

LAKE COUNTY RULES AND REGULATIONS (LCR) FOR ON-SITE SEWAGE DISPOSAL

TABLES, DIAGRAMS AND APPENDICES

All tables, diagrams and appendices referred to in the text of Division 1 may be found in numerical order following the text of these rules.

INDIVIDUAL ON-SITE SYSTEMS

LCR 1-1 DEFINITIONS

As used in these rules, unless otherwise specified:

- (1) "Absorption Facility" means a system of open-jointed or perforated piping, alternative distribution units or other seepage systems for receiving the flow from septic tanks or other treatment facilities and designed to distribute effluent for oxidation and absorption by the soil within the zone of aeration. (See Diagrams 1 through 5 and 12 through 15)
- (2) "Aerobic Sewage Treatment Facility" means a sewage treatment plant which incorporates a means of introducing air (oxygen) into the sewage so as to provide aerobic biochemical stabilization during a detention period.
- (3) "Agent" means the County of Lake, Environmental Health Division.
- (4) "Alteration" means expansion and/or change in location of any existing system, or any part thereof.
- (5) "Alternative System" means any Department approved on-site sewage disposal system used in lieu of the standard subsurface system.
- (6) "Authorized Representative" means the staff of the County of Lake Environmental Health Division.
- (7) "Authorization Notice" means a written document issued by the Agent which establishes that an existing on-site sewage disposal system appears adequate to serve the purpose for which a particular application is made.
- (8) "Automatic Siphon" means a hydraulic device designed to rapidly discharge the contents of a dosing tank between predetermined water or sewage levels.
- (9) "Bedroom" means any room within a dwelling that is deemed or accepted as such by the Department.
- (10) "Black Waste" means human body wastes including feces, urine, other extraneous substances of body origin and toilet paper.

- (11) "Building Sewer" means that part of the system or drainage piping which conveys sewage into a septic tank, cesspool or other treatment facility that begins five (5) feet outside the building or structure within which the sewage originates. (See Diagrams 1, 2, 3 and 14)
- (12) "Cesspool" means a receptacle which receives the discharge of sewage from a sanitary drainage system and which is so designed and constructed as to separate solids from liquids, digest organic matter during a period of detention and allow the liquids to flow into the soil within the zone of aeration through perforations in the .1 side wall of the receptacle.
- (13) "Chambered Leaching Trenches" means an absorption facility, installed below the ground surface, using a specifically designed and manufactured product, to distribute effluent for oxidation and absorption by the soil within the zone of aeration without the use of filter material.
- (14) "Chemical Toilet Facility" means a non-flushing, non-recirculating toilet facility wherein black wastes are deposited directly into a chamber containing a solution of water and chemical.
- (15) "Clayey Soil" means mineral soil that is over forty (40) percent clay that shrinks and develops wide cracks when dry and swells and shears when rewet, forming slickensides and wedge-shaped structures. Clayey soil is very hard or extremely hard when dry, very firm when moist, and very sticky and very plastic when wet.
- (16) "Claypan" means a dense, compact clay layer in the sub- soil. It has a much higher clay content than the overlying soil horizon from which it is separated by an abrupt boundary. Claypans are hard when dry and very sticky and very plastic when wet. They impede movement of water and air and growth of the plant roots.
- (17) "Commercial Facility" means any structure or building, or any portion thereof, other than a single family dwelling.
- (18) "Community System" means an on-site system which will serve more than one (1) lot or parcel or more than one (1) condominium or more than one (1) unit of a planned unit development.
- (19) "Completed Application" means one in which the application form is completed in full, is signed by the owner, is accompanied by all required exhibits and required fee, and is correct.
- (20) "Conditions Association with Saturation" means:
 - (a) Reddish brown or brown soil horizons with gray (chromas of 3 or less) and red or yellowish red mottles; or
 - (b) Solid gray horizons, or gray soil horizons with red, yellowish red, or brown mottles; or
 - (c) Dark colored highly organic soil horizons; or.

- (d) Soil profiles with concentrations of soluble salt or near the ground surface.
- (21) "Confining Layer" means a layer associated with an aquifer that, because of its low permeability, does not allow water to move through it perceptibly under head differences occurring in the groundwater system.
- (22) "Construction" means installation of a new system.
- (23) "Conventional Sand Filter" means a filter with two (2) feet of medium sand designed to filter and biologically treat septic tank or other treatment unit effluent from a pressure distribution system at an application rate not to exceed one and twenty-three hundredths (1.23) gallons per square foot sand surface area per day applied at a dose not to exceed twenty (20) percent of the projected daily sewage flow per cycle.
- (24) "Curtain Drain" means a groundwater interceptor introduced upslope from a disposal field to intercept and divert groundwater or surface water from the absorption facility. It may be required to be installed as a condition for approval of a system.
- (25) "Cut-Manmade (in excess of thirty (30) inches) means a land surface resulting from mechanical land shaping operations where one (1) or more layers that limit effective soil depth intersect the cut surface and where the modified slope is greater than fifty (50) percent, or any other man formed slopes in excess of fifty (50) percent which do not intersect one or more layers that limit effective soil depth.
- (26) "Department" means County of Lake Environmental Health.
- (27) "Director" means the Director of the County of Lake Health Services, Environmental Health Division.
- (28) "Disposal Area" means the entire area used for underground dispersion of the liquid portion of sewage. It may consist of a seepage pit or of a disposal field or of a combination of the two. It may also consist of a cesspool, seepage bed or bottomless sand filter.
- (29) "Disposal Field" means a system of disposal trenches or a seepage trench or system of seepage trenches.
- (30) "Disposal Trench" means a ditch or trench with vertical sides and substantially flat bottom with a minimum of twelve (12) inches of clean, coarse filter material into which a single distribution pipe has been laid, the trench then being backfilled with a minimum of six (6) inches of soil. (See Diagram 10)
- (31) "Distribution Box" means a watertight structure which receives septic tank or other treatment facility effluent and distributes it concurrently into two (2) or more header pipes leading to the disposal area. (See Rule 3-30 and 3 - Diagram)

- (32) "Distribution Pipe or Lateral Pipe" means a perforated pipe used in the dispersion of septic tank or other treatment facility effluent into disposal trenches, seepage trenches, or seepage beds. (See Diagrams 1 through 5 and 9)
- (33) "Distribution Unit" means a distribution box, dosing tank, diversion valve or box, header pipe, or other means of transmitting septic tank or other treatment unit effluent from the effluent sewer to the distribution pipes. (See Diagrams 1 through 5 and 9)
- (34) "Diversion Valve" means a watertight structure which receives septic tank or other treatment facility effluent through one (1) inlet, distributes it to two (2) or more outlets, only one (1) of which is utilized at a given time. (See Diagram 5 and 9 and Rule 3-50)
- (35) "Dosing Tank" means a watertight receptacle placed after a septic tank or other treatment facility equipped with an automatic siphon or pump designed to discharge treated effluent at a rate not to exceed twenty (20) percent of the projected daily sewage flow.
- (36) "Dosing Septic Tank" means a unitized device performing functions of both a septic tank and a dosing tank.
- (37) "Dripline" means flexible small diameter tubing containing small diameter openings called emitters.
- (38) "Dwelling" means any structure or building or any portion thereof which is used, intended, or designed to be occupied for human living purposes including, but not limited to, houses, houseboats, boat houses, mobile homes, travel trailers, hotels, motels and apartments.
- (39) "Effective Seepage Area" means the sidewall area within a disposal trench or a seepage trench from the bottom of the trench to a level two (2) inches above the distribution pipes, or the sidewall area of any cesspool, seepage pit, unsealed earth pit, privy or gray water waste disposal sump seepage chamber; or the bottom area of a seepage bed. (See Diagrams 10, 12, 13, 14 and 15)
- (40) "Effective Soil Depth" means the depth of soil material above a layer that impedes movement of water, air and growth of plant roots. Layers that differ from overlying soil material enough to limit effective soil depth are hardpans, claypans, fragipans, compacted soil, bedrock, saprolite and clayey soil.
- (41) "Effluent Filter" means a device fitted into the outlet port or the outlet piping of a septic tank to passively remove suspended particles before the septic tank effluent is carried to the soil absorption system.
- (42) "Effluent Lift Pump" means a pump used to lift septic tank or other treatment facility effluent to a higher elevation. (See Rule 3-70)

- (43) "Effluent Sewer" means that part of the system of drainage piping that conveys treated sewage from a septic tank or other treatment facility into a distribution unit or an absorption facility. See Diagrams 1 through 4, 9 and 15 and Rule 3-80)
- (44) "Emitter" means small diameter openings in dripline that can dissipate pressure and allow a slow, controlled discharge (rated in gallons per hour).
- (45) "Escarpment" means any naturally occurring slope greater than fifty (50) percent which extends vertically six (6) feet or more as measured from toe to top, and which is characterized by a long cliff or steep slope which separates two (2) or more comparatively level or gently sloping surface, and may intercept one (1) or more layers that limit effective soil depth. (See Diagrams 16 and 17)
- (46) "Existing On-Site Sewage Disposal System" (existing system) means any installed on-site sewage disposal system constructed in conformance with the rules, laws and local ordinances in effect at the time of construction.
- (47) "Failing System" means any system that discharges untreated or incompletely treated sewage or septic tank effluent directly or indirectly onto the ground surface or into public waters.
- (48) "Family Member" means any one (1) or two (2) or more persons related by blood or marriage.
- (49) "Filter Material" means clean, washed gravel ranging from three quarter (3/4) to two and one-half (2 1/2) inches in size, or clean crushed rock ranging in size from one and one-half (1 1/2) to two and one-half (2 1/2) inches. (See Diagrams 7, 10, 11, 12, 13, 14, and 15)
- (50) "Five-Day Biochemical oxygen Demand" (5 day BOD) means the quantity of oxygen used in the biochemical oxidation of organic matter in five days at twenty (20) degrees centigrade under specified conditions and reported as milligrams per liter (mg/l).
- (51) "Fragipan" means a loamy subsurface horizon with high bulk density relative to the horizon above, seemingly cemented when dry, and weakly to moderately brittle when moist. Fragipans are mottled and low in organic matter. They impede movement of water, air and growth of plant roots.
- (52) "Government Unit" means the state or county, special district, municipality, or political subdivision, or any agency thereof.
- (53) "Grade" means the rate of fall or drop in inches per foot or percentage of fall of a pipe.
- (54) "Gray Water" means household sewage other than "black wastes" such as bath water, kitchen waste water and laundry wastes.

- (55) "Groundwater Interceptor" means natural or artificial groundwater or surface water drainage system including agricultural drain tile, cut banks and ditches. (See Diagram 11)
- (56) "Hardpan" means a hardened layer in soil caused by cementation of soil particles with either silica, calcium carbonate, magnesium carbonate, or iron and/or organic matter. The hardness does not change appreciably with changes in moisture content. Hardpans impede movement of water, air and growth of plant roots.
- (57) "Header Pipe" means a tight jointed part of the sewage drainage conduit which receives septic tank effluent from the distribution box or drop box, or effluent sewer and conveys it to the disposal area. (See Diagrams 1, 3, 4, 5, 9 and 15)
- (58) "Headwall" means a steep slope at the head or upper end of a land slump block or unstable landform. (See Diagrams 20 and 21)
- (59) "Health Department" means County of Lake Health Department.
- (60) "Health Officer" means the Health Officer for County of Lake.
- (61) "Holding Tank" means a watertight receptacle designed to receive and store sewage to facilitate disposal at another location.
- (62) "Individual System" means a system that is not a community system.
- (63) "Individual Water Supply" means a source of water and a distribution system, which serves a single residence or user for the purpose of supplying water for drinking, culinary, or household uses and which is not a public water supply system.
- (64) "Industrial Waste" means any liquid, gaseous, radioactive or solid waste substance or a combination thereof resulting from any process of industry, manufacturing, trade or business or from the development or recovery of any natural resources.
- (65) "Intermittent Stream" means any surface public water or groundwater interceptor that continuously flows water for a period greater than two months in any one year, but not continuously for that year.
- (66) "Invert" is the lowest portion of the internal cross section of a pipe or fitting.
- (67) "Low Flush Toilet" is a toilet that uses 1.6 gallons or less per flush.
- (68) "Medium Sand" means a mixture of sand with 100 percent passing the 3/8 inch sieve; 90 percent to 100 percent passing the No. 4 sieve; 62 percent to 100 percent passing the No. 10 sieve; 45 percent to 82 percent passing the No. 16 sieve; 25 percent to 55 percent passing the No. 30 sieve; 5 percent to 20 percent passing the No. 50 sieve; 10 percent or less passing the No. 60 sieve; and 4 percent or less passing the No. 100 sieve.

- (69) "Naturally occurring Soil" means soil formed in place due to natural weathering processes and being unaltered by filling, removal or other man-induced changes other than tillage.
- (70) "Nonwater-Carried Waste Disposal Facility" means any toilet facility, which has no direct water connection, including vault privies and portable toilets.
- (71) "Occupant" means any person living or sleeping in a dwelling.
- (72) "On-Site Sewage Disposal System" means any existing or proposed on-site sewage disposal system including, but not limited to a standard subsurface, alternative, or non-water carried sewage disposal system, installed or proposed to be installed on land of the owner of the system or on other land as to which the owner of the system has the legal right to install the system.
- (73) "Owner" means any person whom alone, or jointly, or severally with others:
- (a) Has legal title to any single lot, dwelling unit or commercial facility; or
 - (b) Has care, charge or control of any real property as agent, executor, executrix, administrator, administrators, trustee, commercial lessee or guardian of the estate of the holder of legal title; or
 - (c) Is the contract purchaser of real property.
- (74) "Permanent Groundwater Table" means the upper surface of a saturated zone that exists year-round. The thickness of the saturated zone and, as a result, the elevation of the permanent groundwater table may fluctuate as much as twenty (20) feet or more annually; but the saturated zone and associated permanent groundwater table will be present at some depth beneath land surface throughout the year.
- (75) "Permit" means the written document issued and signed by the Agent which authorizes the permittee to install a system or any part thereof, which may also require operation and maintenance of the system.
- (76) "Person" includes individuals, corporations, associations, firms, partnerships, joint stock companies, public and municipal corporations, political subdivisions, the state and any agencies thereof, and the federal government and any agencies thereof.
- (77) "Pollution" or "Water Pollution" means such alteration of the physical, chemical or biological properties of any waters of the County of Lake, including change in temperature, taste, color, turbidity, silt or odor of the waters, or such discharge of any liquid, gaseous, solid, radioactive or other substance into any waters of the County, which will or tends to, either by itself or in connection with any other substance, create a public nuisance or which will or tends to render such waters harmful, detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational or other legitimate beneficial uses or to livestock, wildlife, fish or other aquatic life or the habitat thereof.

- (78) "Portable Toilet Shelter" means any readily relocatable structure built to house a toilet facility.
- (79) "Pressure Distribution Lateral" means piping and fittings in pressure distribution systems which distribute septic tank or other treatment unit effluent to filter material through small diameter orifices. (See Diagrams 6, 7 and 10)
- (80) "Pressure Distribution Manifold" means piping and fittings in a pressure distribution system which supply effluent from pressure transport piping to pressure distribution laterals. (See Diagrams 6 and 7)
- (81) "Pressure Distribution System" means any system designed to uniformly distribute septic tank or other treatment unit effluent under pressure in an absorption facility or sand filter. (See Diagrams 6 and 7)
- (82) "Pressure Transport Piping" means piping which conveys septic tank or other treatment unit effluent to a pressure distribution manifold by means of a pump. (See Diagrams 6 and 7)
- (83) "Prior Approval" means a written approval for on-site sewage disposal, for a specific lot, issued prior to the effective date of these rules.
- (84) "Public Health Hazard" means a condition whereby there are sufficient types and amounts of biological, chemical or physical, including radiological, agents relating to water or sewage which are likely to cause human illness, disorders, or disability. These include, but are not limited to, pathogenic, viruses, bacteria, parasites, toxic chemicals and radioactive isotopes.
- (85) "Public Waters" means lakes, bays, ponds, impounding reservoirs, springs, wells, rivers, streams, creeks, marshes, inlets, canals and all other bodies of surface or underground waters, natural or artificial, public or private, which are wholly or partially within or bordering the County of Lake within its jurisdiction.
- (86) "Redundant Disposal Field System" means a system in which two complete disposal systems are installed, the disposal trenches of each system alternate with each other and only one system operates at a given time. (See Diagram 9)
- (87) "Repair" means installation of all portions of a system necessary to eliminate a public health hazard or pollution of public waters created by a failing system.
- (88) "Sand Filter System" means the combination of septic tank or other treatment unit, dosing system with effluent pump(s) and controls, or dosing siphons piping and fittings, sand filter, absorption facility or effluent reuse method used to treat sewage. (See Diagrams 6 and 7)
- (89) "Sanitary Drainage Systems" means that part of the system of drainage piping that conveys untreated sewage from a building or structure to a septic tank or other treatment facility, service lateral at the curb or in the street or alley, or other disposal terminal holding human or domestic sewage. The sanitary drainage

system consists of a building drain or building drain and building sewer. (See Diagrams 1, 2, 3 and 14)

