building Permit has not been issued within the one-year period, the property owner may apply for an extension prior to the expiration of the one-year period. There will be a maximum of two (2) one-year extensions granted as long as it is determined that the original approval remains in conformance with the current code. Additional extension beyond the first two one-year extensions requires a complete new review of the feasibility report and is subject to a plan check fee of equivalent to a renovation project.

## II. The Qualifications for Preparing Feasibility Reports:

Feasibility reports shall be prepared by Qualified Professionals (QP) who possess a valid California license / permit to conduct the required testing and / or to prepare or contribute to the preparation of a feasibility report.

The following are considered **Qualified Professionals**:

A California Professional Geologist, a California Certified Engineering Geologist, a California Registered Professional Engineer, California Registered Professional Soil/Geotechnical Engineer or a California Registered Environmental Health Specialist who is not currently employed by the County of Los Angeles.

All above listed QP are qualified to design a new or replacement OWTS and to perform all necessary soil and site evaluations where the treatment or dispersal system will be replaced or expanded, unless specified otherwise. The design of new and replacement OWTS shall be based on influent wastewater quality, quantity, the site characteristics and the required level of treatment for protection of water quality as well as public health.

The QP who prepares the feasibility report shall sign the report. Additionally, he/she shall affix a professional stamp on the plot plan and the report adjacent to the signature, acknowledging the responsibility for the overall preparation of the report and agreeing to the following declaration: *“This submittal is intended to represent a complete feasibility report that conforms with the applicable provisions of the Los Angeles County Code – Title 28 Plumbing Code and the feasibility report requirements of the Department of Public Health - Environmental Health”.*

### **Note:**

The representative of the Department who is assigned to review the project will only communicate the outcome of the review and the required corrections with the property owner and the individuals named on the Service Request Application submitted for the project.

For the purposes of this document, a **Qualified Contractor** (QC) is defined as an individual who possesses a valid California License as General Engineering Contractor (Class A),

General Building Contractor (Class B), Sanitation System Contractor (Specialty Class C-42), or Plumbing Contractor (Specialty Class C-36) to perform all work related to installation of new and replaced OWTS in accordance with California Business and Professions Code and Title 16 of the California Code of Regulations.

### **III. The Information / Documents Required for OWTS Feasibility Reports:**

- A.** The location of the property, including a legal description (state how the property is identified).
- B.** The owner's name, address, and phone number.
- C.** The type of wastewater dispersal system that is being proposed shall be identified, i.e., leach bed, leach line, seepage pit, infiltrator, subsurface drip.
- D.** A general soil description and any features that may affect subsurface wastewater dispersal including any changes in geologic material from the area being tested for percolation. The soil profile excavation shall be down-logged by a California Professional Geologist or California Certified Engineering Geologist. This report is to be included with the percolation test data.

#### **Notes:**

- 1.** In areas with alluvial geology where previous excavations within the property have proven that the soil profile to be similar within 10 feet of the anticipated bottom of dispersal field or seepage pit, a statement signed by a QP attesting to the data that substantiates the findings may be accepted.  
The soil profile study shall be obtained from boring(s) made at the immediate vicinity of the dispersal system, evenly distanced from the proposed leach lines (or both ends of a single leach line) or seepage pits within a 35 feet radius and at the depth of at least 10 feet below the level where the bottom of dispersal field or seepage pit is anticipated to be. When unfavorable geological conditions, such as, bedrock formation, etc. exist, the soil profile study shall be obtained from borings made that overlie the dispersal leach lines and seepage pits.
  - 2.** The report submitted shall contain: the date of the testing; the information regarding the person conducting the test; the description of the procedures used; and all field data including the failures.
  - 3.** The applicant shall notify this Department of the date and the time of the percolation testing, at least one business day in advance for possible observation by the Department representative when authorized by the Program Director.
  - 4.** Where a seepage pit boring terminates at refusal, the geologist's report shall address the inadequate downward absorption and the material.
  - 5.** Where there is water left in the pit after percolation testing, the geologist's report shall address the issue of mounding effects of effluent.  
Mounding is defined as a possibility of upward movement of the effluent relative to the level of water observed last at the end of percolation test.
- E.** A plot plan shall be submitted, professionally drawn to scale, not less than 1"= 20' for parcels of one acre or less, and 1"= 40' for parcels over one acre, signed by a QP. For very large parcels, insertion of the specific wastewater dispersal areas may also be required. The typeface and size must remain legible (preferably size 12 font) when the plan is reduced to 11 x 17 inches. The plot plan may be on 8 ½ x 11 or 11 x 17 inch paper. Multiple pages may be used to clearly identify all relevant features of the site.

Photographs may be used to illustrate site conditions. The plot plan shall illustrate a northerly indicator and contain the following information:

1. The dimension of the lot including property lines, easements for roads, utilities, access to other lots, etc. (Submittal of easement documents with underlined dimensions that match the dimensions shown on plans and the description of the purpose for each easement shall be required).

**Note:**

The Department will accept an easement that is completely dedicated for the purpose of installing OWTS when it has been recorded through Assessor's Office reflecting such use.

No part of a septic system shall be installed in an Ingress/egress easement on a private road intended to provide access to more than one property. When determined by the Department that through adequate tests conducted by QP throughout the property that no favorable area for installation of an OWTS is available on the property, the Department may authorize the installation of OWTS or part thereof in the easement. The applicant is required to obtain authorization, in writing, from the Fire Department for such installation. All easement holders shall agree to the installation of the system or portion of it in the easement and shall express their agreement through a Covenant and Agreement document, recorded through County Recorder's office.

An OWTS or any part of the system may be installed within a utility easement, once it's demonstrated to the Department that there is no other area on the property that may be feasible for the installation of the OWTS. However, there shall not be any overhead obstructions, such as, electrical lines and all horizontal and vertical setbacks from other utilities are maintained at all times, as required.

Authorization from Road and Grading Section of Building and Safety Division shall be required for the installation of septic systems in public road easements.

2. All slopes and topographical features, on or off the property, affecting "day-lighting" requirements shall be indicated. The location of all down banks and man-made cuts, unstable land forms, and underground utilities within 15 feet of the property shall be indicated. Typically, the day-lighting setback is measured from the point where wastewater is being discharged within the dispersal system. The day lighting setback for infiltrators is measured from the highest point on the interior arc of the infiltrator; for leach lines, it is measured from the bottom of the pipe where perforations are; and for seepage pits, it is measured from the inlet pipe or cap, whichever is higher.

The plans submitted for repair work to an existing OWTS shall also identify all contours and topographical features in the general area of the proposed system.

3. All vegetation and trees, especially oak trees and groundwater indicators such as willows, reeds, cattails, and other hydrophilic plants shall be shown with clear indication of their trunk. For oak trees, in addition to the location of the tree trunk, the drip-line of the tree shall be illustrated.

In unincorporated area of Los Angeles County, the setback clearance from an oak tree shall be in conformance with the Los Angeles County Oak Tree Ordinance, extending to a point that is at least 5 feet outside the drip line or 15 feet from the trunk of the tree, whichever is the greater.

**Recommendation:**

Best management practice would necessitate that wherever possible to maintain a minimum 10 foot setback clearance measured horizontally from the anticipated drip line of a tree at its maturity.

4. The proposed source of drinking water, indicating all existing, abandoned, or proposed wells and springs on the property, as well as off-property wells within 200 feet of the dispersal system.
5. All water mains, domestic onsite water service connections, sub drains, culverts, ripraps, French drains, key-ways, sub-drains on the subject property. Streams, drainage courses, watercourses and flood ways within 200 feet of the property lines. The site plan shall illustrate the flood zone/area.