- (90) "Saprolite" means weathered material underlying the soil that grades from soft, thoroughly decomposed rock to rock that has been weathered sufficiently so that it can be broken in the hands or cut with a knife. It does not include hard bedrock or hard fractured bedrock. It has rock structure instead of soil structure.
- (91) "Saturated Zone" means a three (3) dimensional layer, lens or other section of the subsurface in which all open spaces, including joints, fractures, interstitial voids, pores, etc. are filled with groundwater. The thickness and extent of a saturated zone may vary seasonally or periodically in response to changes in the rate or amount of groundwater recharge or discharge. (See Diagram 18)
- (92) "Scum" means a mass of sewage solids floating at the surface of sewage which is buoyed up by entrained gas, grease or other substances.
- (93) "Seepage Area" see "Effective Seepage Area."
- (94) "Seepage Bed" means an absorption system having disposal trenches wider than three (3) feet.
- (95) "Seepage Pit" is a type of absorption facility that is a covered pit with open jointed lining through which septic tank effluent may seep or leach into surrounding ground.
- (96) "Seepage Trench System" means a system with disposal trenches with more than six (6) inches of filter material below the distribution pipe.
- (97) "Self-Contained Nonwater-Carried Waste Disposal Facility" includes, but is not limited to, vault toilets, chemical toilets, combustion toilets and portable toilets in which all waste is contained in a watertight receptacle.
- (98) "Septic Tank" means a watertight receptacle which receives sewage from a sanitary drainage system, is designed to separate solids from liquids, digest organic matter during a period of detention, and allow the liquids to discharge to a second treatment unit or to a soil absorption facility. (See Rules 3-10 and 3-20)
- (99) "Septic Tank Effluent" means partially treated sewage which is discharged from a septic tank.
- (100) "Sewage" means water carried human/animal wastes, including kitchen, bath and laundry wastes from residences, buildings, industrial establishments or other places, together with such groundwater infiltration, surface waters, or industrial waste as may be present.
- (101) "Sewage Disposal Service" means:
 - (a) The installation of on-site sewage disposal systems (including the placement of portable toilets), or any part thereof; or

- (b) Grading, excavating and earth-moving work connected with the operations described in subsection (a) of this section, except streets, highways, dams, airports or other heavy construction projects and except earth-moving work performed under the supervision of a builder or contractor in connection with and at the time of the construction of a building or structure.
- (102) "Sewer Ordinance" shall be Article III of Chapter 9 of the Lake County Code.
- (103) "Shower Restricter" is a unit specifically designed to reduce the flow of water through a shower unit. Acceptability as a shower restricter shall be determined by the department.
- (104) "Slope" means the rate of fall or drop in feet per one hundred (100) feet of the ground surface. It is expressed as percent of grade.
- (105) "Solid Permeability Rating" refers to that quality of the soil that enables it to transmit water or air, as outlined in the United States Department of Agriculture Handbook, Number 18, entitled Soil Survey Manual.
- (106) "Soil Separate" means the size of soil particles according to Table 7.
- (107) "Soil Texture" means the amount of each soil separate in a soil mixture. Field methods for judging the texture of a soil consists of forming a cast of soil, both dry and moist, in the hand and pressing a ball of moist soil between thumb and finger.
- (a) The major textural classifications are defined as follows: (See Table 6)
 - (1) Sand: Individual grains can be seen and felt readily. Squeezed in the hand when dry, this soil will fall apart when the pressure is released. Squeezed when moist, it will form a cast that will hold its shape when the pressure is released, but will crumble when touched.
 - (2) Sandy loam: Consists largely of sand, but has enough silt and clay present to give it a small amount of stability. Individual sand grains can be readily seen and felt. Squeezed in the hand when dry, this soil will readily fall apart when the pressure is released, but will withstand careful handling without breaking. The stability of the moist cast differentiates this soil from sand.
 - (3) Loam: Consists of an even mixture of sand and of silt and a small amount of clay. It is easily crumbled when dry and has a slightly gritty yet fairly smooth feel. It is slightly plastic. Squeezed when moist, it forms a cast that will not only hold its shape when the pressure is released, but will withstand careful handling without breaking. The stability of the moist cast differentiates this soil from sand.
 - (4) Silt loam: Consists of a moderate amount of fine grades of sand, a small amount of clay and a large quantity of silt particles. Lumps in a

dry, undisturbed state appear quite cloddy, but they can be pulverized readily; the soil then feels soft and floury. When wet, silt loam runs through in puddles. Either dry or moist, casts can be handled freely without breaking. When a ball of moist soil is pressed between thumb and finger, it will not press out into a smooth, unbroken ribbon, but will have a broken appearance.

- (5) Clay loam: Consists of an even mixture of sand, silt and clay, which breaks into clods or lumps when dry. When a ball of moist soil is pressed between the thumb and finger, it will form a thin ribbon that will readily break, barely sustaining its own weight. The moist soil is plastic and will form a cast that will withstand considerable handling.
- (6) Silty clay loam: Consists of a moderate amount of clay, a large amount of silt and a small amount of sand. It breaks into moderately hard clods or lumps when dry. When moist, a thin ribbon of one-eighth (1/8) inch wire can be formed between thumb and finger that will sustain its weight and will withstand gentle movement.
- (7) Silty clay: Consists of even amounts of silt and clay and very small amounts of sand. It breaks into hard clods or lumps when dry. When moist, a thin ribbon of one-eighth (1/8) inch or less sized wire formed between thumb and finger will withstand considerable movement and deformation.
- (8) Clay: Consists of large amounts of clay and moderate to small amounts of sand. It breaks into very hard clods or lumps when dry. When moist, a thin, long ribbon of one-sixteenth (1/16) inch wire can be molded with ease. Fingerprints will show on the soil and a dull to bright polish is made on the soil by a shovel.

(108) "Soil With Rapid or Very Rapid Permeability" means:

- (a) Soil which contains thirty-five (35) percent or more of coarse fragments two (2) millimeters in diameter or larger by volume with interstitial soil of sandy loam texture or coarser as defined in subsection (76)(a) of this rule and as classified in Soil Textural Classification Chart, Table 6; or
- (b) Coarse textured soil (loamy sand or sand as defined in section (76) of this rule and as classified in Soil Textural Classification Chart, Table 6); or
- (c) Stone cobbles, gravel and rock fragments with too little soil to fill interstices larger than one (1) millimeter in diameter.

(109) "Standard Subsurface System" means an on-site sewage disposal system consisting of a septic tank, distribution unit and gravity-fed disposal field constructed using six (6) inches of filter material below the distribution pipe, and maintaining not less than eight (8) feet of undisturbed earth between disposal trenches.

- (110) "Subsurface Drip Disposal" means an efficient pressurized wastewater distribution system that can deliver small, precise doses of effluent to shallow subsurface disposal/refuse fields. SDS distribution piping is small diameter, flexible polyethylene tubing (dripline) with small in-line emitters (orifices that can discharge effluent at slow, controlled rates, usually specified in gallons per hour). Dripline can be trenched (by hand or with a trenching machine) into narrow, shallow trenches or plowed (with a vibratory plow or other insertion tool) directly into the soil and backfilled without gravel. Typical installation depth is between 6" and 10" inches.
- (111) "Subsurface Sewage Disposal" means the physical, chemical or bacteriological breakdown and aerobic treatment of sewage in the unsaturated zone of the soil above any temporarily perched groundwater body.
- (112) "Subsurface Disposal System" means a cesspool or the combination of a septic tank or other treatment unit and effluent sewer and absorption facility.
- (113) "Suspended Solids" means solids in sewage that can be removed readily by standard filtering procedures in a laboratory and reported as milligrams per liter (mg/l).
- (114) "System" – see "On-Site Sewage Disposal System."
- (115) "Temporary Groundwater Table" means the upper surface of a saturated zone that exists only on a seasonal or periodic basis. Like a permanent groundwater table, the elevation of a temporary groundwater table may fluctuate. However, a temporary groundwater table and associated saturated zone will dissipate (dry up) for a period of time each year.
- (116) "Test Pit" means an open pit dug to sufficient size and depth to permit thorough examination of the soil to evaluate its suitability for subsurface sewage disposal.
- (117) "Toilet Facility" means a fixture housed within a toilet room or shelter for the purpose of receiving black waste.
- (118) "Unstable Landforms" means areas showing evidence of mass downslope movement such as debris flow, landslides, rockfalls and hummocky hillslopes with undrained depressions upslope. Unstable landforms may exhibit slip surfaces roughly parallel to the hillside; landslide scars and curving debris ridges; fences, trees and telephone poles which appear tilted; or tree trunks which bend uniformly as they enter the ground. Active sand dunes are unstable landforms. (See Diagrams 19, 20 and 21)
- (119) "Zone of Aeration" means the unsaturated zone that occurs below the ground surface and above the point at which the upper limit of the water table exists. (See Diagram 18)

LCR 1-10 PURPOSE

These rules, adopted pursuant to Article III of Chapter 9 of the Lake County Code, prescribe the requirements for the construction, alteration, repair, operation and maintenance of on-site sewage disposal systems. Their purpose is to restore and maintain the quality of public waters and to protect the public health and general welfare of the people of the County of Lake.

LCR 1-20 GENERAL STANDARDS, PROHIBITIONS AND REQUIREMENTS

- (1) **Public Waters or Public Health Hazards.** If, in the judgment of the Agent, proposed operation of a system would cause pollution of public waters or create a public health hazard, system installation or use shall not be authorized.
- (2) **Approved Disposal Required.** All sewage shall be treated and disposed of in a manner approved by the Department.
- (3) **Discharge of Sewage Prohibited.** Discharge of untreated or partially treated sewage or septic tank effluent, directly or indirectly onto the ground surface or into public waters, constitutes a public health hazard and is prohibited.
- (4) **Discharge Prohibited.** No cooling water, air conditioning water, water softener brine, ground water, oil, hazardous materials or roof drainage shall be discharged into any system.
- (5) **Increased Flows Prohibited.** Except where specifically allowed within this Division, no person shall connect a dwelling or commercial facility to a system if the total projected sewage flow would be greater than that allowed under the original system construction permit.
- (6) **System Capacity.** Each system shall have adequate capacity to properly treat and dispose of the maximum projected daily sewage flow. The quantity of sewage shall be determined from Table 2 or other information the Agent determines to be valid that may show different flows.
- (7) **Material Standards.** All materials used in on-site systems shall comply with standards set forth in these rules.
- (8) **Encumbrances.** A permit to install a new system can be issued only if each site has received an approved site evaluation (LCR 1-30) and is free of encumbrances (i.e., easements, deed restrictions, etc.) which could prevent the installation or operation of the system from being in conformance with the rules of this Division.
- (9) **Future Connection to Sewerage System.** In areas where a district has formed to provide sewerage facilities placement of house plumbing to facilitate connection to the sewerage system shall be encouraged.
- (10) **Plumbing Fixtures Shall Be Connected.** All plumbing fixtures in dwellings and commercial facilities from which sewage is or may be discharged, shall be

connected to and shall discharge into an approved areawide public sanitary sewer system, or an approved on-site system which is not failing.

(11) Property Line Crossed.

- (a) A recorded utility easement and covenant against conflicting uses, on a form approved by the Department, is required whenever a system crosses a property line separating properties under different ownership. The easement must accommodate that part of the system, including setbacks, which lies beyond the property line and must allow entry to install, maintain and repair the system.
- (b) Whenever an on-site system is located on one lot or parcel and the facility it serves is on another lot or parcel under the same ownership, the owner shall cause said lot or parcels to be reverted or merged into one parcel or as stated in 17-20, 17-20A or 17-20B respectively of the Lake County Subdivision Ordinance.

(12) Replacement Area. Except as provided in specific rules, system replacement area shall be kept vacant, free of vehicular traffic and soil modification.

(13) Operation and Maintenance. All systems shall be operated and maintained so as not to create a public health hazard or cause water pollution.

LCR 1-30 SITE EVALUATION PROCEDURES

- (1) A site evaluation is the first step in the process of obtaining a construction permit for an on-site system. Any person who wishes to install a new on-site sewage system shall first obtain a site evaluation report.
- (2) Applications for site evaluations shall be made to the Agent on forms approved by the Department. Each application must be completed in full, signed by the owner or his legally authorized representative and be accompanied by all required exhibits and appropriate fee. Incomplete applications shall be returned to the applicant to be completed. Unless other procedures approved by the Department are provided, applicants shall provide at least two (2) test pits with dimensions of at least two (2) feet wide by four (4) feet long by five (5) feet deep, and located approximately seventy five (75) feet apart and within the area of the proposed system.
- (3) Site Evaluation Report:
 - (a) The Agent shall evaluate the site of the proposed system, shall consider all system options and shall provide a report of such evaluation.
 - (b) The report shall contain, at a minimum, a site diagram and observations of the following
 - (1) Parcel size;
 - (2) Slope--in disposal field and replacement areas (percent and direction);

- (3) Surface streams--springs--other bodies of water;
 - (4) Existing and proposed wells;
 - (5) Escarpments;
 - (6) Cuts and fills;
 - (7) Unstable landforms;
 - (8) Soil profiles--determined from test pits provided by applicant;
 - (9) Water table levels (as indicated by conditions associated with saturation);
 - (10) Usable area for initial and replacement disposal areas;
 - (11) Encumbrances (applicant list on application);
 - (12) Sewerage availability;
 - (13) Other observations as appropriate.
- (c) Site evaluation reports for subdivisions or other land divisions shall be based upon an evaluation of each lot.
 - (d) Specific conditions or limitations imposed on an approved site shall be listed on the evaluation report.
 - (e) An approved site evaluation report assures that the property owner will receive a permit to construct a system on that property provided procedures and conditions for permit issuance found in Rule LCR 1-50 are met.
- (4) Approval or Denial:
- (a) In order to obtain an approved site evaluation report, the following conditions shall be met:
 - (1) All criteria for approval as outlined in rules LCR 1-130 and/or LCR 1-140 through LCR 280 shall be met.
 - (2) Each lot or parcel must have sufficient usable area available to accommodate an initial and replacement system. The usable area may be located outside the lot or parcel if secured pursuant to LCR 1-20(11). Sites may be approved where the initial and replacement systems would be of different types, e.g., a standard subsurface system as the initial system and an alternative system as the replacement system. The site evaluation report shall indicate the type of the initial and type of replacement system for which the site is approved.
 - (b) A site evaluation shall be denied where the conditions identified in subsection (4)(a) of this rule are not met.
 - (c) Technical rule changes shall not invalidate a favorable site evaluation, but may require use of a different kind of system.

LCR 1-40 EXISTING SYSTEM EVALUATION REPORT

- (1) Any person, upon application, may request an evaluation report on an existing on-site sewage disposal system. The application shall be on a form provided by the Department.
- (2) The application is complete only when the form, on its face, is completed in full, signed by the owner or the owner's legally authorized representative and is accompanied by all necessary exhibits, including the fee.
- (3) The Agent shall:
 - (a) Examine the records, if available, on the existing system; and
 - (b) Conduct a field evaluation of the existing system; and
 - (c) Issue a report of findings to the applicant.

LCR 1-50 PERMIT APPLICATION PROCEDURES-GENERAL REQUIREMENTS

- (1) No person shall cause or allow construction, alteration or repair of a system, or any part thereof, without first applying for and obtaining a permit.
- (2) Applications for permits shall be made on forms provided and approved by the Department.
- (3) An application is complete only when the form, on its face, is completed in full, is signed by the owner or the owner's legally authorized representative, is accompanied by all required exhibits (including but not limited to:
 - (a) a site evaluation report,
 - (b) the on-site wastewater treatment system design,
 - (c) a scaled site plan to show all treatment system components plus existing or proposed development,
 - (d) a cross-section plan to show any existing or proposed cuts or excavations greater than 30" in height)
 - (e) and fee.
- (4) The Agent shall receive the application form only when the form is complete as detailed in section (3) of this rule.
- (5) Upon receipt of a completed application the Agent shall deny the permit if:
 - (a) The application contains false information;
 - (b) The Agent wrongfully received the application;
 - (c) The proposed system would not comply with these rules;

- (d) The proposed system, if constructed, would violate a Department moratorium as described in LCR 1-300;
- (e) The proposed system location is encumbered as described in section LCR 1-20(8);
- (f) A sewerage system that can serve the proposed sewage flow is both legally and physically available, as described below:
 - (1) Physical Availability. A sewerage system shall be deemed physically available if its nearest connection point from the property to be served is:
 - (i) For a single family dwelling or other establishment with a maximum projected daily sewage flow of not more than four hundred fifty (450) gallons, within two hundred (200) feet;
 - (ii) For a proposed subdivision or group of two (2) to five (5) single family dwellings, or equivalent projected daily sewage flow, not further than two hundred (200) feet multiplied by the number of dwellings or dwelling equivalents.
 - (iii) For proposed subdivisions or other developments with more than five (5) single family dwellings, or equivalents, the Agent shall make a case-by-case determination of sewerage availability.
- (6) A permit shall be issued only to a person licensed as prescribed by state law or to the owner or easement holder of the land on which the system is to be installed.
- (7) No person shall construct, alter or repair a system, or any part thereof, unless he is licensed as prescribed by state law or he is the permittee.
- (8) The agent should either issue or deny the permit within twenty (20) days after receipt of the completed application.

EXCEPTION: If weather conditions or distance and unavailability of transportation prevent the Agent from acting to either issue or deny the permit within twenty (20) days, the applicant shall be notified in writing. The notification shall state the reason for delay. The Agent should either issue or deny the permit within sixty (60) days after the mailing date of such notification.

- (9) A permit issued pursuant to these rules shall be effective for one (1) year from the date of issuance for construction of the system. The construction-installation permit is not transferable. Once a system is installed pursuant to the permit, and a Certificate of Satisfactory Completion has been issued for the installation, conditions imposed as requirements for permit issuance shall continue in force as long as the system is in use.

- (10) Renewal of a permit may be granted to the original permittee if an application for permit renewal is filed prior to the original permit expiration date. Application for permit renewal shall conform to the requirements of section (2) and (4) of this rule. The permit shall be issued or denied consistent with sections (5), (6), (8) and (9) of this rule.
- (11) Permits issued pursuant to LCR 1-90 (1) may be renewed a maximum of two times.

LCR 1-60 PRE-COVER INSPECTIONS

- (1) When construction, alteration or repair of a system for which a permit has been issued is complete, except for backfill (cover), or as required by permit, the property owner or system installer shall notify the agent. The Agent shall inspect the installation to determine if it complies with the rules of the Department.
- (2) Pre-cover inspection details shall be recorded on a form approved by the Department.

LCR 1-70 CERTIFICATE OF SATISFACTORY COMPLETION

- (1) The Agent shall issue a Certificate of Satisfactory Completion if, upon inspection of installation, the system complies with the rules of the Department and the conditions of the permit.
- (2) If inspected installation does not comply with the rules of the Department and the conditions of the permit, the permittee shall be notified in writing or a Correction Notice shall be posted on the site. System deficiencies shall be explained and satisfactory completion required. The Agent may waive follow-up inspections. After satisfactory completion a Certificate shall be issued.
- (3) A system, once installed, shall be backfilled (covered) only when:
 - (a) The permittee is notified by the Agent that inspection has been waived; or
 - (b) The Agent has conducted the inspection and a Certificate of Satisfactory Completion has been issued.
- (4) Unless otherwise required by the Agent, the system installer shall backfill (cover) a system within ten (10) days after issuance of a Certificate of Satisfactory Completion for that system.
- (5) A Certificate of Satisfactory Completion shall be valid for a period of one (1) year for connection of the system to the facility for which it was constructed. After the one (1) year period, rules for Authorization Notices or Alteration Permits apply, as outlined in rules LCR 1-100 and LCR 1-110.

LCR 1-80 ABANDONMENT OF SYSTEMS

- (1) The owner shall abandon a system when:

- (a) A sewerage system becomes available and the building sewer has been connected thereto; or
 - (b) The source of sewage has been permanently eliminated; or
 - (c) The system has been operated in violation of Lake County Sewer ordinance, unless and until a repair permit and Certificate of Satisfactory Completion are subsequently issued therefore; or
 - (d) The system has been constructed, installed, altered or repaired without a required permit authorizing same, unless and until a permit is subsequently issued therefore; or
 - (e) The system has been operated or used without a required Certificate of Satisfactory Completion or Authorization Notice authorizing same, unless and until a Certificate of Satisfactory Completion or Authorization Notice is subsequently issued therefore.
- (2) Procedures for Abandonment:
- (a) The septic tank, cesspool or seepage pit shall be pumped by a licensed sewage disposal service to remove all sludge;
 - (b) The septic tank, cesspool or seepage pit shall be filled with reject sand, bar run gravel or other material approved by the Agent.
 - (c) The system building sewer shall be permanently capped.

LCR 1-90 PRIOR PERMITS OR APPROVALS

- (1) All permits and written site approvals issued to the effective date of these rules expire by rule on July 1, 1987, unless they met the following criteria and were converted to current department permits prior to that date.
 - (a) The site met existing county requirements at the time of the approval;
 - (b) The site was approved based on field inspection;
 - (c) The completed construction of the system was performed before July 1, 1987;
 - (d) The installation of the system will not cause a public health hazard.
- (2) Converted permits, if renewed, require system construction prior to July 1, 1989. Any prior approvals or prior permits failing to meet the two (2) deadline dates above are void.
- (3) All sites now proposed for on-site systems must meet appropriate requirements of these rules.

LCR 1-100 AUTHORIZATION TO USE EXISTING SYSTEMS

- (1) For the purpose of these rules, "Authorization Notice" means a written document issued by the Agent which established that an existing on-site sewage disposal system appears adequate to serve the purpose for which a particular application is made. Applications for Authorization Notices shall conform to Requirements of LCR 1-50 (2) and (4).
- (2) Authorization Notice Required. No person shall place into service, change the use of or increase the projected daily sewage flow into an existing on-site sewage disposal system without obtaining an Authorization Notice, Construction-Installation Permit or Alteration Permit as appropriate.

EXCEPTIONS: (a) An Authorization Notice is not required when there is a change in use (replacement of mobile homes or recreational vehicles with similar units) in mobile home parks or recreational vehicle facilities.

(b) An Authorization Notice is not required for placing into service a previously unused system for which a Certificate of Satisfactory Completion has been issued within one (1) year of the date such system is placed into service, providing the projected daily sewage flow does not exceed the design flow.

- (3) For placing into service or for changes in the use of an existing on-site sewage disposal system where no increase in sewage flow is projected, or where the design flow is not exceeded; an Authorization Notice valid for a period not to exceed one (1) year shall be issued if:
 - (a) The existing system is shown not to be failing; and
 - (b) All set backs between the existing system and the structure can be maintained; and
 - (c) In the opinion of the Agent the proposed use would not create a public health hazard on the ground surface or in surface public waters.
- (4) If the conditions of section (3) of this rule cannot be met, an Authorization Notice shall be withheld until such time as the necessary alterations and/or repairs to the system are made.
- (5) For changes in the use of a system where projected daily sewage flow would be increased by not more than three hundred (300) gallons beyond the design capacity or by not more than fifty (50) percent of the design capacity for the system, whichever is less, an Authorization Notice valid for a period not to exceed one (1) year shall be issued if:
 - (a) The existing system is shown not to be failing; and

- (b) All set-backs between the existing system and the structure can be maintained; and
 - (c) Sufficient area exists so that a complete replacement area meeting all requirements of these rules (except those portions relating to soil conditions and groundwater) is available; and
 - (d) In the opinion of the Agent the proposed increase would not create a public health hazard or water pollution.
- (6) Only one (1) Authorization Notice for an increase up to three hundred (300) gallons beyond the design capacity, or increased by not more than fifty (50) percent of the design capacity, whichever is less, will be allowed per system.
- (7) For changes in the use of a system where projected daily sewage flows would be increased by more than three hundred (300) gallons beyond the design capacity, or increased by more than fifty (50) percent of the design capacity of the system, whichever is less, a Construction-Installation Permit shall be obtained. Refer to rule LCR 1-110.

LCR 1-110 ALTERATION OF EXISTING ON-SITE SEWAGE DISPOSAL SYSTEMS

- (1) Permit Required:
- (a) No person shall alter or increase the design capacity of an existing on-site sewage disposal system without first obtaining an Alteration Permit or Construction-Installation Permit, as appropriate. Refer to rule LCR 1-50.
 - (b) No person shall increase the projected daily sewage flow into an existing on-site sewage disposal system by more than three hundred (300) gallons beyond the design capacity or increase by more than fifty (50) percent of the design capacity of the system, whichever is less, until a Construction-Installation Permit is obtained. Refer to rule LCR 1-50.
- (2) An application for an Alteration Permit shall be submitted to the Agent for proposed alterations to an existing system that do not increase the existing system's design capacity or do not exceed the existing system's design capacity by more than three hundred (300) gallons per day or fifty (50) percent, whichever is less.

The permit may be issued if:

- (a) The existing system is not failing; and
- (b) The setbacks in Table 1 can be met; and
- (c) In the opinion of the Agent, use of the on-site system would not create a public health hazard or water pollution.

- (3) An application for a Construction-Installation shall be submitted to the Agent when the existing system's design capacity is proposed to be exceeded by greater than three hundred (300) gallons per day or greater than fifty (50) percent, whichever is less.
The permit may be issued if:
 - (a) The existing system is not failing; and
 - (b) A favorable site evaluation report has been obtained from the Agent (refer to rule LCR 1-30); and
 - (c) The proposed installation will be in full compliance with these rules.
- (4) Certificate of Satisfactory Completion Required. Upon completion of installation of that part of a system for which an Alteration Permit or Construction-Installation Permit has been issued, the permittee shall obtain a Certificate of Satisfactory Completion from the Agent pursuant to rule LCR 1-70. An increase in the projected daily sewage flow into the system shall be prohibited until the Certificate is issued.

LCR 1-120 REPAIR OF EXISTING SYSTEMS

- (1) A failing system shall be immediately repaired.

EXCEPTION: If, in the opinion of the Agent, adverse soil conditions exist due to climatic conditions that would likely preclude a successful repair, the Agent may allow a delay in commencing repairs until the soil conditions improve. If this exception is exercised, a compliance date shall be specified in a Notice of violation to the system owner.
- (2) No person shall repair a failing system without first obtaining a Repair Permit. See LCR 1-50.
- (3) Certificate of Satisfactory Completion. Upon completion of installation of that part of a system for which a repair permit has been issued, the permittee shall obtain a Certificate of Satisfactory Completion from the Agent pursuant to LCR 1-70.
- (4) Criteria for Permit Issuance:
 - (a) If the site characteristics and standards described in LCR 1-130 can be met, then the repair installation shall conform with them.
 - (b) If site characteristics or standards described in LCR 1-130 cannot be met, the system shall be repaired utilizing the designated 100% replacement area.
 - (c) If the site characteristics or standards described in LCR 1-130 cannot be met or 100% expansion was not originally designated, the Agent may allow a reasonable repair in order to eliminate a public health hazard.

Reasonable repairs may require the installation of an alternative system in order to eliminate a public health hazard.

- (5) Failing systems, which cannot be repaired, shall be abandoned in accordance with LCR 1-80.

LCR 1-130 STANDARD SUBSURFACE SYSTEMS

- (1) For the purpose of these rules:
 - (a) "Standard Subsurface System" means an on-site sewage disposal system consisting of a septic tank, distribution unit and gravity-fed disposal field constructed in accordance with section (2) of this rule, using six (6) inches of filter material below the distribution pipe and maintaining not less than eight (8) feet of undisturbed earth between disposal trenches.
 - (b) "Effective Soil Depth" means the depth of soil material above a layer that impedes movement of water, air or growth of plant roots. Layers that differ from overlying soil material enough to limit effective soil depths are hardpans, claypans, fragipans, compacted soil, bedrock, saprolite and clayey soil.
 - (c) "Conditions Associated with Saturation" means:
 - (A) Reddish brown or brown soil horizons with gray (chromas of three or less) and red or yellowish red mottles; or
 - (B) Gray soil horizons, or gray soil horizons with red, yellowish red or brown mottles; or
 - (C) Dark colored highly organic soil horizons; or
 - (D) Soil profiles with concentrations of soluble salts at or near the ground surface.
- (2) Criteria for Standard Subsurface System Approval. In order to be approved for a standard subsurface system each site must meet all the following conditions:
 - (a) Effective soil depth shall extend thirty (30) inches or more from the ground surface as shown in Table 3. A minimum six (6) inch separation shall be maintained between the layer that limits effective soil depth and the bottom of the absorption facility.
 - (b) Water table levels shall be predicted using "conditions associated with saturation." If conditions associated with saturation do not occur in soil with rapid or very rapid permeability, predictions of the highest level of the water table shall be based on past recorded observations of the Agent. If such observations have not been made, or are inconclusive, the application shall be denied until observations can be made. Groundwater level determinations shall be made during the period of the year in which high groundwater normally occurs in that area.
 - (A) A water table shall be five (5) feet or more from the bottom of the absorption facility.

- (B) Curtain Drains. (Diagram 11) A curtain drain may be used to intercept and/or drain temporary water from a disposal area; however, it may be required to demonstrate that the site can be de-watered prior to issuing a Construction-Installation permit. Curtain drains may be used only on sites with adequate slope to permit proper drainage. Where required, curtain drains are an integral part of the system, but do not need to meet setback requirements to property lines, streams, lakes, ponds or other surface water bodies.
- (c) Soil with rapid or very rapid permeability shall be thirty six (36) inches or more below the ground surface. A minimum eighteen (18) inch separation shall be maintained between soil with rapid or very rapid permeability and the bottom of disposal trenches.

EXCEPTION: Disposal trenches may be placed into or at the interface of soil with rapid or very rapid permeability if any of the following conditions occur:

- 1- A confining layer occurs between the bottom of disposal trenches and the groundwater table. A minimum six (6) inch separation shall be maintained between the bottom of disposal trenches and the top of the confining layer; or
 - 2- A layer of non-gravelly (less than 15% gravel) soil with sandy loam texture or finer at least eighteen (18) inches thick occurs between the bottom of the disposal trenches and the groundwater table; or
 - 3- The projected daily sewage flow does not exceed a loading rate of four hundred fifty (450) gallons per acre per day.
- (d) Slopes shall not exceed thirty (30) percent and the slope/depth relationship set forth in Table 3.
- (e) The site has not been filled or the soil has not been modified in a way that would, in the opinion of the Agent, adversely affect functioning of the system.
- (f) The site shall not be on an unstable landform where operation of the system may be adversely affected.
- (g) The site of the initial and replacement absorption facility shall not be covered by asphalt or concrete or subject to vehicular traffic, livestock or other activity, which would adversely affect the soil.
- (h) The site of the initial and replacement absorption facility will not be subjected to excessive saturation due to, but not limited to, artificial drainage of ground surface, driveways, road and roof drains.
- (i) Setbacks in Table 1 can be met.

- (A) Stream setbacks. Setback from streams shall be measured from bank drop-off or mean yearly highwater mark, whichever provides the greatest separation distance.
- (B) For Lots Legally Created Prior to the Effective Date of these Rules. The Agent may approve installation of a standard or alternative system with a setback from surface public waters of less than one hundred (100) feet but not less than seventy five (75) feet, provided all other provisions of these rules can be met.
- (C) Water Lines and Sewer Lines Cross. Where water lines and building or effluent sewer lines cross, separation distances shall be as required in the County Plumbing Code.
- (D) Septic Tank Setbacks. The Agent shall encourage the placement of septic tanks and other treatment units as close as feasible to the minimum separation from the building foundation in order to minimize clogging of the building sewer.

(3) Criteria For System Sizing:

Disposal Fields. Disposal fields shall be designed and sized on the basis of information contained in:

- (a) Table 2 - Quantities of Sewage Flows; or other information determined by the Agent to be reliable.

EXCEPTIONS: Systems shall be sized on the basis of three hundred (300) gallons sewage flow per day plus seventy five (75) gallons per day for the third bedroom when:

- (1) Systems to serve single family dwellings on legal lots of record prior to the effective date of these rules, which are inadequate in size to accommodate a system sized for a daily sewage flow of four hundred fifty (450) gallons.

EXCEPTION: Lots requiring seepage trench systems may not reduce flow for the third bedroom.

- (b) Table 4 - Minimum Length of Disposal Trench Required, Soil Texture Versus Effective Soil Depth.
- (c) Table 5 - Minimum Length of Disposal Trench Required, Soil Texture Versus Depth to Temporary Water.

(4) Septic Tank:

- (a) For the purpose of these rules, "Septic Tank" means a watertight receptacle which receives sewage from a sanitary drainage system, is designed to separate solids from liquids, digest organic matter during a period of

detention and allow the liquids to discharge to a second treatment unit or to a soil absorption facility.

- (b) Liquid Capacity. The minimum liquid capacity of any septic tank installed shall be nine hundred forty (940) gallons.
 - (1) For projected daily sewage flows up to fifteen hundred (1,500) gallons, the septic tank shall have a liquid capacity equal to at least one and one-half (1 1/2) days sewage flow, or one thousand two hundred fifty (1,250) gallons, whichever is greater.
 - (2) For projected daily sewage flows greater than fifteen hundred (1,500) gallons, the septic tank shall have a liquid capacity equal to eleven hundred twenty five (1,125) gallons plus seventy five (75) percent of the projected daily sewage flow.
 - (3) Additional volume may be required by the agent for industrial or other special wastes.
 - (4) The quantity of daily sewage flow shall be estimated from Table 2. For structures not listed in Table 2, the Agent shall determine the projected daily sewage flow.
 - (5) Single Family Dwelling. Septic tanks to serve single family dwellings shall be sized on the number of bedrooms in the dwelling, as follows:
 - (i) 1 to 2 bedrooms940 gallons
 - (ii) 3 to 4 bedrooms 1200 gallons
 - (iii) more than 4 bedrooms.....1500 gallons
- (c) Installation Requirements:
 - (A) Septic tanks shall be installed on a level, stable base that will not settle.
 - (B) Septic tanks located in high groundwater areas shall be weighted or provided with an antibuouancy device to prevent flotation.
 - (C) All septic tanks installed with the manhole access deeper than eighteen (18) inches, or when used within a sand filter system, commercial system, or pressurized system shall be provided with a watertight riser extending to the ground surface or above. The riser shall have a minimum inside dimension equal to or greater than that of the tank manhole. The cover shall be securely fastened or weighted to prevent easy removal.
 - (D) Septic tanks shall be installed in a location that provides access for servicing and pumping.

(E) Where practicable, the sewage flow from any establishment shall be consolidated into one septic tank.

(F) Septic tanks shall be fitted with an approved effluent filter, installed in a manner providing access for service and maintenance.

(5) Distribution Techniques. Disposal trenches shall be constructed according to one of the following methods:

(a) Gravity Fed Equal Distribution (including Loop) System. (Diagrams 3 and 4)

The equal distribution system shall be used on slopes of four (4) percent or less and may be used on slopes over 4%. All trenches and piping shall be level within a tolerance of one (1) inch. All lateral piping shall be at the same elevation.