**Notes:**

1. The installation of OWTS within flood plain/hazard area shall be avoided. Where suitable sites outside of flood hazard areas are not available, wastewater dispersal systems may be located in flood hazard areas on sites where the effects of inundation, under conditions of the design, are minimized. Applicants are advised to contact the local Building and Safety office to inquire whether additional requirements apply.  
Setback clearance for dispersal fields/pits shall be measured from closest edge of the floodway as determined by the Grading and Drainage Section of Building and Safety Division of the Los Angeles County Department of Public Works or Public Works Department/Division for the affected City.  
Due to site constraints of a property, located within a flood hazard area, the applicant shall be required to demonstrate that the proposed OWTS is designed with additional protective measures to prevent contamination of surface water or runoffs and minimize other risks associated with flooding, such as, infiltration into the dispersal system when the area is inundated by flood water or the potential of scour over and into the dispersal system that could adversely impact the absorption capability of the dispersal system and the overall function of the OWTS.
2. Any stream, drainage course, watercourse, floodway, or any waterway, identified as such through maps developed by FEMA, USGS, or DPW and Building and Safety Division, Grading and Drainage Section, OR when a waterway in its natural state, extending unbroken throughout the property and extending onto abutting property, within the required setback area, and it could potentially carry surface water, rain water or runoffs, whether tributary to a blue line stream or not, shall be treated as an active stream; therefore, all setback requirements intended for streams shall apply.
6. The location of all percolation tests, including failures, and their corresponding percolation rates; all borings to establish current groundwater/subsurface water levels; and test locations and borings shall be identified by numbers corresponding to the collected field data.

**Note:**

The dispersal area shall be configured to exclude all failed test holes. The distances between failed test hole and the proposed dispersal system

shall be at a minimum distance required by the respective setback for the dispersal system.

7. The location of rock outcroppings.
8. The location of all existing and proposed structures to include cesspools, tanks, out-buildings, car ports, swimming pools, driveways, paved areas, retaining walls, steps, decks, patios, cantilevered balconies, etc.  
Repairs and/or replacement work shall require an evaluation of the existing structure and the anticipated demand on the system in order to properly evaluate the size of the system
9. The location and components of the entire dispersal system to include:
  - a. The dimensions (length x width x depth) and location of the drain field, leach lines, or seepage pits; distances between trenches and pits;
  - b. Any extra gravel in excess of the required 12 inches below the distribution line(s) shall be indicated on the plot plan with a cross sectional view.
  - c. A cross-sectional view of the proposed installation of the entire dispersal field or seepage pit and its components, illustrating setbacks to preclude day-lighting. The minimum setback for day-lighting is 15 feet and it's considered the shortest horizontal distance measured from the nearest point that wastewater is being discharged (i.e., closest side wall of leach line or perimeter of seepage pit) to the edge of sloping grounds or to any underground structure.  
The required setbacks from the building are measured out from the vertical plane of the closest edge of the building exterior, clear to sky, to include any protrusions, such as, roof overhang, balcony, deck, etc. The day-lighting setback requirement shall similarly apply to underground structures. Therefore, the setback to any underground structure, where the structure is at or below the level of the point of discharge, is measured out from the vertical plane of the closest edge of the structure.
  - d. Dispersal systems composed of two or more leach lines or seepage pits shall be equipped with a distribution box located at the head of the drain field, leach lines, or multiple pits.

**Note:**

When the existing system is required to be exposed to establish the size and capacity of the septic tank and/or dispersal field or seepage pit, the Department staff shall visit the site and verify the dimensions with the QP/QC.

The QP/QC shall notify this Department of the date and the time of the uncovering of the OWTS, at least one business day in advance for possible observation by the Department representative.

10. The size and rating of the septic tank to be installed. Plans shall illustrate a cross-sectional view of the proposed installation. All joints between the septic tanks and its component shall be watertight and constructed of solid, durable materials to prevent excessive corrosion or decay. All septic tanks shall be installed in accordance with the manufacturers' recommendations. Any tank proposed to be installed within a driveway must be traffic-rated and equipped with traffic-rated risers with a minimum 24 inches in diameter to-grade for the manhole to each

chamber as well as tight fitted with traffic-rated covers. Septic tanks that are not traffic-rated shall not be installed within 5 feet of any road or driveway.

**Recommendation:**

Best management practice necessitates that any septic tank being installed to be equipped with risers with tight fitted covers extending to-grade for each manhole to each chamber.

11. The proposed approved area reserved for the 100% future expansion. Where access to the future absorption area is compromised by the construction of the dwelling or by any future use of the property, the 100% future expansion system shall be installed with the present system. The 100% future expansion system installed with the present system shall not be activated till when the life of the present system has come to its end.
  12. The locations and types of filler material such as rock or gravel to be used in the dispersal fields of leach lines and beds, or to line the outside of the seepage pit liners. The size of the filler material/rocks may vary in size from  $\frac{3}{4}$  to 2  $\frac{1}{2}$  inches. All filler materials/rocks shall be washed and be reasonably free of fines. The documentation from the supplier attesting that materials have been washed shall be available at the time of installation.
  13. All pertinent minimum horizontal set-back distances as required by Table K-1 of the Los Angeles County Code – Title 28 Plumbing Code.
- F. Information shall be provided regarding the method utilized to determine seasonal and historical high groundwater/subsurface water. This should include all available historical data that supports the findings concluded by the California Professional Geologist. The required groundwater/subsurface water statement provided by the California Professional Geologist shall be site-specific.
- G. A scaled floor plan shall be submitted for the building(s), reduced to 11" X 17", to illustrate all rooms along with a listing of all plumbing fixture units.
- H. A copy of an approved grading plan from the DPW, Building & Safety Division.
- I. A copy of the rough grading geology review sheet approval for hillside properties that is required by the DPW, Building & Safety Division shall be submitted prior to final approval. The proposed system shall conform to the rough grading approval by the County Geology Division.

**IV. Submittal of a Feasibility Report is Subject to the Following Requirements:**

- A. Prior to submittal of a feasibility report to the Department, the owner or QP shall:
1. Secure a legal address and plan check number from the applicable Building Authority. Submit construction plans for the proposed structures to the Los Angeles County Department of Public Works (DPW), Building & Safety Division, or the City Building Authority having jurisdiction.
  2. The feasibility report may be submitted with either Assessor's Identification Number (AIN/APN) or Utility Address for review purposes, but prior to approval of plans, a legal address for the site must be identified.
  3. A temporary utility address must be secured from DPW, Building & Safety Division for a conceptual approval for the Coastal Commission.

4. Submit a completed Service Request Application with the required fees. A Plan Check number from DPW, Building & Safety Division and the date that the plans are submitted shall be provided prior to processing the application.  
A plan check number is not required for Coastal Commission review.  
Any change to previous approval shall require a new referral to the Coastal Commission for any renewal of approval, unless an exemption letter has been obtained from the Coastal Commission.
- B. A feasibility report for the proposed OWTS shall be prepared according to the requirements indicated on page 2 of this document and submitted to the Department.
  - C. The Department shall review the records and the submitted documents for completeness and accuracy. The Department shall perform a site evaluation of the property to verify information presented in the feasibility report and to determine any concerns or obstacles that may prevent the proposed installation of an OWTS. The Department representative may request that the address of a job site be posted in the construction area for sites that are difficult to identify and locate.
  - D. The feasibility report shall be reviewed for final approval upon confirmation that the proposed installation of OWTS is in conformance with the requirements of the Los Angeles County Code and all other applicable laws.

#### V. Types of Dispersal Systems for Conventional OWTS:

- A. **Leach Bed:** This system consists of multiple perforated lines installed in an excavation with a minimum 36 inches in width, maximum of 100 linear feet in length and containing 12 to 36 inches of gravel beneath a system of perforated distribution pipes through which sewage effluent seeps into the surrounding soil. Perforated pipes shall neither be installed greater than 6 feet apart nor closer than 3 feet to the sidewall of the leach bed.