(b) Serial Distribution System. (Diagrams 1 and 2)

The serial distribution system may be used on slopes greater than four (4) percent. Each trench shall be level within a tolerance of one (1) inch.

(c) Pressurized Distribution System. See LCR 1-160 for pressurized distribution requirements.

(6) Distribution Boxes and Drop Boxes:

(a) Construction. Construction of distribution boxes and drop boxes shall comply with minimum standards in LCR 3-30 and LCR 3-40.

(b) Foundation. All distribution boxes and drop boxes shall be bedded on a stable, level base.

(7) Dosing Tanks:

(a) Construction of dosing tanks shall comply with the minimum standards in LCR 3-60.

(b) Each dosing tank shall be installed on a stable level base.

(c) Each dosing tank shall be provided with a watertight riser extending to the ground surface or above, with a minimum inside horizontal measurement equal to or greater than the tank access manhole. Provision shall be made for securely fastening the manhole cover.

(d) At the discretion of the Agent, a removable plug may be placed in the top of the septic tank's inlet sanitary tee, and a trench ten (10) feet long and otherwise constructed the same as a standard disposal trench may be used to provide air and gas exchange from the dosing tank, providing

- (A) Ground and surface water will not infiltrate through the gravel-filled trench into the dosing tank; and
 - (B) The invert elevation of the perforated pipe in the ten (10) foot trench is one (1) foot higher than the invert elevation of the septic tank's inlet sanitary tee; and
 - (C) The design flow for the system does not exceed six hundred (600) gallons per day.
- (e) Dosing tanks located in high groundwater areas shall be weighted or provided with an antibuoyancy device to prevent flotation.
 - (f) Dosing tanks located in high groundwater areas shall be coated with a waterproof compound to preclude permeation of waters.
- (8) Disposal Trenches. (Diagrams 1, 2, 3, 4, 5, 9 and 10):
- (a) Disposal trenches shall be constructed in accordance with the standards contained in the following table, unless otherwise allowed or required within a specific rule of this division:

(A)	Maximum length of trench.....	125 feet
(B)	Minimum bottom width of trench.....	24 inches
(C)	Minimum depth of trench, using:	
(i)	Equal or loop distribution	18 inches
(ii)	Serial distribution.....	24 inches
(iii)	Pressure distribution.....	18 inches
(D)	Maximum depth of trench.....	36 inches
(E)	Minimum distance of undisturbed earth between disposal trenches.....	8 feet
(F)	Minimum length of trench	10 feet
 - (b) The bottom of the disposal trench shall be level within a tolerance of plus or minus one (1) inch.
 - (c) When the sidewall within the disposal trench has been smeared or compacted, sidewalls shall be raked to insure permeability.
 - (d) Trenches shall not be constructed in a manner that would allow septic tank effluent to flow backwards from the distribution pipe to undermine the distribution unit.
 - (e) Filter material shall extend the full width and length of the disposal trench to a depth of not less than twelve (12) inches. There shall be at least six (6) inches of filter material under the distribution pipe and at least two (2) inches over the distribution pipe.
 - (f) Prior to backfilling the trench the filter material shall be covered with filter fabric, untreated building paper or other material approved by the Agent.

- (9) Trench Backfill:
 - (a) The installer shall assume responsibility for backfilling the system. Backfill shall be carefully placed to prevent damage to the system.
 - (b) A minimum of six (6) inches of backfill is required, except in serial systems where twelve (12) inches is required.
 - (c) Backfill shall be free of large stones, frozen clumps of earth, masonry, stumps or waste construction materials or other materials that could damage the system.
- (10) Header Pipe. (LCR 3-80) Header pipe shall be watertight, have a minimum diameter of three (3) inches and be bedded on undisturbed earth. Where distribution boxes or drop boxes are used header pipe shall be at least four (4) feet in length.
- (11) Distribution Pipe (LCR 3-80):
 - (a) Distribution pipes shall have a minimum diameter of three (3) inches.
 - (b) Each disposal trench shall have distribution piping that is centered in the trench and laid level within a tolerance of one (1) inch.
 - (c) Distribution piping, which complies with standards in LCR 3-80, must consist of perforated plastic.
 - (d) All perforated pipe shall be installed with centerline markings up.
 - (e) The terminal ends of distribution piping shall be provided with secure plugs or caps.
- (12) Effluent Sewer. (LCR 3-80) The effluent sewer shall extend at least five (5) feet beyond the septic tank before connecting to the distribution unit. It shall be installed with a minimum fall of four (4) inches per one hundred (100) feet, but in no instance shall there be less than two (2) inches of fall from one end of the pipe to the other. The effluent sewer shall be bedded on undisturbed earth or packed with backfill earth to prevent settling.
- (13) Large Systems. Systems with a projected daily sewage flow greater than two thousand five hundred (2,500) gallons shall be designed in accordance with requirements set forth in LCR 1-310.

LCR 1-135 CHAMBERED LEACHING TRENCHES

- (a) Disposal trenches using a chamber system, designed and manufactured for leach field use, may be installed at all locations where a standard disposal trench (containing filter media 12 inches deep) would otherwise be installed.

- (b) Disposal trenches shall be constructed in accordance with the current installation instructions of the manufacturer and shall comply with the disposal trench standards described in LAKE COOUNTY ON-SITE SEWAGE DISPOSAL RULES except for the following:
 - (1) LCR 1-130 (8) (e) and (f) and LCR 1-130 (11) are not applicable with chambered leaching trenches. Filter material and gravity fed distribution pipe is not used with the chambered leaching trench design.
 - (2) LCR 1-160 (4) (c) (C) and (D) are not applicable with chambered leaching trenches. Filter material is not required with the chambered leaching trench design.
 - (3) When the sidewall and trench bottoms within the disposal trench have been smeared or compacted, sidewalls and trench bottom shall be raked to ensure permeability.
 - (4) Notwithstanding LCR 1-130 (8) (a)(C) and (9)(b), the minimum depth of trench and minimum depth of backfill material shall be as specified by the manufacturer of the product.

LCR 1-140 ALTERNATIVE SYSTEMS, GENERAL

- (1) For the purpose of these rules "Alternative System" means any department approved on-site sewage disposal system used in lieu of the standard subsurface system.
- (2) Unless otherwise noted, all rules pertaining to the siting, construction and maintenance of standard subsurface systems shall apply to alternative systems.
- (3) Sites with redundant or seepage trench systems require installation of low flush toilets that utilize 1.6 gallons of water or less.
- (4) General Requirements:
 - (a) Periodic Inspection of Installed Systems. where required by rule of the Department, periodic inspections of installed alternative systems shall be performed by the Agent. An inspection fee may be charged.
 - (b) A report of each inspection shall be prepared by the Agent. The report shall list system deficiencies and correction requirements and timetables for corrections. A copy of the report shall be provided promptly to the system owner. Necessary follow-up inspections shall be scheduled.

1-150 CAPPING FILLS (Diagram 8)

- (1) For the purposes of this rule "Capping Fill" means a system where the disposal trench effective sidewall is installed a minimum of twelve (12) inches into natural soil below a soil cap of specified depth and texture.
- (2) Criteria for Approval. In order to be approved for a capping fill system each site must meet all the following conditions:
 - (a) Slope does not exceed twelve (12) percent.
 - (b) Where a water table is present, a minimum five (5) feet separation shall be maintained between the bottom of the disposal trench and the water table.
 - (c) Where material with rapid or very rapid permeability is present, a minimum eighteen (18) inches separation shall be maintained between the bottom of the disposal trench and soil with rapid and very rapid permeability.
 - (e) Effective soil depth is eighteen (18) inches or more below the natural soil surface.
 - (f) Soil texture from the ground surface to the layer that limits effective soil depth is no finer than silty clay loam.
 - (g) A minimum six (6) inch separation shall be maintained between the bottom of the disposal trench and the layer that limits effective soil depth.
 - (h) The system can be sized according to effective soil depth in Table 4.
- (3) Installation Requirements: The cap shall be constructed pursuant to permit requirements. Unless otherwise required by the Agent, construction sequence shall be as follows:
 - (a) The soil shall be examined and approved by the Agent prior to placement. The texture of the soil used for the cap shall be of the same textural class or of one textural class finer as the natural topsoil.
 - (b) Construction of capping fills shall occur between June 1 and October 1 unless otherwise allowed by the Agent. The upper eighteen (18) inches of natural soil must not be saturated or at a moisture content which causes loss of soil structure and porosity when worked.
 - (c) The disposal area and the burrow site shall be scarified to destroy the vegetative mat.
 - (d) The system shall be installed as specified in the construction permit. There shall be a minimum ten (10) feet of separation between the edge of the fill and the absorption facility.
 - (e) Fill shall be applied to the fill site and worked in so that the two (2) contact layers (native soil and fill) are mixed. Fill material shall be evenly graded to

a final depth of sixteen (16) inches over the gravel. Both initial cap and repair cap may be constructed at the same time.

- (f) The site shall be landscaped according to permit conditions and protected from livestock, automotive traffic or other activity that could damage the system.
- (4) Required Inspections. The following minimum inspections shall be performed for each capping fill installed:
- (a) Both the disposal area and borrow material must be inspected for scarification, soil texture and moisture content prior to cap construction.
 - (b) After cap is placed, to determine that there is good contact between fill material and native soil (no obvious contact zone visible), adequate depth of material and uniform distribution of fill material.
 - (c) Pre-cover inspection of the installed absorption facility.
 - (d) Final inspection after landscaping. A certificate of Satisfactory Completion may be issued at this point.

LCR 1-155 SUBSURFACE DRIP DISPOSAL SYSTEMS

- (1) "Subsurface Drip Disposal" means an efficient pressurized wastewater distribution system that can deliver small, precise doses of effluent to shallow subsurface disposal/reuse fields. SDS distribution piping is small diameter, flexible polyethylene tubing (dripline) with small in-line emitters (orifices that can discharge effluent at slow, controlled rates, usually specified in gallons per hour). Dripline can be trenched (by hand or with a trenching machine) into narrow, shallow trenches or plowed (with a vibratory plow or other insertion tool) directly into the soil and backfilled without gravel. Typical installation depth is between 6 and 10 inches.
- (2) Soil absorption systems using subsurface drip disposal may be permitted on any site meeting requirements for standard subsurface sewage disposal systems contained under LCR 1-130 or wherever pressurized distribution systems are allowed or required. Subsurface drip disposal systems require a highly treated effluent and are used with Aerobic Treatment Units or Packed Media Filters.
- (3) Subsurface drip disposal systems shall be designed, installed, operated and maintained in accordance with current design, installation and maintenance instructions of the manufacturer. All designs for subsurface drip disposal systems shall be completed and submitted by a California Registered Geologist, Registered Engineering Geologist, Registered Civil Engineer, Registered Environmental Health Specialist or professionally registered Soil Scientist with specific experience in on-site wastewater treatment and disposal systems.

- (4) All materials and components used in subsurface drip disposal systems must be designed and manufactured for wastewater use and must be approved by the agent.

LCR 1-160 PRESSURIZED DISTRIBUTION SYSTEMS

- (1) Pressurized distribution systems may be permitted on any site meeting requirements for installation of standard subsurface sewage disposal systems or other sites where this method of effluent distribution is desired.
- (2) Except as provided in LCR 1-130 (2)(c), pressurized distribution systems shall be used where depth to soil as defined in LCR 1-5 (77)(a) and (b) is less than thirty six (36) inches and the minimum separation distance between the bottom of the disposal trench and soil as defined in LCR 1-5 (77)(a) and (b) is less than eighteen (18) inches.
- (3) Pressurized distribution systems installed in soil as defined in LCR 1-5 (77)(a) and (b) in areas with permanent water tables shall not discharge more than four hundred fifty (450) gallons of effluent per one-half (1/2) acre per day except where:
 - (a) A detailed hydrogeological study discloses loading rates exceeding four hundred fifty (450) gallons per one-half (1/2) acre per day would not increase the nitrate-nitrogen concentration in the groundwater beneath the site, or at any down gradient location, above five (5) milligrams per liter.
- (4) Materials and Construction:
 - (a) General:
 - (A) All materials used in pressurized systems shall be structurally sound, durable and capable of withstanding normal stresses incidental to installation and operation.
 - (B) Nothing in these rules shall be construed to set aside applicable building, electrical or other codes. An electrical permit and inspection from the County Building Department or the municipality with jurisdiction is required for pump wiring installation.
 - (b) Pressurized Distribution Piping. Piping, valves and fittings for pressurized systems shall meet the following minimum requirements:
 - (A) All pressure transport, manifold, lateral piping and fittings shall meet or exceed the requirements for Class 160 PVC 1120 pressure pipe as identified in ASTM Specification D2241.
 - (B) Pressure transport piping shall be uniformly supported along the trench bottom, and at the discretion of the Agent, it shall be bedded in sand or other material approved by the Agent.

- (C) Orifices shall be located on top of the pipe.
 - (D) The ends of lateral piping shall be provided with threaded plugs or caps.
 - (E) All joints in the manifold, lateral piping and fittings shall be solvent welded, using the appropriate joint compound for the pipe material. Pressure transport piping may be solvent welded or rubber ring jointed.
 - (F) A gate valve shall be placed on the pressure transport pipe, in or near the dosing tank, when appropriate.
 - (G) A check valve shall be placed between the pump and the gate valve when appropriate.
- (c) Trench Construction:
- (A) Minimum trench length required shall be not less than that specified in Tables 4 and 5 or LCR 1-190 (4).
 - (B) Disposal trenches shall be constructed using the specifications for the standard disposal trench unless otherwise allowed by the Department on a case-by-case basis.
 - (C) Pressure lateral piping shall have not less than six (6) inches of filter material below and not less than four (4) inches of filter material above the piping.
 - (D) The sides of the trench and top of the filter material shall be lined or covered with filter fabric or other nondegradable material permeable to fluids that will not allow passage of soil particles coarser than very fine sand. In soils finer textured than loamy sand, lining the sidewall may not be required.
- (d) Seepage Bed Construction:
- (A) Seepage beds may only be used in soil as defined in LCR 1-5 (77)(a) and (b) as an alternative to the use of disposal trenches.
 - (B) The effective seepage area shall be based on the bottom area of the seepage bed. The minimum area shall be not less than two hundred (200) square feet per one hundred fifty (150) gallons projected daily sewage flow.
 - (C) Beds shall be installed not less than eighteen (18) inches (twelve [12] inches with a capping fill) nor deeper than thirty six (36) inches into the natural soil. The seepage bed bottom shall be level.

- (D) The top of the filter material shall be lined or covered with filter fabric or other nondegradable material that is permeable to fluids but will not allow passage of soil particles coarser than very fine sand.
 - (E) Pressurized distribution piping shall have not less than six (6) inches of filter material below and not less than four (4) inches of filter material above the piping.
 - (F) Pressurized distribution piping shall be horizontally spaced not more than four (4) feet apart and not more than two (2) feet away from the seepage bed sidewall. At least two (2) parallel pressurized distribution pipes shall be placed in the seepage bed.
 - (G) A minimum of ten (10) feet of undisturbed earth shall be maintained between seepage beds.
- (e) Notwithstanding other requirements of this rule, when the projected daily sewage flow is greater than two thousand five hundred (2,500) gallons the Department may approve other design criteria and standards it deems appropriate.
- (5) Hydraulic Design Criteria. Pressurized distribution systems shall be designed for appropriate head and capacity:
- (a) Head calculations shall include maximum static lift, pipe friction and orifice head requirements:
 - (A) Static lift where pumps are used shall be measured from the minimum dosing tank level to the level of the perforated distribution piping.
 - (B) Pipe friction shall be based upon a Hazen Williams coefficient of smoothness of 150. All pressure lateral piping and fittings shall have a minimum diameter of two (2) inches unless submitted plans and specifications show a smaller diameter pipe is adequate. The head loss across a lateral with multiple evenly spaced orifices may be considered equal to one-third (1/3) of the head loss that would result if the entrance flow were to pass through the length of the lateral.
 - (C) There shall be a minimum head of five (5) feet at the remotest orifice and no more than a fifteen (15) percent head variation between nearest and remotest orifice in an individual unit.
 - (b) The capacity of a pressurized distribution system refers to the rate of flow given in gallons per minute (GPM).
 - (A) Lateral piping shall have discharge orifices drilled a minimum diameter of one-eighth (1/8) inch and evenly spaced at a distance

not greater than twenty four (24) inches in coarse textured soils or greater than four (4) feet in finer textured soils.

- (B) The system shall be dosed at a rate not to exceed twenty (20) percent of the projected daily sewage flow.
- (C) The effect of back drainage of the total volume of effluent within the pressure distribution system shall be evaluated for its impact upon the dosing tank and system operation.

LCR 1-170 SEEPAGE TRENCH SYSTEMS

- (1) For the purpose of these rules "Seepage Trench System" means a system with disposal trenches with more than six (6) inches of filter material below the distribution pipe.
- (2) Criteria for Approval. Construction permits may be issued by the Agent for seepage trench systems on lots created prior to the effective date of these rules, for sites that meet all the following conditions:
 - (a) Groundwater degradation would not result.
 - 1- Groundwater levels for seepage trench systems must be determined by "conditions associated with saturation" and may require specialized testing.
 - (b) Lot or parcel is inadequate in size to accommodate standard subsurface system disposal trenches with a projected flow of four hundred fifty (450) gallons per day.
 - (c) All other requirements for standard subsurface systems can be met.
- (3) Design Criteria:
 - (a) The seepage trench may have a maximum depth of sixty (60) inches.
 - (b) The seepage trench system shall be sized according to the following formula:

Length of seepage trench = (4) (length of standard system disposal trench) divided by (3+2D), where D= depth of filter material below distribution pipe in feet. Maximum depth of filter material (D) shall be four (4) feet.

Trenches over three feet in depth require inspection prior to installation of the filter material. Trench inspection may be waived by the Agent.

- (c) The projected daily sewage flow shall be limited to a maximum of four hundred fifty (450) gallons.

LCR 1-180 REDUNDANT SYSTEMS (Diagram 9)

- (1) For the purpose of these rules "Redundant Disposal Field System" means a system in which two (2) complete disposal systems are installed, the disposal trenches of each system alternate with each other and only one system operates at any given time.
- (2) Criteria for Approval. Construction installation permits may be issued by the Agent for redundant disposal field systems to service single family dwellings on sites that meet all the following conditions:
 - (a) The lot or parcel was legally created prior to the effective date of these rules and
 - (b) There is insufficient area to accommodate a standard system.
- (3) Design Criteria:
 - (a) Each redundant disposal system shall contain two (2) complete disposal fields.
 - (b) Each disposal field shall be adequate in size to accommodate the projected daily sewage flow from the building.
 - (c) A minimum separation of ten (10) feet (twelve (12] feet on centers) shall be maintained between disposal trenches designed to operate simultaneously and a minimum separation of four (4) feet (six (6] feet on centers) shall be maintained between adjacent disposal trenches.

LCR 1-190 SAND FILTER SYSTEMS

- (1) For the purpose of these rules:
 - (a) "Conventional sand filter" means a filter with two (2) feet of medium sand designed to filter and biologically treat septic tank or other treatment unit effluent from a pressure distribution system at an application rate not to exceed one and twenty three hundredths (1.23) gallons per square foot sand surface area per day, applied at a dose not to exceed twenty (20) percent of the projected daily sewage flow.
 - (b) "Medium sand" means a mixture of sand with 100 percent passing the 3/8 inch sieve; 90 percent to 100 percent passing the No. 4 sieve; 62 percent to 100 percent passing the No. 10 sieve; 45 percent to 82 percent passing the No. 16 sieve; 25 percent to 55 percent passing the No. 30 sieve; 5 percent to 20 percent passing the No. 50 sieve; 10 percent or less passing the No. 60 sieve; and 4 percent or less passing the No. 100 sieve.

- (c) "Sand filter system" means the combination of septic tank or other treatment unit, a dosing system with effluent pump(s) and controls or dosing siphon, piping and fittings, sand filter, absorption facility or effluent reuse method used to treat sewage.
- (2) Inspection Requirements. Each sand filter system installed under this rule may be inspected annually. The Department may waive the annual evaluation fee during years when sand filter field evaluation is not performed.
 - (3) Sites approved for Sand Filter Systems. Sand Filters may be permitted on any site meeting requirements for standard subsurface sewage disposal systems contained under LCR 1-130, or where disposal trenches would be used, and all the following minimum site conditions can be met:
 - (a) The minimum separation distance from the bottom of the effective seepage area to the highest level attained by a permanent water table would be twenty-four (24) inches.

* NOTE: Shallow disposal trenches (placed not less than twelve (12) inches into the original soil profile) may be used with a capping fill to achieve separation distances from permanent groundwater. The fill shall be placed in accordance with provisions of LCR 1-150 (3) and LCR 1-150 (4)(a) through (c).
 - (b) Water table levels shall be determined in accordance with methods contained in subsection LCR 1-130 (1)(c). Sand filters installed in soils are defined in LCR 1-5 (77), in areas with water tables shall not discharge more than four hundred fifty (450) gallons of effluent per one-half (1/2) acre per day except where:
 - (A) A detailed hydrogeological study discloses loading rates exceeding four hundred fifty (450) gallons per one-half (1/2) acre per day would not increase nitrate-nitrogen concentration in the groundwater beneath the site, or any down gradient location, above five (5) milligrams per liter.
 - (B) Where slope is thirty (30) percent or less.
 - (4) The minimum length of disposal trench required for sand filter absorption facilities is indicated in the following table:

Soil Groups	Minimum Length (Linear Feet) Disposal Trench Per One Hundred Fifty (150) Gallons Projected Daily Sewage Flow
(a) Gravel, sand, loamy sand, sandy loam	35 feet
(b) Loam, silt loam, sandy clay loam, clay loam	45 feet
(c) Silty clay loam, silty clay, sandy clay, clay	50 feet

- (d) Saprolite or fractured bedrock 50 feet
- (e) High shrink-swell clays (Vertisols) 75 feet *

* NOTE: Disposal trenches in Vertisols shall contain twenty four (24) inches of filter material and twenty four (24) inches of soil backfill.

- (5) Sites with saprolite, fractured bedrock, gravel or soil textures of sand, loamy sand, or sandy loam in a continuous section at least two (2) feet thick in contact with and below the bottom of the sand filter, that meet all other requirements of section LCR 1-190 (3), may utilize either a conventional sand filter without a bottom or a sand filter in a trench that discharges biologically treated effluent directly into those materials. The application rate shall be based on the design sewage flow in LCR 1-200 and the basal area of the sand in either type of sand filter. A minimum twenty four (24) inch separation shall be maintained between a water table and the bottom of the sand filter.
- (6) Materials and Construction:
 - (a) All materials used in sand filter system construction shall be structurally sound, durable and capable of withstanding normal installation and operation stresses. Component parts subject to malfunction or excessive wear shall be readily accessible for repair and replacement.
 - (b) All filter containers shall be placed over a stable level base.
 - (c) In areas of temporary groundwater, at least twelve (12) inches of unsaturated soil shall be maintained between the bottom of the sand filter and bottom of the disposal trench.
 - (d) Piping and fittings for the sand filter distribution system shall be as required under pressure distribution systems.
 - (e) The specific requirements for septic tanks, dosing tanks, etc. are found in LCR 1-130.
 - (f) Minor changes in materials and construction may be allowed by the Department if the materials can be demonstrated to be equal to or better than the materials or construction techniques required herein.
- (7) Plans and specifications for sand filter systems shall be prepared by any competent registered professional with education or experience in the specific technical field involved.

LCR 1-195 AEROBIC SYSTEMS

- (1) For the purpose of these rules, "Aerobic Sewage Treatment Facility" means a sewage treatment plant which incorporates a means of introducing air (oxygen) into the sewage so as to provide aerobic biochemical stabilization during a detention period

- (2) Criteria for approval. Aerobic sewage treatment facilities may be approved for a construction-installation permit provided all of the following criteria are met:
- (a) Wastewater strength times the rate of flow does not exceed the maximum limits for the plant aeration capacity
 - (b) The aerobic sewage treatment facility (plant) is part of an approved Onsite Wastewater Treatment System (OWTS);
 - (c) The plant has been tested pursuant to the current version of the National Sanitation Foundation (NSF) Standard No. 40, relating to Individual Aerobic Wastewater Treatment Plants, and been found to conform with Class I or Class II and other requirements of the standard. In lieu of NSF testing, the Agent may accept testing by another agency which it considers being equivalent.
 - (d) Sites approved for aerobic sewage treatment facilities: aerobic sewage treatment facilities may be permitted on any site meeting requirements for standard subsurface sewage disposal systems contained under LCR 1-130, or where the minimum separation distance from the bottom of the effective seepage area to the highest level attained by a permanent water table would be twenty-four (24) inches.
 - (e) The property owner records in the county land title records, in a form approved by the Agent, a notice disclosing the existence of a specialized waste treatment and disposal system which requires specialized operation and maintenance.
 - (f) The owner shall retain a Record Plan and an Operation and Maintenance (O&M) Manual for any new or replaced Onsite Wastewater Treatment System (OWTS) which includes an Aerobic Treatment Unit.
 - (g) Upon the sale of the property, it is the obligation of the owner of the parcel to provide the buyer, through escrow or otherwise, a complete copy of the O&M Manual and record plan for the OWTS at the property including frequency of inspections and maintenance, sample of costs and effects to the buyer if maintenance is not completed.
- (3) The plant shall:
- (a) Have a visual and audible alarm, placed at a location acceptable to the Agent, which are activated upon an electrical or mechanical malfunction;
 - (b) Have a minimum rate hydraulic capacity equal to the daily sewage flow or five hundred (500) gallons per day, whichever is greater;
 - (c) Have aeration and settling compartments constructed of durable material not subject to excessive corrosion or decay;

- (d) Have provisions to prevent surging of flow through the aeration and settling compartment;
 - (e) Have access to each compartment for inspection and maintenance;
 - (f) Have provisions for convenient removal of solids;
 - (g) Be designed to prevent:
 - 1. short circuiting of flow;
 - 2. excessive accumulation of scum in the settling compartment;
 - 3. the passage of untreated sewage into the disposal field if the plant malfunctions.
- (4) Disposal Field Sizing. Standard disposal fields serving systems employing aerobic sewage treatment facilities shall be sized according to Tables 4 and 5 of these rules. Where a NSF Class I plant is installed, the linear footage of standard disposal trench installed shall be sized according to section LCR 1-190 (4) of these rules.
- (5) Operation and Maintenance:
- (a) The system owner shall be responsible for continuous operation and maintenance of the system and shall keep in full force and effect an inspection, maintenance service contract.
 - (b) The supplier of the plant shall be responsible for providing operation training to the owner;
 - (c) The supplier of the plant shall provide the owner with an operation and maintenance manual for the specific plant installed;
 - (d) The owner shall remove excess solids from the plant as determined by inspections during scheduled service visits or as recommended by the operation and maintenance manual
- (6) Operation and Maintenance-Requirements.
- (a) A Qualified Service Provider shall inspect each aerobic sewage treatment facility installed under this rule at least every six months or as recommended by the manufacturer.
 - (b) A Qualified Service Provider must have at least one of the following and be approved by the Agent:
 - 1. A manufacturer's certification for a specific aerobic treatment system is considered qualified for O&M service for that system.

2. A current formal certification for aerobic systems inspection, operation and maintenance through the National Association of Wastewater Transporters, Inc. (NAWT), or
3. Another certification of training which the Agent considers being equivalent.

LCR 1-200 CONVENTIONAL SAND FILTER DESIGN AND CONSTRUCTION

- (1) Sewage Flows:
 - (a) Design sewage flows for a system proposed to serve a commercial facility shall be limited to six hundred (600) gallons or less per day unless otherwise authorized in writing by the Department.
 - (b) Design sewage flows for a system proposed to serve a single family dwelling shall not be less than four hundred fifty (450) gallons per day.
- (2) Minimum Filter Area. Sand filters shall be sized based on an application rate of not more than one and twenty three hundredths (1.23) gallons septic tank effluent per square foot medium sand surface per day.
- (3) Sand filter container, piping, medium sand, gravel, gravel cover and soil crown material for a sand filter system discharging to disposal trenches shall meet minimum specifications indicated in these rules unless otherwise authorized by the Department.
- (4) Container Design and Construction:
 - (a) A reinforced concrete container consisting of floor and walls is required where water tightness is necessary to prevent groundwater from infiltrating into the filter.
 - (b) Container may be constructed of materials other than concrete where equivalent function, workmanship, water tightness and at least a twenty (20) year service life can be documented:
 - (A) Flexible membrane liner (FML) materials must have properties which are at least equivalent to thirty (30) mil unreinforced polyvinyl chloride (PVC) described in LCR 3-120. To be approved for filter installation, FML materials must:
 - (i) Have field repair instructions and materials which are provided to the purchaser with the liner; and
 - (ii) Have factory fabricated "boots" suitable for field bonding onto the liner to facilitate the passage of piping through the liner in a waterproof manner.

- (B) Where accepted for use, flexible sheet membrane liners shall be placed against relatively smooth, regular surfaces. Surfaces shall be free of sharp edges, corners, roots, nails, wire, splinters and other projections which might puncture, tear or cut the liner. Where a smooth, uniform surface cannot be assured in the field, filter system plans must include specifications for liner protection. A four (4) inch bed of clean sand or a non-degradable filter fabric acceptable to the Agent shall be used to provide liner protection.

LCR 1-210 OTHER MEDIA FILTER DESIGNS

- (1) Other media filters which vary in design from the conventional sand filter may be authorized by the Department if they can be demonstrated to produce comparable effluent quality.
- (2) Pre-Application Submittal. Prior to applying for a construction permit for a variation to the conventional sand filter, the Department must approve the design. To receive approval the applicant shall submit the following required information to the Department:
 - (a) Effluent quality data. Filter effluent quality samples shall be collected and analyzed by a testing agency acceptable to the Department using procedures identified in the latest edition of "Standard Methods for the Examination of Wastewater," published by the American Public Health Association, Inc. The duration of filter effluent testing shall be sufficient to ensure results are reliable and applicable to anticipated field operating conditions. The length of the evaluation period and number of data points shall be specified in the test report. The following parameters shall be addressed:
 - (A) BOD ;
 - (B) Suspended solids;
 - (C) Fecal coliform;
 - (D) Nitrate-Nitrogen
 - (b) A description of unique technical features and process advantages.
 - (c) Design criteria, loading rates, etc.
 - (d) Filter media characteristics.
 - (e) A description of operation and maintenance details and requirements.
 - (f) Any additional information specifically requested by the Department.

LCR 1-215 MEDIA FILTER SYSTEM OPERATION AND MAINTENANCE

- (1) Media Filter operation and maintenance tasks and requirements shall be as specified in the permit conditions and in the Operation and Maintenance Manual

supplied by the designer or installer. Where a conventional sand filter system or other media filter system with comparable operation and maintenance requirements is used, the system owner shall be responsible for the continuous operation and maintenance of the system.

- (2) No permit shall be issued for the installation of any other media filter which, in the judgment of the Department, would require operation and maintenance significantly greater than the conventional sand filter unless arrangements for system operation and maintenance, meeting the approval of the Director, have been made which will ensure adequate operation and maintenance of the system. Each permitted installation may be inspected by the Agent at least every twelve (12) months and checked for necessary corrective maintenance. The Agent may waive the annual system evaluation fee during years when the field evaluation work is not performed.

LCR 1-220 STEEP SLOPE SYSTEMS

- (1) General conditions for approval. An on-site system construction permit may be issued by the Agent for a steep slope system to serve a single family dwelling on slopes in excess of thirty (30) percent provided all the following requirements can be met:
 - (a) Slope does not exceed forty five (45) percent.
 - (b) The soil is well drained with no evidence of saturation.
 - (c) The soil has a minimum effective soil depth of sixty (60) inches.
- (2) Construction Requirements:
 - (a) Seepage trenches shall be installed at a minimum depth of thirty (30) inches and at a maximum depth of thirty six (36) inches below the natural soil surface on the downhill side of the trench and contain a minimum of eighteen (18) inches of filter material and twelve (12) inches of native soil backfill.
 - (b) The system shall be sized at a minimum of seventy five (75) linear feet per one hundred fifty (150) gallons projected daily sewage flow.
- (3) Lots created prior to the effective date of these rules may install seepage trench systems if all criteria under LCR 1-170 can be met.

LCR 1-230 TILE DEWATERING SYSTEMS

- (1) General conditions for approval. On-site system construction permits may be issued by the Agent for tile dewatering systems provided the following requirements can be met:

- (a) The site has a natural outlet that will allow a field tile installed on a proper grade around the proposed absorption facility to daylight above annual high water.
- (b) Soils must be silty clay loam or coarser textured and be drainable, with a minimum effective soil depth of at least seventy-two (72) inches.
- (c) Slope does not exceed three (3) percent.
- (d) All other requirements for the system, except depth to groundwater, can be met. However, after the field collection drainage tile is installed, the groundwater levels shall conform to the requirements of LCR 1-130 (2) or LCR 1-190 (3).

(2) Construction Requirements:

- (a) Field collection drainage tile shall be installed on a uniform grade of two tenths to four tenths (0.2 -0.4) feet of fall per one hundred (100) feet and a minimum of sixty six (66) inches deep.
- (b) Maximum drainage tile spacing shall be seventy (70) feet center to center.
- (c) Minimum horizontal separation distance between the drainage tile and absorption facility shall be twenty (20) feet.
- (d) Field collection drainage tile shall be rigid smooth wall perforated pipe with a minimum diameter of four (4) inches.
- (e) Field collection drainage tile shall be enveloped in clean filter material to within thirty (30) inches of the soil surface. Filter material shall be covered with filter fabric, untreated building paper or other nondegradable material approved by the Agent.
- (f) Outlet tile shall be rigid smooth wall solid PVC pipe with a minimum diameter of four (4) inches. The outlet end shall be protected by a short section of Schedule 80 PVC or ABS or metal pipe and a flap gate or grill to exclude rodents.
- (g) A silt trap with a thirty (30) inch minimum diameter shall be installed between the field collection drainage tile and the outlet pipe unless otherwise authorized by the Department. The bottom of the silt trap shall be a minimum twelve (12) inches below the invert of the drainage pipe outlet.
- (h) The discharge pipe and tile drainage system are integral parts of the system but do not need to meet setback requirements to property lines, streams, lakes, ponds or other surface water bodies.

- (i) The Agent has the discretion of requiring demonstration that a proposed tile dewatering site can be drained prior to issuing a Construction-Installation permit.
- (j) The absorption facility shall use equal or pressurized distribution.