**Note:**

The area designated as a leach bed shall be at least 50% greater than the area required for leach lines.

- B. **Leach Line:** This system consists of one or more trenches. Each trench shall be 36 inches in width, maximum of 100 feet in length, and contain 12 to 36 inches of gravel beneath a single perforated distribution pipe through which sewage effluent seeps into the surrounding soil.

**Notes:**

1. The distance between trenches shall be a minimum of 4 feet, measured from closest sidewall to sidewall. The distance between trenches shall be increased by 2 feet for every 1 foot of gravel beneath the perforated lines.
2. Leach lines on hillside properties shall be installed level with the contour of the land.
3. When more than 1 leach line is required to be installed, they shall be equal in length and size. If extreme circumstances exist on a property or if the property's configuration precludes the installation of leach lines equal in length, the QP shall design the dispersal system (set the distribution box) in a manner to ensure that the anticipated volume of wastewater received by each leach line is proportionate to the length of each leach line. The designing QP shall provide information describing the design configuration to include a statement attesting that the design will not create inundation.

4. If due to extenuating circumstances installation of a straight leach line is not possible, the leach line may be allowed to be bent in an angle not exceeding 45 degree. The entire length of the bend may not be perforated. The non-perforated segment shall connect to the leach line with watertight joints and shall extend to a length that provides sufficient separation between the start of each dispersal area on both sides of the bend.

The length of the non-perforated segment shall be proportional to the depth of the gravel underneath the pipe. For example, if 3 feet of gravel underneath the pipe is used, the separation distance between the closest points on the dispersal areas where the perforated pipe ends and restarts shall not be less than 8 feet.

The length of the non-perforated segment of the leach line shall be excluded when determining the required length of the leach line.

**C. Infiltrative Chamber:** This system consists of semicircular chambers installed contiguously with open portion of the infiltrators on the ground. The infiltrative surface shall be sized using the area beneath the open portion of the chamber, not including area beneath the base of walls that is placed on the ground or outside the chamber, and using the design application rate similar to leach line. The infiltrative surface area may be reduced to seventy percent (70%) of the area that it would be required for a conventional leach field dispersal system. Use of gravel under the infiltrative chambers is optional; however, no additional sidewall credit will be given when gravel is used.

**D. Seepage Pit:** This system consists of one or more covered circular excavations, four to six feet in diameter with an interior lining of six inches of gravel and sewer brick or concrete liners allowing effluent to seep into the surrounding soil. The pit shall have a minimum effective sidewall of 10 feet below its sewer inlet pipe.

**E. Gravel-packed Pit:** This system consists of one or more circular excavations 4 to 6 feet in diameter packed/filled with washed and free of silt gravel of  $\frac{3}{4}$  to 2  $\frac{1}{2}$  inches in size up to the cap level, allowing effluent to seep into the surrounding soil. Similarly, the pit shall have a minimum effective sidewall of 10 feet below its sewer pipe inlet and shall have an excavated diameter of not less than four 4 feet.

The number of gravel packed pits required is determined by dividing the volume equaling to five times the capacity of the septic tank by the volume of water absorbed.

**Notes:**

1. All other requirements established for percolation testing of seepage pits shall apply.
2. An authorization from DPW, Building & Safety Division shall be obtained to ensure that the construction of gravel-packed seepage pits without utilizing brick or concrete liners are permitted.
3. The percolation testing shall be conducted in a 2 feet diameter test hole to establishing the feasibility prior to filling the pit with gravel.
4. The perforated pipe schedule 40 quality or equivalent with 8 to 12 inches in diameter shall be installed symmetrically within the pit prior to gravel packing the pit.

The preceding requirements pertain only to pits that are gravel packed after successful presoak and percolation tests have been accomplished while test holes were empty.

When due to safety concerns, instability of the land or other geological circumstances, QP determines that the test holes must be gravel packed prior to presoak and/or percolation tests in order to maintain the structural integrity of the hole, the QP/applicant

shall obtain authorization from the Department prior to gravel packing and performing the percolation test.

The gravel placed within the gravel packed test hole occupies 62.5% of the space within the test hole. Therefore, the required 10 feet of drop during presoak and percolation tests, the length of time that is required to achieve the required drop and the dispersal of water shall be calculated based on 3/8 ratio (37.5%) (i.e., for each foot of water drop, a credit of 0.375 feet of vertical drop will be given).

As an alternative technique to achieve the required water drop and the volume dispersed, the length of time that is required to achieve the required drop and the dispersal of water shall be reduced based on a 3/8 ratio. (i.e., the 10 feet drop during the presoak shall be achieved in a total of 9 hours instead of typical 24 hours and the required 10 feet drop after the percolation testing shall be achieved in 6 hours instead of typical 16 hours). The time allowed for the total required volume of water to be dispersed (a volume equal to or greater than 5 times the required tank capacity) may remain 8 hours.

The following requirements shall apply when presoak and percolation tests are performed in gravel-packed pits:

1. A successful presoak test has been achieved once water equal to the nominal volume of the hole has been metered in. The required 10 feet of drop shall be measured after 9 hours from the start of presoak test.
2. After a successful presoak test, a percolation test is considered successful and complete once at least water equal to 5 times the required tank capacity has been metered in, as further prescribed under, “**Procedures for Percolation Testing of Seepage Pit**”. The required 10 feet drop shall be measured after 6 hours from the end of the percolation test.
3. A perforated pipe with a minimum of 4 inches in diameter shall be installed vertically within the gravel-packed pit to facilitate the measurement of the water level during the percolation testing.
4. Gravel packing the test holes prior to the percolation testing shall be pre-authorized by this Department.
5. All other requirements established for percolation testing of seepage pits shall apply.

**Notes Applicable to All Dispersal System Types:**

- A. No excavation for a leach line, leach bed, or seepage pit shall extend to within 10 feet of groundwater. Additional effluent treatment including disinfection shall be required where the possibility of groundwater contamination exists due to a failed existing OWTS that has been previously approved, but does not meet the current requirements even though there are no concurrent improvements planned for the structure; or where on a property that the location of the existing OWTS that has been previously approved and surface or subsurface water conditions are such that the current setback requirements cannot be met, an additional effluent treatment to include disinfection shall be required.
- B. Regardless of the type of the dispersal system, a sufficient land area for an entirely new dispersal system (100% future expansion area), shall be provided. A dispersal system proposed for the 100% future expansion area may not be utilized until the present system has failed.
- C. When the present dispersal system has failed and the 100% future expansion area is to be utilized, a new 100% future expansion area shall be demonstrated through tests and be reserved for future use.

This requirement may be waived when the 100% future expansion area (dispersal system) that is being activated is equipped with supplemental treatment component; or where the property is one acre or greater in size and there is no bedrock formation; or where adequate land, similar in size and characteristics of the new dispersal system, will still be available after the new 100% future expansion area has been activated. The similarity in characteristics and favorable soil conditions shall be evident through the geology report for both present and 100% future expansion area.

In situations where adequate land is not available for another 100% future expansion, the 100% future expansion area (dispersal system) that is being installed shall be equipped with supplemental treatment component. Additionally, the effectiveness of the 100% future expansion area (dispersal system) shall be determined in accordance with similar procedures required for the present dispersal system. Moreover, the 100% future expansion area shall be capable of supporting the installation of a dispersal system of the same capability and characteristics as the present dispersal system.