**LCR 1-240 GRAY WATER WASTE DISPOSAL SUMPS
(Diagrams 12 and 13)**

- (1) For the purpose of these rules "gray water waste disposal sump" means a series of receptacles designed to receive hand-carried gray water for disposal into the soil.
- (2) Criteria for Approval:
 - (a) Hand-carried gray water may be disposed of in gray water waste disposal sumps which serve facilities such as recreation parks, camp sites, seasonal dwellings or construction sites where the projected daily gray water flow does not exceed ten (10) gallons per unit. Gray water or other sewage shall not be piped to the gray water waste disposal sump.
 - (b) Gray water sumps may be used only where soil conditions are approved for such use by the Agent.
- (3) In campgrounds or other public use areas, gray water waste disposal sumps shall be identified as "sink waste disposal" by placard or sign in letters not less than three (3) inches in height and in a color contrasting with the background.

LCR 1-250 NONWATER-CARRIED SYSTEMS

- (1) For the purpose of these rules:
 - (a) "Nonwater-carried waste disposal facility" means any toilet facility which has no direct water connection, including vault privies and portable toilets.
 - (b) "Privy" means a structure used for disposal of human waste without the aid of water. It consists of a shelter built above a vault in the ground into which human waste falls.
 - (c) "Portable toilet" means any self-contained chemical toilet facility that is housed within a portable toilet shelter.
- (2) No person shall cause or allow the installation or use of a nonwater-carried waste disposal facility without prior written approval of the Agent.

EXCEPTIONS: Sewage Disposal Service business licensed pursuant to Article II of Chapter 11 of the Lake County Code may install portable toilets without written approval of the Agent, providing all other requirements of this rule are met.

- (3) Non-water carried waste disposal facilities may be approved for temporary or limited use areas such as recreation parks, camp sites, seasonal dwellings, farm labor camps or construction sites, provided all liquid wastes can be handled in a manner to prevent a public health hazard and to protect public waters, provided further that the separation distances in Table 8 can be met.

EXCEPTION: The use of portable toilets shall not be allowed for seasonal dwellings.

- (4) Construction. Nonwater-carried waste disposal facilities shall be constructed in accordance with requirements contained in LCR 3-90 through LCR 3-100.
- (5) Maintenance. Nonwater-carried waste disposal facilities shall be maintained to prevent health hazards and pollution of public waters.
- (6) General. No water-carried sewage shall be placed in nonwater-carried waste disposal facilities. Contents of nonwater-carried waste disposal facilities shall not be discharged into storm sewers on the surface of the ground or into public waters.
- (7) Pit Privy: Unsealed earth pit type privies shall not be installed within Lake County.
- (8) No person shall cause or allow the installation or use of a portable toilet unless the pumping or cleaning of the portable toilet is covered by a valid and effective contract with a person licensed pursuant to Article II of Chapter 11 of the Lake County Code. Each portable toilet shall display the business name of the sewage disposal service that is responsible for servicing it.

LCR 1-260 CESSPOOLS AND SEEPAGE PITS (Diagrams 14 and 15)

- (1) For the purpose of these rules:
 - (a) "Cesspool" means a lined pit which receives raw sewage, allows separation of solids and liquids, retains the solids and allows liquids to seep into the surrounding soil through perforations in the lining.
 - b) "Seepage Pit" means a "cesspool" which has a treatment facility such as a septic tank ahead of it.
- (2) Prohibitions. Cesspools and seepage pits shall not be used except as a method of repair for existing failing systems. Cesspools and seepage pits shall not be used when the soil and lot size allows for the repair of a system by standard methods.
- (3) Construction Requirements:
 - (a) Each cesspool and seepage pit shall be installed in a location to facilitate future connection to a sewerage system when such facilities become available.
 - (b) Maximum depth of cesspools and seepage pits shall be thirty five (35) feet below ground surface.
 - (c) The cesspool or seepage pit depth shall terminate at least four (4) feet above the water table.

LCR 1-270 HOLDING TANKS

- (1) For the purpose of these rules "holding tank," means a watertight receptacle designed to receive and store sewage to facilitate disposal at another location.
- (2) Criteria for Approval. Installation permits may be issued by the Agent for holding tanks on sites that meet all the following conditions:
 - (a) Permanent Use:
 - (A) The site is not approvable for installation of a standard subsurface system; and
 - (B) No community or area-wide sewerage system is available or expected to be available within five (5) years; and
 - (C) The tank is intended to serve a small industrial or commercial building or an occasional use facility such as a county fair or a rodeo; and
 - (D) Unless otherwise allowed by the Department, the projected daily sewage flow is not more than two hundred (200) gallons; and

(E) Setbacks as required for septic tanks can be met.

(3) General:

- (a) No building may be served by more than one (1) holding tank.
- (b) A single parcel or lot of record may be served by no more than one (1) holding tank.

(4) Design and Construction Requirements:

- (a) Plans and specifications for each holding tank proposed to be installed shall be submitted to the Agent for review and approval.
- (b) Each tank shall have a minimum liquid capacity of fifteen hundred (1,500) gallons.
- (c) Each tank shall:
 - (A) Comply with standards for septic tanks contained in LCR 3-10 and LCR 3-20.
 - (B) Be located and designed to facilitate removal of contents by pumping.
 - (C) Be equipped with both an audible and visual alarm, placed in a location acceptable to the Agent, to indicate when the tank is seventy five (75) percent of full. The audible alarm only may be user cancelable.
 - (D) Have no overflow vent at an elevation lower than the overflow level of the lowest fixture served.
 - (E) Be designed for antibuoyancy if test hole examination or other observations indicate seasonally high ground water may float the tank when empty.

(5) Special Requirements. The application for an installation permit shall contain:

- (a) A copy of a contract with a licensed sewage disposal service company which shows the tank will be pumped periodically, at regular intervals or as needed, and the contents disposed of in a manner and at a facility approved by the Department.
- (b) Evidence that the owner or operator of the proposed disposal facility will accept the pumpings for treatment and disposal.
- (c) A record of pumping dates and amounts pumped shall be maintained by both the treatment facility owner and the sewage disposal service, and upon request, made available to the Agent.

- (6) Inspection Requirements. Each holding tank installed under this rule shall be inspected annually.

LCR 1-280 LOW-FLUSH TOILETS

Permits issued for installation of an on-site system shall allow a reduction of twenty five (25) percent in the seepage area provided:

- (1) The single family dwelling or commercial facility utilizes 1.6 gallons or less low volume flush toilets approved by the Lake County Health Department.

EXCEPTIONS: Systems which require low flush toilets by rule may not reduce seepage area.

LCR 1-290 EXPERIMENTAL SYSTEMS

- (1) Policy. Alternative technologies to standard on-site sewage systems are needed in areas planned for rural or low density development. It is the policy of the Department to pursue a program of experimentation for the purpose of obtaining sufficient data for the development of alternative sewage disposal systems which may benefit significant numbers of people within Lake County.
- (2) Permit Required. Without first obtaining a permit from the Department, no person shall construct an experimental on-site sewage treatment and disposal system.
- (3) Application Procedures:
 - (a) Application for experimental systems shall be made on Department forms.
 - (b) The application shall be complete, signed by the owner and accompanied by the required fee.
 - (c) The application shall include detailed system design specifications and plans and any additional information the Department considers necessary.
 - (d) The owner shall agree, in writing, to hold the County of Lake, its officers, employees and agents harmless of any and all loss and damage caused by defective installation or operation of the proposed system.
- (4) Criteria for Approval. Sites may be considered for experimental system permits where:
 - (a) Soils, climate, groundwater or topographical conditions are common enough to benefit large numbers of people.
 - (b) A specific acceptable backup alternative is available in the event of system failure.

- (c) For absorption systems, soils in both original and system replacement areas are similar.
 - (d) Installation of a particular system is necessary to provide a sufficient data sampling base.
 - (e) Zoning, planning and building requirements allow system installation.
 - (f) A single family dwelling will be served.
 - (g) The system will be used on a continuous basis during the life of the test project.
 - (h) Resources for monitoring, sample collection and laboratory testing are available.
 - (i) Legal and physical access by easement for construction inspections and monitoring are available.
 - (j) The property owner records a Department approved affidavit which notifies prospective property purchasers of the existence of an experimental system.
 - (k) The parcel size is at least one (1) acre.
- (5) Permit conditions. The system installation permit shall:
- (a) Specify method and manner of system installation, operation and maintenance;
 - (b) Specify method, manner and duration of system testing and monitoring;
 - (c) Identify when and where the system is to be inspected;
 - (d) Require that the permit not be transferable;
 - (e) Require system construction and use within one (1) year of permit issuance.
- (6) Inspection of Installed System:
- (a) Upon completing construction for each inspection phase required under the permit, the permit holder shall notify the Department.
 - (b) The Department shall inspect construction to determine whether it complies with permit conditions and requirements.
 - (c) After system installation is complete and complies with permit conditions, a Certificate of Satisfactory Completion shall be issued.

- (7) Repair or Replacement of System. If the Department finds the operation of the system is unsatisfactory, the owner, upon written notification, shall promptly repair or modify the system, replace it with another acceptable system or, as a last resort, abandon the system.
- (8) System Monitoring. The system shall be monitored by the Department in accordance with a schedule contained in the permit.

LCR 1-300 MORATORIUM AREAS

- (1) Whenever the Department finds that construction of subsurface or alternative sewage disposal systems should be limited or prohibited in an area, it shall issue an order limiting or prohibiting such construction.
- (2) The order shall be issued only after public hearing for which more than thirty (30) days notice is given.
- (3) The order shall be a rule of this division which contains a general description of the moratorium area. A more detailed description of the area, if needed, shall be an appendix to these rules.
- (4) No permit or site evaluation report shall be issued for construction of a new or expanded system which would violate any order of the Department issued pursuant to the Lake County Sewer Ordinance.
- (5) Criteria for Establishing Moratoriums. In issuing an order under this section the Commission shall consider the factors contained in Article III of Chapter 9 of the Lake County Code.

LCR 1-310 LARGE SYSTEMS

- (1) For the purpose of these rules "large system" means any system with a projected daily sewage flow greater than two thousand five hundred (2,500) gallons.
- (2) Special Design Requirements. Unless otherwise authorized by the Department, large systems shall comply with the following requirements:
 - (a) Large system absorption facilities shall be designed with pressure distribution.
 - (b) The disposal area shall be divided into relatively equal units. Each unit shall receive no more than thirteen hundred (1,300) gallons of effluent per day.
 - (c) The replacement (repair) disposal area shall be divided into relatively equal units, with a replacement disposal area unit located adjacent to an initial disposal area unit.

- (d) Effluent distribution shall alternate between the disposal area units.
 - (e) Each system shall have at least two (2) pumps or siphons.
 - (f) The applicant shall provide a written assessment of the impact of the proposed system upon the quality of public waters and public health.
- (3) Plans and specifications for large systems shall be prepared by any competent registered professional with education or experience in the specific technical field involved.
- (4) Construction Requirements:
- (a) Construction shall be in substantial conformance with approved plans and specifications and any terms of the permit issued by the Agent.
 - (b) After completion of the system, the professional shall certify that the system was installed in accordance with approved plans and specifications.

LCR 1-320 SITE SPECIFIC VARIANCES

- (1) The Director may approve a site specific variance, on any existing parcel, to any provision of these rules if all of the following findings are made:
- (a) That there are special circumstances specific to the subject property, such as but not limited to: size, slope, direction of slope, shape, topography, soils, geology, drainage or location; and
 - (b) That based upon submitted evidence, which clearly demonstrates a variance is justified and would not result in the granting of a special privilege, and also documents the inability to comply with the standard provisions of these rules; and
 - (c) A public health hazard will not be created by the granting of this variance.
- (2) In order to apply for a site specific variance the Board established fee must first be paid. This fee is non-refundable.
- (3) All requests for a site specific variance must be done on a form supplied by the Department.
- (4) Application for a variance shall be made in writing by the owner of the property; or lessee, purchase in escrow or optionee with the written consent of the owner; or by a public utility company or other agency with the power of eminent domain.
- (5) The Department has up to 45 working days from application and fee submittal to respond to all requests for a variance.

- (6) In order to properly evaluate certain variance applications, specific testing and/or excavating may be necessary to obtain vital information needed to determine if the potential for creating a public health hazard exists. The extent of information or excavating required will be determined at the time the application is submitted. The application will not be considered complete until the testing or excavations are provided for review.

- (7) The decision on the request for a variance or the revocation of a variance is final and cannot be appealed. However, if the variance decision results in the denial of a permit, the denial may be appealed to the Lake County Board of Supervisors, in accordance with Section 9-20 of the Lake County Code.

**TABLE 1
MINIMUM SEPARATION DISTANCES**

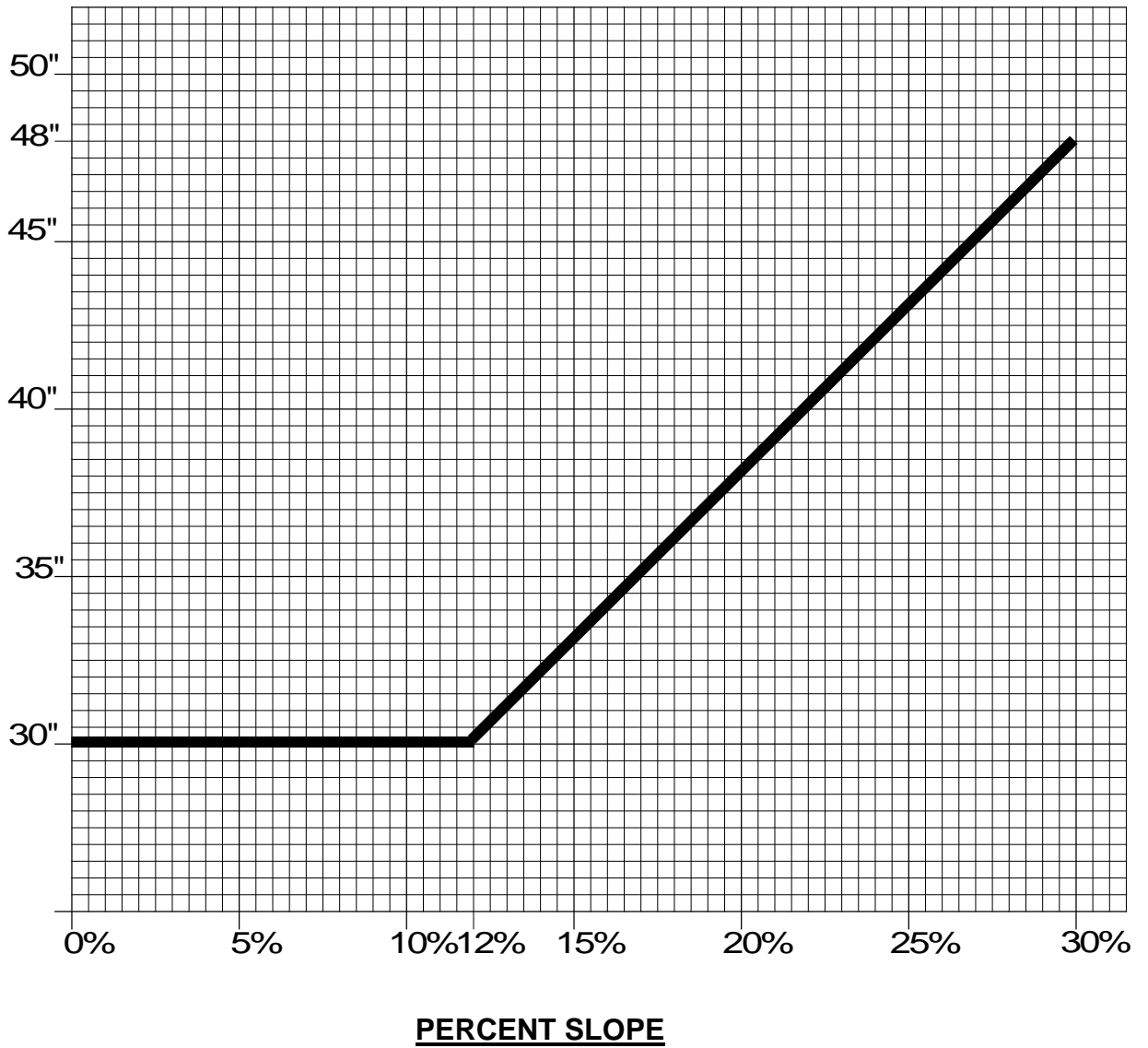
Items Requiring Setback	From Sewage Disposal Area (Leachfield) Including Replacement Area	From Septic Tank and Other Treatment Units, Effluent Sewer and Distribution Units
1. Groundwater Supplies Including Domestic Wells	100'	50'
2. Temporarily Abandoned Wells	100'	50'
3. Springs:		
--Upgradient	50'	50'
--Downgradient	100'	50'
4. Surface Public Waters	100'	50'
5. Intermittent Streams:		
--Piped (Water tight to extend 25' past any part of the on-site system.)	20'	20'
--Unpiped	50'	50'
6. Groundwater Interceptors:		
--On a slope of 3% or less	20'	20'
--On a slope greater than 3%		
--Upgradient	10'	10'
--Downgradient	50'	25'
7. Cuts, Manmade, in Excess of 30" (Top of Downslope Cut):		
--Which intersect layers that limit effective soil depth within 48" of surface.	50'	25'
--Which do not intersect layers that limit effective soil depth.	3.3 times the height of the cut not to exceed 25'	10'
8. Escarpments:		
--Which intersect layers that limit effective soil depth.	50'	10'
--Which do not intersect layers that limit effective soil depth.	25'	10'
9. Property Lines	5'	5'
10. Small Cement Lined Drainage Ditch less than 30" deep	10'	10'
11. Water Lines		
--On-site domestic water service line.	5'	5'
--Pressure public water main.	10'	10'
12. Foundation Lines of Any Building, including garages and out buildings	10'	5'
13. Pier Blocks for Decks	5'	
14. Septic Tank	5'	
15. Swimming Pools (Above & Below Ground)		
--Upgradient (minimum)	10'	10'
--Downgradient	20'	20'

**TABLE 2
QUANTITIES OF SEWAGE FLOWS**

Type of Establishment	COLUMN 1 Gallons Per Day	COLUMN 2 Minimum Gallons Per Establishment Per Day
Airports	5 (per passenger)	150
Bathhouses and swimming pools	10 (per person)	300
Camps: (4 persons per campsite, where applicable)		
Campground with central comfort stations	35 (per person)	700
With flush toilets, no showers	25 (per person)	500
Construction camps (semi-permanent)	50 (per person)	1000
Day camps (no meals served)	15 (per person)	300
Resort camps (night & day) with limited plumbing	50 (per person)	1000
Luxury camps	100 (per person)	2000
Churches	5 (per seat)	150
Country clubs	100 (per resident member)	2000
Country clubs	25 (per nonresident member present)	---
Dwellings:		
Boarding Houses	150 (per bedroom)	600
Additional for nonresidential boarders	10 (per person)	---
Rooming Houses	80 (per person)	500
Condominiums, Multiple family dwellings (Including apartments)	300 (per unit)	900
Single family dwellings	300 (not exceeding 2 bedrooms)	300
With more than 2 bedrooms	75 (for third & each succeeding bedroom)	450
Factories (exclusive of industrial wastes, with Shower facilities)	35 (per person, per shift)	300
Factories (exclusive of ind. wastes, without Shower facilities)	15 (per person, per shift)	150
Hospitals	250 (per bed space)	2500
Hotels with private baths	120 (per room)	600
Hotels without private baths	100 (per room)	500
Institutions other than hospitals	125 (per bed space)	1250
Laundries, self-service	500 (per machine)	2500
Mobile home parks	250 (per space)	750
Motels (with bath, toilet & kitchen wastes)	100 (per bedroom)	500
Motels (without kitchens)	80 (per bedroom)	400
Picnic Parks (toilet wastes only)	5 (per picnicker)	150
Picnic Parks (with bathhouses, showers & flush toilets)	10 (per picnicker)	300
Restaurants	40 (per seat)	800
Restaurants (single-service)	2 (per customer)	300
Restaurants (with bars and/or lounges)	50 (per seat)	1000
Schools:		
Boarding	100 (per person)	3000
Day (Without gyms, cafeterias or showers)	15 (per person)	450
Day (with gyms, cafeterias and showers)	25 (per person)	750
Day (with cafeteria, but without gyms or showers)	20 (per person)	600
Service Stations	10 (per vehicle served)	500
Swimming pools and bathhouses	10 (per person)	300
Theaters:		
Movie	5 (per seat)	300
Drive-In	20 (per car space)	1000
Travel trailer parks (without individual water & sewer hookups)	50 (per space)	300
Travel trailer parks (with individual water & sewer hookups)	100 (per space)	500
Workers:		
Construction (as semi-permanent camps)	50 (per person)	1000
Day, at schools and offices	15 (per shift)	150

*Except as otherwise provided in these rules

TABLE 3
SLOPE, EFFECTIVE SOIL DEPTH RELATIONSHIP



* When slope exceeds 30 percent, rules on steep slope systems apply.
(Refer to LCR 1-220)

TABLE 4

**MINIMUM LENGTH OF DISPOSAL TRENCH
EFFECTIVE SOIL DEPTH vs. SOIL TEXTURE**

Minimum length of disposal trench (linear feet) required per one hundred fifty (150) gallons projected daily sewage flow determined from soil texture versus effective soil depth.

<u>EFFECTIVE SOIL DEPTH</u>	<u>SOIL GROUP</u> A	<u>SOIL GROUP</u> B	<u>SOIL GROUP</u> C
18" to less than 24"	125	150	175
24" to less than 36"	100	125	150
36" to less than 48"	75	100	125
48" or more	50	75	125

SOIL GROUP

- SOIL GROUP A Sand, Loamy Sand, Sandy Loam
- SOIL GROUP B Sandy Clay Loam, Loam, Silt Loam, Silt, Clay
Loam
- SOIL GROUP C Silty Clay Loam, Sandy Clay, Silty Clay,
Clay

TABLE 5

**MINIMUM LENGTH OF DISPOSAL TRENCH
TEMPORARY GROUNDWATER vs. SOIL TEXTURE**

Minimum length of disposal trench (linear feet) required per one hundred fifty (150) gallons projected daily sewage flow determined from soil texture versus depth to temporary groundwater.

<u>DEPTH TO TEMPORARY GROUNDWATER</u>	<u>SOIL GROUP</u>	<u>SOIL GROUP</u>	<u>SOIL GROUP</u>
	A	B	C
24" to less than 48"	100	125	150
48" or more	50	75	125

SOIL GROUP

- SOIL GROUP A Sand, Loamy Sand, Sandy Loam
- SOIL GROUP B Sandy Clay Loam, Loam, Silt Loam, Silt, Clay Loam
- SOIL GROUP C Silty Clay Loam, Sandy Clay, Silty Clay, Clay

TABLE 6
SOIL TEXTURAL CLASSIFICATION CHART

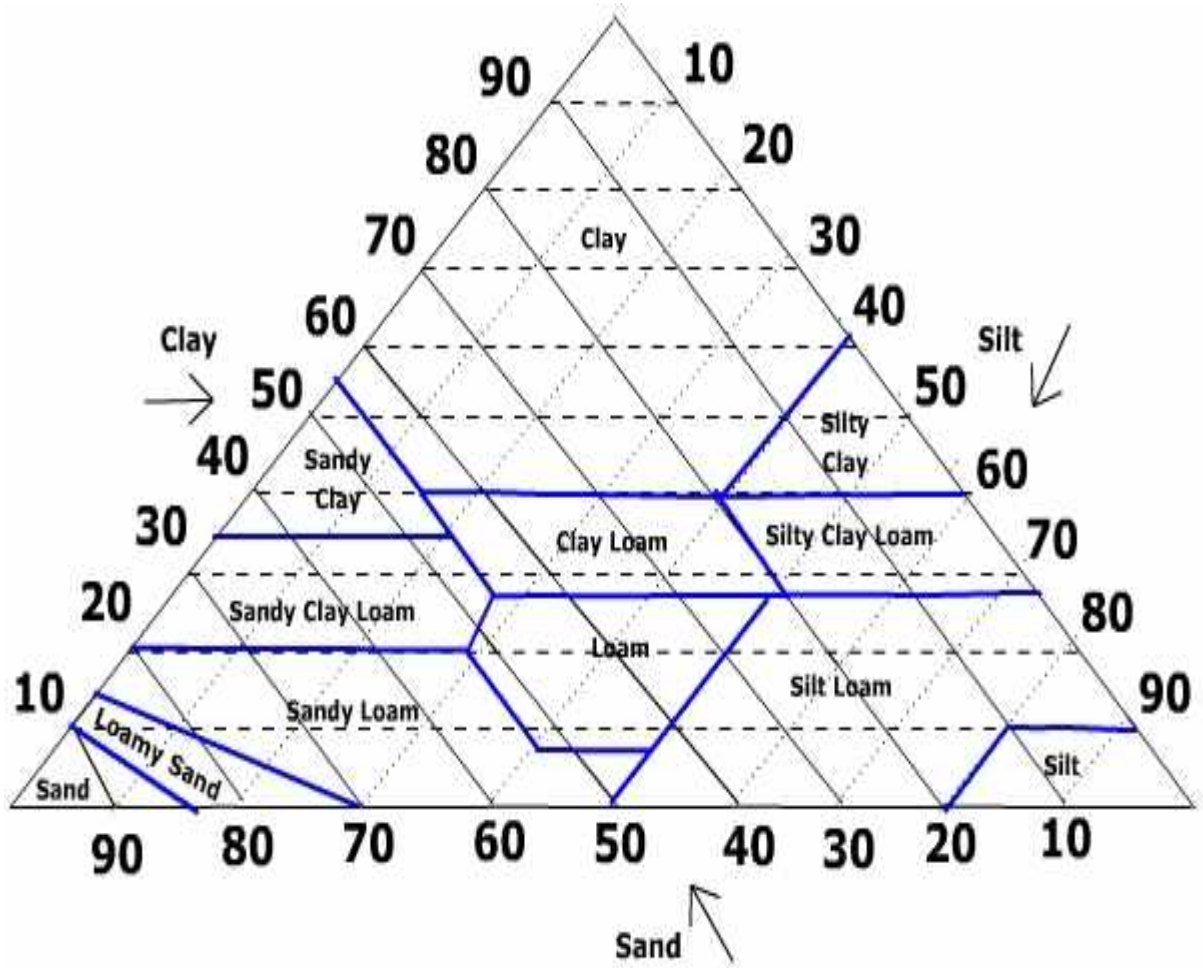


TABLE 7**USDA SOIL CALSSIFICATION SIZE OF SOIL SEPARATES**

Soil Separate	Sieve Sizes	Millimeters
Clay		<.002
Silt	270	.002 .050
Very fine sand	200	0.075
Fine sand	140	0.1
Medium sand	60	0.25
Coarse sand	35 18	.5 1.0
Very coarse sand	10	2
Fine gravel	4 3/8"	4.75 9.5
Coarse gravel	1/2"	12.5
Cobbles	3"	76.2

TABLE 8
MINIMUM SEPARATION DISTANCES
FOR
NONWATER-CARRIED WASTE DISPOSAL FACILITIES

	Self Contained Nonwater-Carried Disposal Facility	Gray Water Waste Disposal Sump & Seepage Chambers
Groundwater Supplies including springs and cisterns	50'	100'
Surface public waters, excluding intermittent streams	50'	100'
Intermittent streams	50'	50'
Property lines	25'	25'

LCR 3-10 SEPTIC TANK CONSTRUCTION

The following requirements shall apply to all septic tanks manufactured for use in Lake County unless specifically exempted by other portions of these rules:

- (1) Compartments: Septic tanks shall have single or multiple compartments. Tanks shall comply with the following:
 - (a) The first compartment shall have a minimum liquid capacity of at least two thirds ($2/3$) of the total required liquid capacity as measured from the invert of the outlet fitting.
 - (b) The second and succeeding compartments shall each have a minimum liquid capacity equal to or greater than one half ($1/2$) of the liquid capacity of the first compartment.
 - (c) Each compartment shall have access provided by a manhole having not less than eighteen (18) inches across its shortest dimension unless otherwise approved by the Department. The manhole cover shall not weigh more than seventy five (75) pounds.
 - (d) No compartment shall have an inside horizontal dimension of less than twenty four (24) inches.
- (2) Liquid Depth. The liquid depth of any compartment shall be at least thirty (30) inches. Liquid depths greater than seventy two (72) inches shall not be considered in determining the working liquid capacity.
- (3) Septic tanks shall be watertight.
- (4) Septic tanks shall be capable of supporting an earth load of at least three hundred (300) pounds per square foot when the maximum coverage does not exceed three (3) feet. Tanks installed with more than three (3) feet of cover shall be reinforced to support the additional load.
- (5) The inlet and outlet fittings shall be of Schedule 40 PVC plastic, Schedule 40 ABS plastic or other materials approved by the Department with a minimum diameter of four (4) inches.
 - (a) The distance between the inlet and outlet fittings shall be equal to, or greater than, the liquid depth of the tank.
 - (b) The inlet and outlet fittings shall be located at opposite ends of the tank. They shall be attached in a watertight manner approved by the Department.
 - (c) The inlet fitting shall be a "sanitary tee" extending at least six (6) inches above and below the liquid level.

- (d) The outlet fitting shall be either an approved effluent filter or a "sanitary tee" extending below the liquid level a distance equal to not less than thirty five (35) percent nor greater than fifty (50) percent of the liquid depth, and at least six (6) inches above the liquid depth in order to provide scum storage. When the outlet fitting is a "sanitary tee" then an approved effluent filter shall be installed in the effluent sewer in a manner providing access for service and maintenance. When tank is used as a holding tank, the outlet fitting shall be provided with a watertight plug.
 - (e) Ventilation shall be provided through the fittings by means of a two (2) inch minimum space between the underside of the top of the tank and the top of the "tee" fitting.
 - (f) The invert of the inlet fitting shall be not less than one (1) inch and preferably three (3) inches above the invert of the outlet fitting.
 - (g) The septic tank manufacturer shall provide with each fitting a rubber or neoprene rubber gasket meeting ASTM Specification C-564 or an appropriate coupler which the Department determines will provide a watertight connection between the fittings and the building and effluent sewer pipes.
 - (h) An access cover of not less than six (6) inches across shall be provided above each fitting.
- (6) At least ten (10) percent of the inside volume of the tank shall be above liquid level to provide scum storage.
 - (7) A four (4) inch diameter (minimum) "tee" fitting, or equivalent, shall be placed in each common compartment wall, using the same specifications as required for the outlet fitting. The invert of this "tee" fitting shall be at the same elevation as the outlet "tee."
 - (8) Septic tanks shall be constructed of concrete or other materials approved by the Department.
 - (a) Precast concrete tanks shall have a minimum wall, compartment and bottom thickness of two and one half (2 1/2) inches and shall be adequately reinforced. The top shall be at least four (4) inches thick.
 - (b) Where concrete block tanks are permitted by the Agent, the tanks shall be constructed of heavyweight concrete block, eight (8) inch minimum thickness, laid on a six (6) inch (minimum) poured foundation slab. The mortared joints shall be well filled. All block holes or cells shall be filled with mortar or concrete. 1/2" webbing shall be installed at every third row of block. Number three (3) rebar shall be installed vertically in every block. Tank interiors shall be surfaced with at least two (2) one quarter (1/4) inch thick coats of corrosion resistant waterproof sealant. The first row of blocks shall be keyed or doweled to the concrete foundation.

- (c) For cast-in-place septic tanks with dimensions different from those shown in Diagram 1, or when the septic tank is to be located under a road or driveway, two (2) copies of detailed plans and specifications, prepared by a registered professional engineer licensed to practice in California shall be provided to the Lake County Building Department for review and approval.
- (9) All prefabricated septic tanks shall be marked on the uppermost tank surface with the liquid capacity of the tank and either the manufacturer's full business name or the number assigned by the Department.
- (10) Each commercial manufacturer of prefabricated septic tanks shall provide two (2) complete sets of plans and specifications, prepared by a registered professional engineer licensed to practice in California, to the Department for review and approval.
- (11) Each commercial manufacturer of prefabricated septic tanks shall provide the Department with written certification that septic tanks for use in on-site sewage disposal systems in the County of Lake will comply with all requirements of this Rule.

LCR 3-20 DOSING SEPTIC TANK ASSEMBLIES

(1) Introduction

A dosing septic tank combines the functions of a septic tank and dosing tank into one unitized assembly by withdrawing septic tank effluent with a pump or dosing siphon from the clear zone at the outlet end of the tank. These may be considered by the Department for equipment approval for installations where the design flow does not exceed 450 gallons per day.

(2) Structural

Dosing septic tanks shall comply with applicable standards for septic tanks and for dosing tanks. Each tank shall be water tested by filling to the soffit for a period of one hour. During the test there shall be no measurable drop in water level and no visible leakage. Each tank shall be certified watertight.

(3) Configuration

- (a) A typical design is shown in 2-Diagram.
- (b) The minimum total volume of the tank shall be one thousand one hundred (1,100) gallons.
- (c) The minimum submerged volume at the lowest operating liquid level shall be nine hundred (900) gallons.
- (d) Unless otherwise authorized by the Department, liquid levels shall be controlled so that not more than twenty (20) percent of the projected daily sewage flow is discharged each cycle.
- (e) The invert of the inlet tee shall be not less than one inch above the high operating liquid level.
- (f) Ports or holes provided in a vault or outlet device shall be located to withdraw effluent horizontally at an elevation measured from the inside bottom of the tank to sixty five (65) to seventy (75) percent of the lowest operating liquid depth. The net area of the ports shall be not less than twenty (20) square inches.
- (g) A convenient means of monitoring sludge and scum accumulation shall be provided with access extending to ground level.