- D. Where two or more leach lines are installed, an approved distribution box of sufficient size to receive lateral lines shall be installed at the head of the dispersal field. Similarly, two or more seepage pits shall be connected by means of a distribution box and not in a series. Distribution boxes shall be of an approved type with protective coating on interior surfaces, sufficient in size and designed to ensure equal flow. Distribution boxes shall be installed on a level concrete slab in natural or compacted soil. The inverts of all outlets shall be level and the invert of the inlet shall be at least one inch higher than the outlets.
- E. When an existing system has failed or does not meet current requirements and a new dispersal system is being installed, the existing septic tank shall be examined to ensure that the tank is in good repair and that the structural integrity has not been compromised.
- F. No pit privy or chemical toilet shall be accepted in lieu of properly designed and installed wastewater treatment system as mentioned in this document.

Chemical toilets with lavatories are authorized for temporary use and on a limited basis only, such as, at a permitted temporary event where water flush toilets are not available and cannot be constructed, at a construction site while construction is in progress. When chemical toilets are allowed, there shall be not less than one toilet for each multiples of 20 employees, or fractional part thereof, working at a construction site. For the purpose of this section, the term "construction site" shall mean the location on which actual construction of a building, structure, or facility, is in progress. When chemical toilets are allowed, one chemical toilet shall be required for each sex.

Chemical toilets are not approved to be used on a permanent basis at recreational areas, such as, beaches, lakes, organized camps, ski areas, stables, parks, or at any type of commercial/industrial/institutional establishments, etc.

**Recommendation:**

When a new dispersal system is required, best management practice would necessitate that the existing septic tank to be replaced with a new tank unless it is certain that public sewer will be available within two years. The best management practice would necessitate that when an expansion or "overflow" system is installed, a diverter valve to be installed. This will permit the existing system to dry out and function in the future as a relief to the "overflow" system.

## **VI. The Required Capacity for Septic Tank:**

The liquid capacity of all septic tanks shall conform to Tables K-2 and K-3 of the Los Angeles County Code, Title 28 – Plumbing Code. The capacity for a septic tank to be utilized for single or multiple family dwelling shall be determined based on the number of bedrooms and bedroom equivalents. The septic tank capacity for commercial establishments shall be determined based on fixture units count specified in Table K-2 and in accordance with the type of the establishment indicated in Table K-3, whichever provides a greater capacity. The design and construction of septic tanks shall conform to the requirements of Los Angeles County Code, Title 28 – Plumbing Section, Appendix K.

### **Notes:**

1. When determining the septic tank size for establishments that are composed of both single or multiple family dwelling units and commercial establishments, whether based on fixture unit count or bedroom and bedroom equivalent or combination of both, the largest resulting capacity shall be proposed.
2. OWTS that utilize pumps to move effluent from the septic tank to the dispersal field or seepage pit shall be equipped with one of the following: a visual, audible, or telemetric alarm that alerts the owner or service provider in the event of pump failure. All pump systems shall, at minimum, provide sufficient storage space in the pump chamber during a 24-hour power outage or pump failure and shall not allow an emergency overflow discharge. The capacity for the storage space for pump chamber shall be equal or greater than the sum of 300 gallons for first bedroom and 150 gallons for each additional bedrooms or bedroom equivalent rooms thereafter.

### **Recommendation:**

Septic tanks may be voluntarily oversized to improve the retention time. This should be clearly noted on the plans.

## **VII. Determination for Sizing an OWTS Based on Number of Bedrooms:**

All rooms with the exception of core rooms, as defined below, shall be considered bedroom or bedroom equivalent when determining a minimum capacity for a septic tank and sizing of a dispersal system. Application for construction of a new OWTS shall include a detailed floor plan drawn to scale and reduced to 11"x 17". Application for renovation, modification and expansion shall provide a detailed floor plan drawn to scale and reduced to 11"x 17" to include all existing rooms, plumbing fixtures and ancillary amenities.

### **Notes:**

1. A guest house with kitchen shall require a separate OWTS, large enough to accommodate the wastewater dispersal needs of the structure, independent of the main house. Sizing of OWTS for guesthouses with kitchen shall be computed based on the number of bedrooms and bedroom equivalents. The construction of a guesthouse with kitchen requires approval from the Department of Regional Planning, in addition to Building and Safety Division.
2. Detached structures/rooms with windows that are greater than 70 square feet in area and are not equipped with water lines or plumbing fixtures shall not be considered a bedroom or bedroom equivalent. Plans for construction shall clearly describe the purpose of such structure/room and indicate that the structure/room is not equipped with any plumbing fixtures.

## **Definition of Rooms:**

### **A. A Core Room is:**

A room in a single-family dwelling, recognized as a kitchen, living room, bathroom, utility room, dining room, or family room.

### **B. A Bedroom or Bedroom Equivalent is:**

A room designed to afford privacy, which does not lead into other rooms and is equipped with window(s) on its exterior walls; OR any room that is designed in such a manner that could function and potentially be used as a bedroom is considered a bedroom equivalent. Rooms identified as sleeping rooms, dens, studios, sewing rooms, game rooms, libraries, theater rooms, lofts, study rooms, offices, lounges, gyms, or any room with area of 70 square feet or greater in size shall be considered to be a bedroom or bedroom equivalent regardless whether the room is equipped with a door or not. The Department may grant exception if a room, by its design, cannot function as a bedroom.

### **C. A Family Room is:**

A room with at least one wall designed with an unobstructed opening of at least one-half the length or area of that wall. A family room is an informal, all-purpose room, usually located adjacent to a dining room or a kitchen and has doors leading to the outdoors. A maximum of one room can be identified as a family room for each single family dwelling.

### **D. A Utility Room is:**

A room containing clothes washing and drying appliances, utility/mop sink, space for storage or household supplies or other similar uses.

## **VIII. The Procedure for Percolation Testing:**

Sufficient number of percolation tests shall be conducted within the anticipated absorption area on all properties proposing to use OWTS. The entire percolation test procedures, including presoak shall be performed by a QP or qualified individual(s) that are supervised by the QP. The feasibility report shall clearly disclose the name and the profession of the person(s) who has performed the actual percolation testing procedure and the working relationship to the QP consultant who signed the report.

A California Registered Environmental Health Specialist who is not currently employed by the County of Los Angeles may perform related percolation tests.

## **Requirements Applicable to All Percolation Testing Types:**

- A.** Prior to performing percolation testing, the QP shall notify the Department of the date and time of all percolation tests to be performed, at least one business day in advance. The Department representative, when authorized by the Program Director, may visit the site to observe the testing procedure.
- B.** All QPs are strongly advised to consult with the Department, prior to performing the tests, to reach an agreement on the number of test holes required when it's anticipated that unusual circumstances may be encountered.
- C.** All percolation testing shall be performed within the immediate proximity of the actual anticipated dispersal area. All test holes, successful or failed, shall be clearly identified and labeled by durable monuments and tags so that the correct locations for dispersal

system (leach fields and seepage pits), as established through successful tests, can be easily identified during the construction.

- D. Where extreme geological conditions (e.g., bedrock formation or variation in water table, etc.) do not exist on a property and where uniform geology has been established by a Professional Geologist within a certain limited area on the property, the results of soil profile and percolation testing conducted in the area may be accepted as a representation for a dispersal field or seepage pit as long as the test holes are within a 35 feet radius of the proposed dispersal field or seepage pit.
- E. The distances between percolation test holes shall be the same as the setback required for the respective dispersal system when constructed. An exception may be allowed when due to extenuating circumstances test holes are closer that required. Each test hole shall be excavated and tested separately and the test hole that was tested shall be back-filled with the native soil and compacted to match with the compaction of the surrounding area prior to performing percolation test in the other test hole.
- F. Results from previously conducted percolation testing may be accepted for a project, if the proposed dispersal field or seepage pit is in the same location where tests were conducted and referenced in updated geology reports, except when significant changes in geology (e.g., flood, earthquake, significant groundwater recharge, etc.) have occurred or the Department's procedures for percolation test has changed after the date of the testing. Nonetheless, the plan approval of the entire construction proposal will expire one year from the date of the approval.
- G. When soil profile and percolation tests confirm alluvium geology and uniformity in geology has been established by the Professional Geologist, the required percolation testing for the 100% future expansion area may be waived.
- H. When a minimum of 2 inches of rainfall has been recorded within a 10 day period in the area where the percolation test is to be conducted, the start of percolation test, including the presoak shall be delayed a minimum of 3 weeks provided that there shall be no rainfalls during the 3-week period.

#### **Requirements Applicable to Percolation Testing for Leach Lines and Leach Beds:**

- A. The location for percolation testing on each line shall be strategically selected so as to provide a true representation of the entire leach line.
- B. The percolation test location shall be evenly spaced along the proposed present and 100% future expansion leach fields/lines in a manner that the test holes are not greater than 35 feet apart from each other. In no case shall there be fewer than 3 test holes in the present and 3 test holes in the 100% future expansion area. Requiring only 3 test holes represents the most optimal situation with a minimum size system and shall be authorized once uniformity in geology and absorption rates has been demonstrated. Larger dispersal fields, significant variation in absorption rates of percolation tests or less favorable geological conditions, such as, hard rock formation may require additional testing. It's recommended and may be necessary to excavate and test a sufficient number of percolation test holes in the proposed present, and future dispersal area to provide a complete and accurate representation of the absorption rate for the proposed dispersal area.
- C. During the percolation testing, the slowest percolation time observed among all tested holes shall be considered for determining the size of the proposed dispersal field.

## **Procedures for Percolation Testing of Leach Line and Leach Bed Dispersal Systems:**

- A.** Prior to performing percolation tests, a determination of the topography and plumbing hydraulic grade shall be made to appropriately determine the level of the dispersal field. All percolation tests shall be performed at the depth where the floor of the trenches are planned to be installed; so that the top of the cubic test holes shall be at the same level as the anticipated bottom of the trench.
- B.** An excavation shall be made at least 10 feet below the calculated depth of the trenches to provide a soil profile. Based on this information, the size of the system may be estimated and a determination made concerning a representative number of test holes.
- C.** Excavation for the test holes shall be made at the same depth as the proposed depth for the leach lines or leach bed. These test holes shall be at least 3 feet square and dug to the depth of not less than 2.5 feet. A 1 cubic foot hole (1' x 1' x 1') shall be provided at the bottom.
- D.** The 1 cubic foot holes shall be thoroughly presoaked 24 hours prior to percolation test. If water is found in any test holes after 24 hours of the presoak, the test holes are considered failed.
- E.** At or before 24 hours later, after a successful presoak, the test holes shall be completely filled with water again and allowed adequate time for the water level to drop. As the water level drops, each one inch of drop shall be recorded. The size of the dispersal field shall be determined by the amount of time required for the water to drop from the 5<sup>th</sup> to the 6<sup>th</sup> inch. The slowest acceptable elapsed time recorded on the property shall be used as the representative of the percolation rate for the area being tested and utilized in the Ryon Formula calculation.

$$\text{Ryon Formula: } A = \frac{T + 6.24}{29} \times \frac{C}{2}$$

Where A = Square feet of 3-foot wide trench dispersal area  
T = Time in minutes for the 6<sup>th</sup> inch of water to drain  
C = Proposed septic tank capacity

The resulting "A" must be divided by 3 to arrive at the length of a 3 foot wide trench with 1 foot of filter material below the perforated pipe provided for the dispersal system. For trenches proposing 2 feet of filter material below the pipe, "A" must be divided by 5 to arrive at the length of trench. For trenches proposing 3 feet of filter material below the pipe, "A" must be divided by 7.

### **Notes:**

- 1.** Gravel, stone, slag and similar materials used for filtration purposes shall be thoroughly washed to be free of fines.
- 2.** A single leach line shall not exceed 100 feet in length.
- 3.** Dispersal field shall be installed at the shallowest practicable depth to maximize elements critical to treatment of effluent in the soil. Elements critical to treatment of effluent include oxygen transfer, biological treatment, and evaporation and uptake of nutrients by vegetation (evapotranspiration).
- 4.** The total depth for a trench or bed, from ground level to the bottom of trench/bed, may not exceed 5 feet. The total depth of fill over leach lines to ground level, to include the gravel over the pipe, shall not exceed 24 inches. A depth of 12 to 18 inches of earthen cover is required over leach lines.

Deep trenches will provide effective wastewater dispersal, but not necessarily effective treatment of the wastewater, as there will be limited biological activities due to lack of oxygenation to support degradation of particles at greater depth.

Where due to day-lighting concerns on steep slopes or other extreme circumstances that may exist on a property, or when it necessitates due to poor soil conditions or an impervious layer that restricts the downward movement of the wastewater, the total depth for trench or bed may be allowed to be greater than 5 feet. The QP shall address the need for greater depth. When the total depth of fill and the depth from ground to the bottom of trenches are allowed to be greater than 5 feet, the entire column of the trench shall be back filled with gravel to the height where the earthen cover starts (12 to 18 inches below the ground level). Except for hillside properties where slope is 2:1 or steeper, the trench spaces above leach lines installed deeper than 5 feet will not be required to be backfilled with gravel.

Installation of dispersal fields (leach lines/beds and subsurface drip system) on slopes greater than 2:1 require approval from Geological and Materials Engineering Division (GMED) of DPW to ensure the installation will not cause instability in the area and the integrity of the slope will not be compromised.

5. On sloping grounds, to compensate for excessive line slope, leach lines and leach beds shall be stepped. The lines between each horizontal section shall be made with watertight joints and shall be designed so each horizontal dispersal trench or bed shall be utilized to the maximum capacity before the effluent shall pass to the next lower leach line or bed. A California Certified Engineering Geologist or a California Registered professional soil/Geotechnical Engineer shall address any possible potential for slope destabilization for any proposed hillside installation.
6. The dispersal field/area may not be covered or paved over and in no case may a vehicle be driven or placed over the dispersal field/area.

In situations where due to insufficient land or other extenuating circumstances, after it has been demonstrated to the satisfaction of the Department that there are no other alternative, the dispersal field/area may be allowed to be paved or driven over. However, the dispersal system shall be either equipped with supplemental treatment component, or be comprised of approved type infiltrators that are traffic rated or installed in that manner. The infiltrators shall be equipped with air vents with a minimum of 2 inches in diameter, one on each end, that are installed at the same proximity of each end. The vent openings shall be designed and installed in a manner to prevent moisture intrusion into infiltrators. The vents stacks shall extend to a height required by Building and Safety Division and secured to a permanently installed structure(s) to remain upright at all times and be protected from accidental damage or being covered. The Department may require carbon filters and blowers in conjunction with the air vents to enhance aeration.

The applicant is required to demonstrate, by means of adequate tests or otherwise, that the placement of the leach field in the driveway is the only viable and practical alternative. The location of the leach field in a driveway will be reviewed and approved on a case by case basis.

7. For the computation of leach bed size, the size of the bed shall be at least 50% greater than the required area for leach lines.
8. No excavation for a leach line or leach bed shall extend within 10 feet of the ground/subsurface water. When deemed feasible, the Department may permit ground to be built up by engineering/manufactured soil to a maximum of 3 feet in depth to provide sufficient vertical setback from the ground/subsurface water.

A pressurized distribution system is required where engineered soil is used to comply with the requirements for minimum vertical setback to ground/subsurface water (Refer to Soil Replacement section). The total absorption surface area required for the pressurized distribution system is determined in the manner as typical leach field. Additional effluent treatment including disinfection shall be required where the possibility of groundwater contamination exists.

- 9. Absorption rates that exceed 60 minutes for the water level to drop from the 5<sup>th</sup> to 6<sup>th</sup> inch do not meet the minimum requirements. Conversely, absorption rates of less than 5 minutes for the water to drop from the 5<sup>th</sup> to 6<sup>th</sup> inch shall not be accepted (Refer to Supplemental Treatment and Soil Replacement Requirements). OWTS with nonconforming absorption rates are required to either replace the native soil for absorption rate that exceed 60 Minutes per inch (MPI) or provide supplemental treatment of the sewage effluent prior to discharging into the receiving environment below ground surface for absorption rates of less than 5 MPI, as prescribed in Los Angeles County Code. (Refer to Supplemental Treatment and Soil Replacement Requirements)**

### **Requirements Applicable to Percolation Testing for Seepage pits:**

- A.** Results from the soil profile and percolation testing of different pits shall be accepted where the proposed seepage pits locations are within 35 feet of the actual soil profile and percolation testing area, where uniform geology has been established by a professional geologist, except where the proposed seepage pits are located in bedrock/hardpan/fractured rock formation.
- B.** The soil profile excavation hole shall be down-logged by a California Professional Geologist or California Certified Engineering Geologist unless reasonably deemed unsafe by the Geologist. When reasonably deemed unsafe by the geologist the required information shall be obtained through alternative methods advised by the geologist.
- C.** Every seepage pit located in bedrock, hardpan or fractured rock formation shall be tested to establish percolation rates for each individual pit.  
When test holes are required to be down-logged by Geological and Materials Engineering Division (GMED) of DPW, a copy of the field data shall be submitted to the Department.
- D.** Where proposed future expansion areas are in bedrock, hardpan or fractured rock formation, the future pits shall be tested to establish percolation rates for each individual pit. When proposing a cluster system comprised of numerous pits, the Professional Geologist may request for reconsideration of this requirement in light of sufficient data that might support an alternative scope of testing. Such data should be presented to the local office prior to commencing the test procedure, in order to reach an agreement as to the scope of testing that will be required.
- E.** When percolation testing holes cannot be filled to presoak or to conduct a conventional percolation test, the maximum absorption capacity allowed by the Los Angeles County Plumbing Code is considered to be exceeded. See note 4 below.

### **Procedures for Percolation Testing of Seepage Pit Dispersal Systems:**

A circular boring with a minimum 2 foot diameter and maximum 6 foot diameter shall be excavated for percolation testing purposes. Approval shall be obtained prior to construction of any pit having an excavated diameter greater than 6 feet. No pits shall be finished,

bricked or capped, without prior authorization by the Department. If a seepage pit is to be installed, it will be necessary to secure a permit for the installation of a test pit from DPW, Building & Safety Division.

- A. Presoak the test pit by filling it with clear water up to the proposed level of the inlet and allow it to permeate for 24 hours. The water drop after 24-hour presoak period shall equal or exceed 10 feet.
- B. At or before 24 hours later, after a successful presoak achieving a minimum 10 feet drop, the level of the water remaining in the pit is measured and considered the starting level for the percolation testing (Zero Level). Then, clear water under constant pressure is continuously metered into the test pit to the proposed cap level through a hose with a minimum 1½ inch diameter size, corresponding with the water meter being used. The water is allowed to drop for equal intervals of 30 to 60 minutes. The pit is re-filled with water to the cap level after each drop. Prior to each fill-up, of equal intervals, 30 to 60-minutes, the water level shall be measured and documented during the 8-hour period. At the end of the 8-hour testing, the pit is filled back up with water to the cap level for one final time.

A proof, confirming that the meter used for testing has been calibrated and certified within last 12 months prior to the date of testing shall be made available for verification purposes.

- C. Twenty-four (24) hours after the start of the 8 hour testing period, the water level in the test pit shall be measured to determine that there has been at least a 10 feet drop in the water. The total amount of water that percolated into the soil is then calculated by subtracting the quantity of water that did not percolate into the soil (the remaining water) from the total volume of water introduced into the test pit over the 8-hour period.

**Notes:**

- 1. The volume of water dispersed during the percolation test is computed based on the “effective height”, which is measured by subtracting the height (level) of the remaining water from the cap level. The geologist shall explain that the remaining water in the test pit after 24 hours from the start of the testing that will not adversely affect the dispersal of expected wastewater load and attest that mounding will not occur in future.

For the intent of this section, mounding is defined as any elevation in water level, above the level recorded after 24 hours of the start of the 8 hour percolation test.

- 2. The soil profile of the test pits shall be determined by a California Professional Geologist.
- 3. After completion of the percolation testing, where water is remaining at the bottom of the tested pit, the test pit shall be periodically monitored, within the first 24 hours, by a QP to observe the fluctuation in water level, lack of absorption or any infiltration of the subsurface water to rule out the possibility of mounding and to observe the remaining water has been partially dissipated or the excavated test hole is dry. Covering and securing of any open test excavations/borings/pits shall be in conformance with DPW, Building & Safety Division’s requirements.
- 4. When test holes cannot be filled in order to perform presoak or percolation tests, the test may be stopped once a volume of water equal or greater than the nominal volume of the hole has been metered in during the presoak test and a volume equal or greater that 5 times the required tank capacity has been metered in during the percolation test. The water metered in shall be under pressure and shall be metered in constantly through a hose with a minimum 1½ inch diameter size.

The feasibly report shall include the volume of water dispersed, the percolation rate and the required calculations. Test pits that cannot be filled to the cap level

are deemed to have an absorption rates exceeding 5.12 gallons per square foot of dispersal area per 24 hours, which do not meet the minimum requirements for conventional OWTS and shall require additional supplemental treatment.

- D. Calculation:** the percolation rate is calculated by adding the sum of the surface area of the bottom of the pit and sidewall area of the seepage pit that absorbed the water (total area of sidewall shall be calculated based on the “effective height” as described under number Note 1 above). Then the total number of gallons of water that the pit absorbed is divided by the sum of the areas; the result is the percolation rate.

**Notes:**

1. The number of pits required is determined by multiplying five times the capacity of the septic tank, and dividing this total by the volume of water absorbed.
2. When volumetric determinations are being made for testing in a two foot boring, credit will be given for 23.5 gallons per vertical foot that the water drops.
3. The volume of water absorbed by the 2 feet diameter test hole may be adjusted to a larger volume based on the ratio of the side wall surface areas:
  - a. A 4 feet diameter pit would be given credit for 2 times the volume percolated in a 2 feet diameter test hole.
  - b. A 5 feet diameter pit would be given credit for 2.5 times the volume percolated in a 2 feet diameter test hole.
  - c. A 6 feet diameter pit would be given credit for 3 times the volume percolated in a 2 feet diameter test hole.
4. Sidewall determinations are based on the boring diameter. Volumetric calculations are based on the liner diameter. The pilot hole for reaming out a pit is not calculated in the sizing of a pit and shall not extend to within 10 feet of the level of groundwater.
5. Seepage pits shall be constructed with 6 inches of washed gravel between the pit lining and the excavated sidewall and shall have an excavated diameter of not less than four 4 feet. The following chart indicates the comparison of different diameters of finished bricked/lined seepage pits and gallons of wastewater dispersed for each size.

<b>Seepage pit Diameter</b>	<b>Gallons per Vertical Foot</b>
4 Feet	53 Gallons
5 Feet	94 Gallons
6 Feet	147 Gallons

6. During the percolation test, when the volume of water dispersed collectively by more than one test pit, has been marginally greater than the required amount AND the absorption capability of one pit is significantly less that the other(s), the QP shall design the dispersal system (set the distribution box) in a manner to ensure that the volume of wastewater received by each pit is proportionate to its respective absorption capability. The designing QP shall provide information describing the design configuration and include a statement attesting that the design will not create inundation in either seepage pit.
7. **Absorption rates of less than 0.83 gallons per square foot of dispersal area per 24 hours shall not be accepted. Absorption rates that exceed 5.12 gallons per square foot of dispersal area per 24 hours do not meet the minimum requirements for conventional OWTS. OWTS with non-conforming absorption rates that exceed 5.12 gallons per squared are required to provide additional treatment (supplemental treatment component) of the sewage effluent prior to discharging the effluent into**

**receiving environment below ground surface (Refer to Supplemental Treatment and Soil Replacement Requirements).**

**IX. The Procedure for Determining Groundwater/Subsurface Water:**

A site evaluation, including subsurface exploration, shall be conducted by a California Professional Geologist or a California Certified Engineering Geologist to determine the depth of high subsurface water. The subsurface water test hole shall be excavated at the lowest possible elevation on each site at the immediate vicinity, of the actual dispersal field or seepage pit in order to determine the depth of the seasonal high subsurface water by a Professional Geologist. When unfavorable geological conditions, such as, bedrock formation, etc. exist, the subsurface/groundwater determination shall be obtained from test borings made that overlie the dispersal leach lines or any of the seepage pits proposed for dispersal system.

In areas with alluvial geology, the determination for subsurface/groundwater water may be obtained from a test hole that is within a 35 feet radius and it's evenly distanced from the proposed seepage pits or leach lines (or both ends of a single leach line). The determination of high subsurface water in areas with alluvial geology may be based on evaluations that were previously conducted on the same property, provided that the evaluations were conducted consistent with the current departmental guidelines. A new site evaluation may not be required if the depth to historical and seasonal high subsurface water level has been determined to be greater than 10 feet below the expected bottom of dispersal field or seepage pit, as specified above.

In areas where there are no high subsurface water concerns, the determination of high subsurface water may be founded upon supportive data obtained from previous subsurface explorations and evaluations conducted by Professional Geologists within the area.

The determination made by the professional geologist assigned to the project shall be supported by practical principles and fundamentals of geology, based on geological circumstances that exist at the site, such as, uniform geology, favorable hydrological configuration, consistent elevation and corresponding gradient.

**Notes:**

1. The groundwater/subsurface water test hole shall be down-logged by a professional geologist. The geologist shall take precautions to ensure safety. When it's deemed unsafe by the geologist, the required information shall be obtained through alternative methods advised by the geologist and acceptable to the Department.
2. The Geologist's log of subsurface exploration, in addition to the description of the earthen material in the excavation, shall also include any observation of mottling, oxidation, staining, crystal buildup, seeps, weeps or other features that may indicate the past or current presence of subsurface water. The report shall provide an interpretation of the observation and include a statement by the professional geologist substantiating whether the infiltration and presence of water, if any, is temporary.

Where observation of mottling, oxidation, staining, crystal buildup, seeps, weeps or other features that may indicate presence of subsurface water in the past or present or where subsurface water or moisture seepage (seeps, perched-water, etc.) is present within 10 feet below the expected bottom of the dispersal field or seepage pit, the QP shall, on a continuous basis, monitor and measure the presence of moisture and depth to high subsurface water through a subsurface water level observation well in a manner described below:

1. The consultant shall notify this Department, at least one business day in advance of the starting date of the monitoring so that the Department representative may visit the site anytime during the monitoring period.
2. High subsurface water determination exploration may be conducted year-round, except in areas where high groundwater/subsurface water has been previously identified and documented, the high groundwater/subsurface water determination exploration shall be conducted throughout the months of March through May.  
In areas that are known to have high groundwater/subsurface water, the Department representative may require additional monitoring to be conducted during a period lasting 30 days, starting immediately after 2 consecutive months when rainfall has reached 80% of the average annual rainfall for that year in that area.
3. The subsurface water level shall be monitored and measured on a regular basis, as described further, to determine the highest level that water has reached during the monitoring period and the final static water level. The subsurface water level shall be measured continuously in consistent intervals, ranging from once a day to twice a week during the entire monitoring period. The subsurface water measurements could be achieved by physical observation or by using a piezometer or any instrument intended for this purpose to record the subsurface water level. The piezometer or instrument may be a float device that mechanically or electrically records the highest water level.
3. The subsurface water level observation well shall be installed to a minimum depth of 10 feet below the anticipated depth of dispersal field or seepage pit, at the lowest possible elevation in the vicinity of a proposed wastewater dispersal system. An observation/monitoring well permit may be required.  
If an impermeable layer is present at a depth of less than 10 feet below the anticipated bottom of the dispersal field or seepage pit, the depth of the subsurface water level observation well shall extend beyond the depth of the impermeable layer to a depth of 10 feet below the anticipated bottom of the dispersal field or seepage pit, unless demonstrated in other manners acceptable to the Department.
4. All subsurface water test holes shall remain covered and secured for a minimum of 5 days and shall be monitored periodically by the QP, at least once on 2<sup>nd</sup> day and once at the end of 5<sup>th</sup> day to establish the static level of the water and when feasible by Environmental Health Specialist to observe the water level. The report generated by QP shall indicate the monitoring intervals, fluctuation of the water level and establish the final level where the water was stabilized. The covering and securing of any open test excavations/borings/pits shall be in conformance with DPW, Building & Safety Division's requirements.
5. A perforated pipe may be installed vertically within a gravel-packed observation well to facilitate the subsurface water level measurement.
6. Seeps and Perched-water are considered infiltration of water and are considered as evidence of high subsurface water being present. The QP shall monitor the excavated subsurface water test hole during the entire observation period as specified above to observe the presence of water, continuation of seeps, increase/decrease in the seepage and any fluctuation of the water level or if the water has been dissipated and the excavated test hole is completely dry. The professional geologist shall interpret the observation in the geology report and substantiate that the infiltration and presence of water does no longer exist, if so.
7. In areas that are subject to special circumstances such as snowmelt or irrigation, measurements to determine the annual high subsurface water level shall be conducted during the period when the special circumstances occur.
8. The exploratory groundwater hole may be proposed and utilized as a seepage pit if the hole is backfilled with native soil to 10 feet above the point where groundwater

was encountered and compacted to match the compaction of the surrounding area, then topped with one foot of neat cement or hydrated bentonite to ensure the required vertical setback from the groundwater.

## **X. Types of Non-Conventional Onsite Wastewater Treatment Systems (NOWTS):**

The following are examples of currently recognized NOWTS:

- A. Enhanced System** is a NOWTS that utilizes a supplemental treatment component to provide further treatment of the sewage effluent prior to discharging into a conventional dispersal system (e.g. drain field or seepage pit or a combination of both).
- B. Alternative System** is a NOWTS that utilizes a supplemental treatment component to provide further treatment of the sewage effluent prior to discharging into the dispersal system that utilizes pressurized drip tubing or other approved, sub-surface, non-conventional means for dispersal of wastewater effluent.

### **Note:**

**Prior to construction/installation of Alternative systems, it shall be demonstrated that the property is capable of supporting the installation of a Conventional OWTS. Each approval is site specific and requires plan review and approval by the Department for each individual site.**

**The installation of a NOWTS requires recordation of a Covenant and Agreement document through the County Recorder's Office. Moreover, a contract signed by both, the property owner and the certified Service Provider shall also be required for approval of NOWTS.**

NOWTS may only be used when approved by this Department. This approval is granted when competency of the system has been established based on extensive field and test data from conditions similar to those at the proposed site. The approval may require additional data collection during a demonstration phase\* to provide assurance that the system will produce continuous and long-range results at the proposed site. These results shall, at the minimum, be equivalent to levels specifically authorized by the Department. When demonstration systems are to be considered for installation, conditions for installation, maintenance and monitoring at each site shall first be established by the Department.

\* Demonstration Phase: The demonstration phase commences after the installation of NOWTS has been completed and the system is ready to be utilized by the occupant(s) of the house, after a Certificate of Occupancy has been issued, and extends to at least three months after the dwelling has been occupied for normal occupancy. During this period, a minimum of 3 consecutive monthly reports of all service calls and maintenance/repairs performed for the system shall be forwarded to Land Use Program. At or immediately after 3 months when the system has been used, samples of wastewater shall be taken (influent and effluent) by a certified representative of the manufacturer at the point where wastewater enters the supplemental treatment system (influent) and at the point of discharge in subsurface dispersal area (effluent).

The samples shall be taken to an approved laboratory by a certified lab technician in a manner to assure the integrity of the "Chain of Custody" procedures. The samples shall be analyzed for the levels of BOD/CBOD, TSS and Total Nitrogen and the result of the analysis shall be forwarded to Land Use Program for review and further assessment of the systems' capability. For the purposes of successful completion of the demonstration phase, it shall be demonstrated to the satisfaction of the Department that the supplemental

treatment system is capable of achieving or surpassing the effluent concentration levels averaged over the course of this evaluation period as described further.

Conventional OWTS with non-conforming absorption rates are required to either replace native soil where dispersal field does not overlie the ground waters protected for drinking water supplies where the percolation rate is slower than accepted, or provide supplemental treatment of the sewage effluent prior to discharging effluent into receiving environment below ground surface when the percolation rate exceeds the maximum allowable rate, as prescribed further:

**Supplemental Treatment:**

Where the percolation rate exceeds 5.12 gallons per square foot of dispersal area per 24 hours, the wastewater disposal system shall require additional supplemental treatment system that has been accepted by the Department. All supplemental treatment systems and components shall be installed and operated in accordance with their respective manufacturers' recommendation and are subject to review and acceptance by the Department. Acceptance of supplemental treatment systems by the Department is contingent upon a demonstration through extensive field and test data confirming that the supplemental treatment system will produce continuous and long-range results. This acceptance is subject to revocation when the supplemental treatment system is deemed inadequate by this Department.

The supplemental treatment technology being demonstrated shall meet or exceed secondary treatment standards and shall provide reduction in Biochemical or Carbonaceous Biochemical Oxygen Demand (BOD/CBOD), Total Suspended Solids (TSS) concentrations and Total Nitrogen as prescribed further. Supplemental treatment shall conform to the standards as defined by Los Angeles County Plumbing Code.

**Soil Replacement:**

Where undisturbed earth has insufficient depth to satisfy the minimum depth requirements or has poor absorption rate, manufactured/engineered soil with similar composition characteristics of loamy sand, certified by a California Registered Professional Soil/Geotechnical Engineer, may be added to the existing native soil so that the site conditions meet or exceed the specific depth and absorption rate requirements. The manufactured/engineered soil shall be re-composed and re-graded uniformly to provide homogenized absorption capability, equivalent to soil category of loamy sand. The qualified professional shall prove through sieve analysis and other quantifying tests that the desirable composition and compaction has been achieved. The compaction characteristics of the manufactured soil shall correspond as close as possible to the native soil of the surrounding area. Adequate number of percolation test shall be conducted in the area where manufactured soil has been provided to confirm that the percolation rates are in correlation with loamy sand soil category. The results of the percolation tests conducted in the area shall affirm uniformity in soil composition and compaction.

**Notes:**

1. Soil replacement shall not compromise the protection of the groundwater; a minimum of 10 feet of separation to groundwater from the bottom of the replaced soil column shall be allowed.
2. Percolation testing shall be done in those areas where engineered soil has been provided to ensure that new soil meets or exceeds the absorption rate requirements.
3. Engineered soil shall compensate for the lack of in-place earthen material at a ratio of 1.5 to 1; so that a 1 foot deficiency in the soil column depth would require 1.5

feet of engineered soil material. In no case shall engineered soil compensate for more than 2 feet of the minimum native soil depth requirements.

4. A pressurized distribution system is required where engineered soil is used to comply with the minimum earthen material depth or absorption rate requirements. Pressurized distribution means a type of dispersal system that employs a pump or automatic siphon and distribution piping with small diameter perforation (1/4 of an inch or less) or drip emitters that are installed at a depth of 12 inches below grade and a minimum of 12 inches apart or as recommended by the manufacturer and approved by the Department, to distribute effluent into soil with uniform distribution.

**Required Earthen Material Depth for a Conventional OWTS:**

Dispersal systems of all conventional OWTS shall have at least 3 feet of continuous natural, unsaturated undisturbed, earthen material, excluding non-porous materials, below the bottom of the dispersal field or seepage pit. Where the required earthen material depth cannot be met, supplemental treatment components shall be used to disperse the effluent. A minimum of 10 feet of separation to groundwater from the bottom of the dispersal field or seepage pit shall be maintained.

**Required Earthen Material Depths for Non-Conventional OWTS:**

Dispersal systems of all NOWTS utilizing supplemental treatment components shall have at all times during operation at least 2 feet of continuous natural unsaturated, undisturbed, earthen material, excluding non-porous materials, below the bottom of the dispersal field or seepage pit. Where these conditions cannot be met, the supplemental treatment components in conjunction with disinfection shall be used to disperse the effluent. A minimum of 10 feet of separation to groundwater from the bottom of the dispersal field or seepage pit shall be maintained.

**When deemed necessary, the Department may require supplemental treatment systems for any existing or new OWTS to ensure the protection of the underlying groundwater quality and public health.**

**The following requirements shall apply to Supplemental Treatment Units:**

1. Supplemental treatment components, other than that of disinfection, shall be designed to reduce the concentration of Biochemical Oxygen Demand (BOD)/ Carbonaceous Biochemical Oxygen Demand (CBOD), Total Suspended Solids (TSS) and Total Nitrogen (TN).
2. Supplemental treatment components, other than that of disinfection, shall produce an effluent concentration level that meets or surpasses the following requirements:
  - **BOD – 30 mg/L or CBOD5 – 25 mg/L**
  - **TSS – 30 mg/L**
  - **Total Nitrogen – At least a 50% average of influent TKN (Total Kjeldahl Nitrogen)**
  - **pH – 6.0 to 9.0 SU**
3. OWTS with supplemental treatment components shall be equipped with a visual or audible alarm as well as a telemetric alarm that notifies the owner and the service provider of the OWTS in the event of system malfunction. The telemetric monitoring system shall be capable of continuously assessing the operation of the supplemental treatment system.

4. OWTS with supplemental components shall be monitored by a service provider who is certified by the components' manufacturer and maintains the OWTS in accordance with the operation and maintenance manual for the components. The OWTS designed to meet the treatment performance requirements outlined above shall be inspected by the service provider as frequently as needed or more frequently as required by this department to ensure proper operation at all times. The reports of all maintenance records shall be forwarded to this Department on a quarterly basis or more frequently as deemed by the Department.
5. The laboratory analysis of the effluent from supplemental treatment components shall be conducted on an annual basis or more frequently as deemed by the Department. Effluent samples shall be taken by service provider under contract at the point of discharge; the sample shall then be taken to a laboratory certified for such analysis. The results of the laboratory analysis shall be forwarded to this Department. The lab report shall clearly specify the location/address where sample was taken from. The laboratory analysis must include Biological Oxygen Demand (BOD), Total Nitrogen (TN) (which consists of ammonia, organic nitrogen, nitrate, etc.), Total Suspended Solids (TSS), and pH. Bacteriological analysis is also required when the system is equipped with a disinfection device. The laboratory findings must meet the RWQCB standards.  
The data provided on monitoring or laboratory analysis reports are subject to verification by the Department.

**Note:**

The Department may exercise the option of requiring samples to be taken while the departmental representative is present and/or by an independent party authorized by the Department. Additional requirements to ensure proper "Chain of Custody" may apply.

## **XI. Reconsideration of the Requirements**

When exceptional circumstances are identified they may merit reconsideration in the scope of these Guidelines, please contact the Chief Environmental Health Specialist, Land Use Program, for further clarification and discussion.