(4) Features

- (a) Design and equipment shall emphasize ease of maintenance and longevity and reliability of components

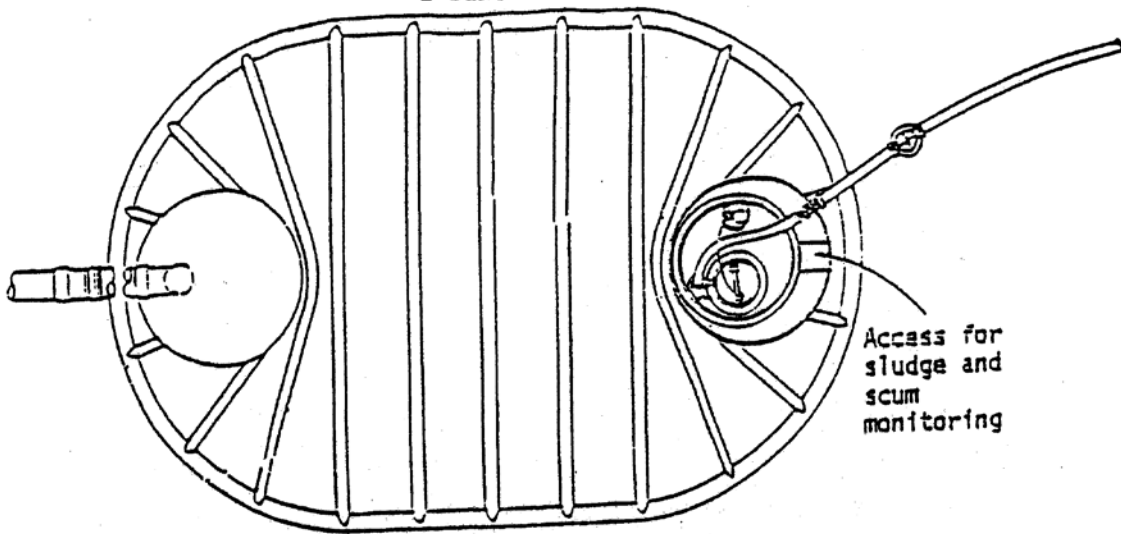
and shall be proved suitable by operational experience, test or analysis suitable to the Department.

- (b) An easy means of electrical and plumbing disconnect shall be provided, preventing the need for a repairman to be more than briefly exposed to the sewerage atmosphere.
- (c) Component materials shall be durable and corrosion resistant such as Type 316 stainless steel, suitable plastics or 85-5-5-5 bronze.

(5) Approvals

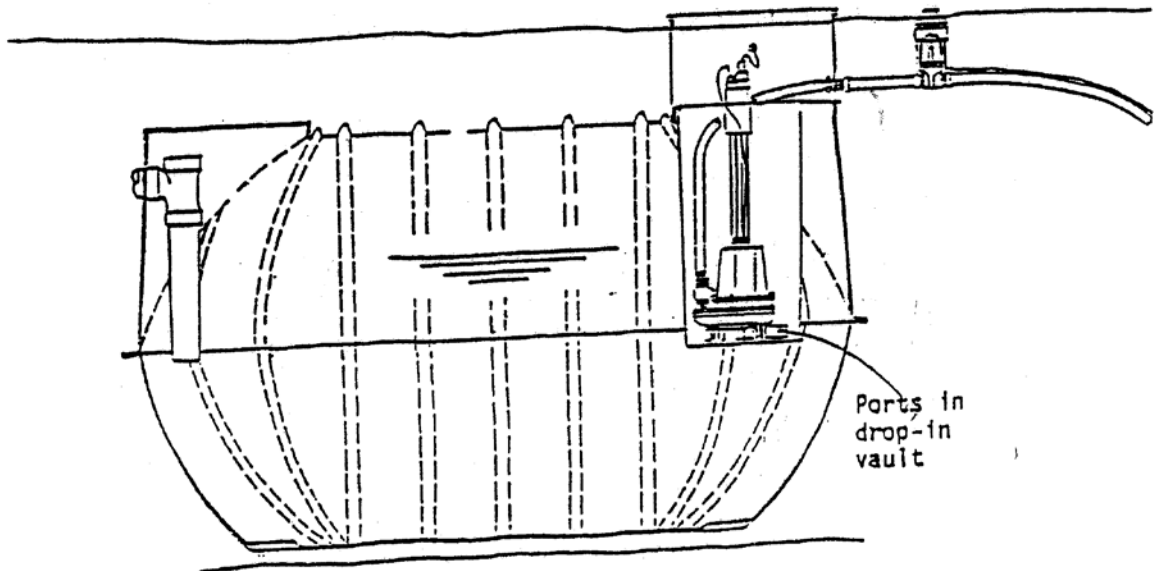
Each commercial manufacturer of prefabricated dosing septic tanks shall provide two (2) complete sets of plans and specifications, prepared by a registered professional engineer licensed to practice in California, to the Department for review and approval. Each manufacturer must also provide written certification to the Department that such assemblies distributed for use in on-site sewage disposal systems in Lake County will comply with all requirements of this Rule.

2-DIAGRAM



Access for
sludge and
scum
monitoring

PLAN



Ports in
drop-in
vault

SECTION

LCR 3-30 DISTRIBUTION BOXES

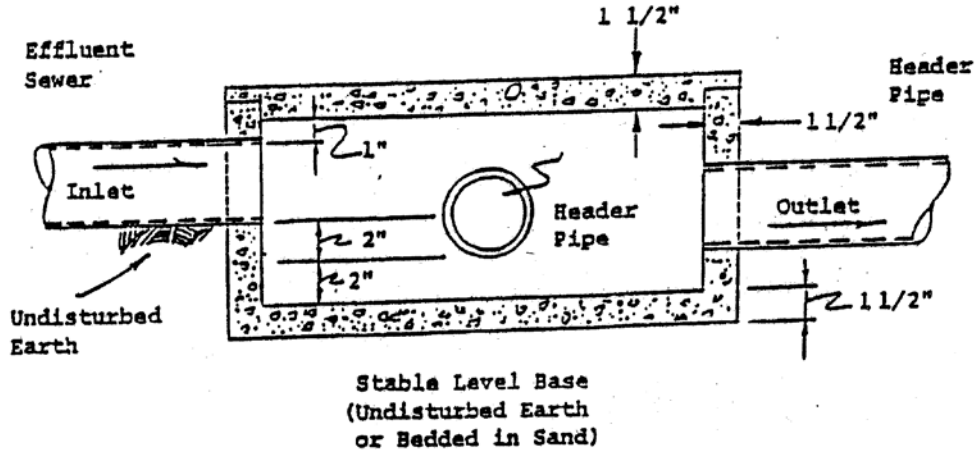
- (1) Distribution boxes shall be constructed of concrete, fiberglass or other materials acceptable to the Department.
- (2) Distribution boxes shall be watertight and designed to accommodate the necessary distribution laterals. (See 3-Diagram for details.) The top, walls and bottom of concrete distribution boxes shall be at least one and one half (1 1/2) inches thick.
- (3) The invert elevation of all outlets shall be the same and shall be at least two (2) inches below the inlet invert.
- (4) Each distribution box shall be provided with a sump extending at least two (2) inches below the invert of the outlets.
- (5) The minimum inside horizontal dimension measured at the bottom shall be eight (8) inches with a minimum bottom inside surface area of one hundred sixty (160) square inches. The bottom outside surface area shall be equal to or greater than the top outside surface area.
- (6) Distribution box covers shall be marked with the manufacturer's full business name or number assigned by the Department.
- (7) Each manufacturer shall provide the Department with complete detailed plans and specifications of the distribution box and shall certify, in writing, that distribution boxes manufactured for use in on-site sewage systems in Lake County will comply with all requirements of this Rule.

LCR 3-40 DROP BOXES

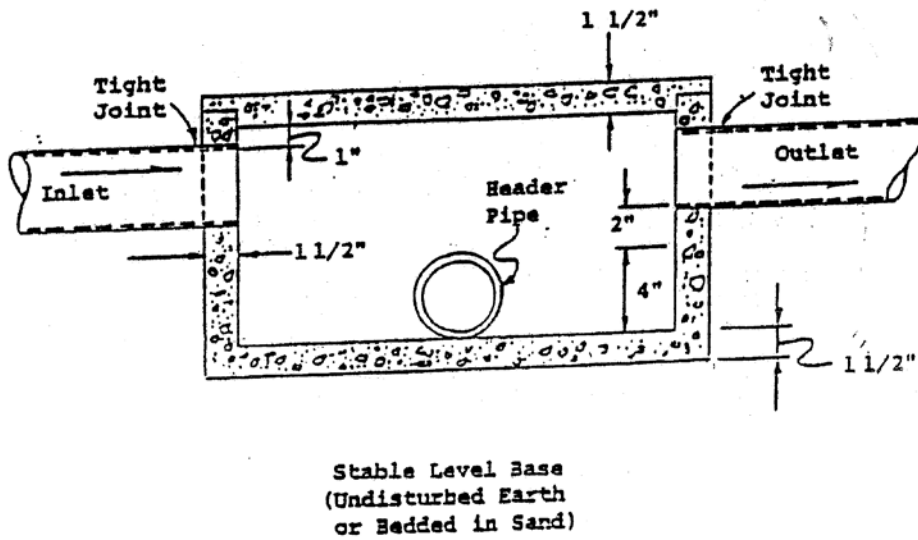
- (1) Drop boxes shall be constructed of concrete, fiberglass or other materials acceptable to the Department.
- (2) Drop boxes shall be watertight and designed to accommodate the necessary piping. (See 3-Diagram for details.) The top, walls and bottom of concrete drop boxes shall be at least one and one half (1 1/2) inches thick.
- (3) The inverts of the inlet and overflow port shall be at the same elevation. The invert of the header pipe port(s) leading to the disposal trench (es) shall be six (6) inches below the inlet invert.
- (4) Drop box covers shall be marked with the manufacturer's full business name or number assigned by the Department.
- (5) Each manufacturer shall provide the Department with complete detailed plans and specifications of the drop box and shall certify, in writing, that drop boxes manufactured for use in on-site sewage disposal systems in Lake County will comply with all requirements of this Rule.

3-DIAGRAM

PRE-CAST CONCRETE DISTRIBUTION BOX DETAIL



PRE-CAST CONCRETE DROP BOX DETAIL



LCR 3-50 DIVERSION VALVES

- (1) Diversion valves shall be constructed of durable material and be of a design approved by the Department. They shall be corrosion resistant, watertight and designed to accommodate the inlet and outlet pipes.
- (2) The manufacturer's name or number assigned by the Department shall be marked on the cover.
- (3) Each manufacturer shall provide the Department with complete detailed plans and specifications of the diversion valve and shall certify, in writing, that diversion valves manufactured for use in on-site sewage disposal systems in Lake County will comply with all requirements of this Rule.

LCR 3-60 DOSING TANK CONSTRUCTION

- (1) Dosing tanks used in on-site sewage disposal systems in Lake County shall be watertight. They may be constructed of concrete, fiberglass or other noncorrosive materials approved by the Department.
 - (a) Fiberglass dosing tanks shall be a minimum three sixteenths (3/16) inch thick and constructed with a glass fiber content of forty (40) percent and a resin content of sixty (60) percent, with no exposed non-resin covered glass fibers.
 - (b) Precast concrete dosing tanks shall have a minimum wall and bottom thickness of two and one half (2 1/2) inches. The top shall be not less than four (4) inches thick. There shall be no seams in the walls or bottom.
 - (c) Cast-in-place concrete dosing tanks shall have a minimum wall, top and bottom thickness of six (6) inches when the liquid capacity is twelve hundred (1,200) gallons or less. A permit from the Lake County Building Department is required when the liquid capacity of a cast-in-place concrete dosing tank exceeds twelve hundred (1,200) gallons. The Building Department will require that detailed plans and specifications prepared by a registered professional engineer licensed to practice in California be submitted for their review.
- (2) Each dosing tank shall be constructed and reinforced to withstand the loads imposed upon the walls and bottom.
- (3) Each dosing tank employing one (1) or more pumps shall have a minimum liquid capacity equal to the projected daily sewage flow for flows up to twelve hundred (1,200) gallons per day. The Department may use its discretion in sizing dosing tanks when the projected daily sewage flow is greater than twelve hundred (1,200) gallons per day. The liquid capacity shall be as measured from the invert elevation of the inlet fitting.
- (4) The inlet fitting shall be of hubbed cast iron soil pipe or other materials approved by the Department with a minimum diameter of four (4) inches. The dosing tank

manufacturer shall supply a rubber or neoprene rubber compression gasket meeting the minimum requirements of ASTM specification C-564 with each fitting or an appropriate coupler which will provide watertight connection.

- (5) Each dosing tank shall be provided with an access manhole with a minimum horizontal measurement of eighteen (18) inches where entry is necessary for operation and maintenance.
- (6) Each prefabricated dosing tank shall be marked on the uppermost surface with the liquid capacity and the manufacturer's full business name or number assigned by the Department.
- (7) Each commercial manufacturer of prefabricated dosing tanks shall provide two (2) complete sets of plans and specifications prepared by a registered professional engineer, licensed to practice in California, to the Department for review and approval. Each manufacturer must also provide written certification to the Department that such tanks distributed for use in on-site sewage disposal systems in Lake County will comply will all requirements of this Rule.
- (8) Dosing tanks with siphons shall be designed and sized for each specific project and shall allow sufficient clearance above the siphon dome to allow removal of the dome.

LCR 3-70 EFFLUENT PUMPS, CONTROLS & ALARMS AND DOSING SIPHONS

- (1) Pumps, Controls and Alarms. Electrical components used in on-site sewage disposal systems shall comply with Lake County Electrical Code and the following provisions:
 - (a) Motors shall be continuous-duty with overload protection.
 - (b) Pumps shall have durable impellers of bronze, cast iron or other materials approved by the Department.
 - (c) Submersible pumps shall be provided with an easy, readily accessible means of electrical and plumbing disconnect and a noncorrosive lifting device as a means of removal for servicing.
 - (d) Except where specifically authorized in writing by the Director, the pump shall be placed within a corrosion resistant screen that extends above the maximum effluent level within the pump chamber. The screen shall have at least twelve (12) square feet of surface area with one eighth (1/8) inch openings. The use of a screen is not required if the pump does not discharge into a pressurized distribution system, and the pump has a non-clog impeller capable of passing a three quarter (3/4) inch diameter solid sphere.
 - (e) Pumps shall be automatically controlled by sealed mercury float switches with a minimum mercury tube rating of twelve (12) amps at one hundred fifteen (115) volts AC or by a Department approved equivalently reliable

switching mechanism. The switches shall be installed so that approximately twenty (20) percent of the projected daily sewage flow is discharged each cycle.

- (f) An audible and visual high water level alarm with manual silence switch shall be located in or near the building served by the pump. The audible alarm only may be user cancelable. The switching mechanism controlling the high water level alarm shall be located so that at time of activation the dosing tank has at least one third (1/3) of its capacity remaining for effluent storage.
- (2) Dosing Siphons. Dosing siphons used in on-site sewage disposal systems shall comply with all of the following minimum requirements:
- (a) Shall be constructed of corrosion-resistant materials.
 - (b) Shall be installed in accordance with the manufacturer's recommendations.

LCR 3-80 PIPE MATERIALS AND CONSTRUCTION

(1) Effluent Sewer Pipe

The effluent sewer shall be constructed with materials in conformance to building sewer standards, as identified in the UPC. The effluent sewer pipe shall have a minimum diameter of three (3) inches.

(2) Distribution and Header Pipe and Fittings

(a) Plastic Pipe and Fittings

(A) Styrene-rubber plastic distribution and header pipe and fittings shall meet the most current ASTM (American Society for Testing and Materials) Specification D 2852 and Sections 5.5 and 7.8 of Commercial Standard 228, published by the U.S. Department of Commerce. Pipe and fittings shall also pass a deflection test withstanding three hundred fifty (350) pounds per foot without cracking by using the method found in ASTM 2412. In addition to the markings required by ASTM 2852, each manufacturer of styrene-rubber plastic pipe shall certify in writing to the Department, that the pipe to be distributed for use in absorption facilities within the County of Lake will comply with all requirements of this section.

(B) Polyethylene distribution pipe in ten (10) foot lengths and header pipe in lengths of ten (10) feet or greater of which pipe and fittings shall meet the current ASTM Specifications F405, Pipe and fittings shall also pass a deflection test withstanding three hundred fifty (350) pounds per foot without cracking or collapsing by using the method found in ASTM 2412. Pipe used in absorption facilities shall be heavy duty. In addition to the markings required by ASTM F405, each manufacturer of polyethylene pipe

shall certify in writing to the Department that the pipe to be distributed for use in absorption facilities within the County of Lake will comply with all requirements of this section.

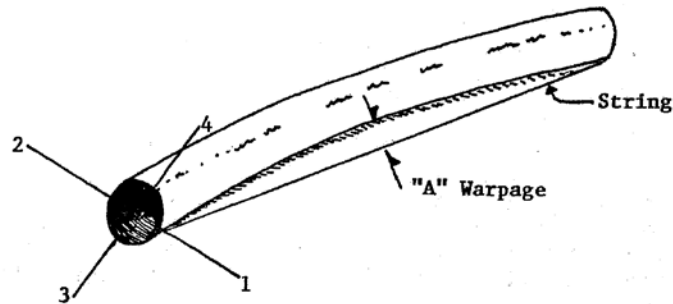
- (C) Polyvinyl chloride (PVC) distribution and header pipe and fittings shall meet the most current ASTM Specifications D-2729. Pipe and fittings shall pass a deflection test withstanding three hundred fifty (350) pounds per foot without cracking or collapsing by using the method found in ASTM 2412. Markings shall meet requirements established in ASTM Specification D-2729, subsections 9.1.1, 9.1.2 and 9.1.4. Each manufacturer of polyvinyl chloride pipe shall certify in writing to the Department that pipe and fittings to be distributed for use in absorption facilities within the County of Lake will comply with all requirements of this section.
 - (D) High density polyethylene smooth wall distribution and header pipe (ten [10] foot lengths) and fittings shall meet the specifications designated as Appendix 1. Each manufacturer of high density polyethylene smooth wall pipe to be distributed for use in absorption facilities within the County of Lake will comply with all requirements of this Rule.
 - (E) The four types of plastic pipe described above shall have two (2) rows of holes spaced one hundred twenty (120) degrees apart and sixty (60) degrees on either side of a center line. For distribution pipe, a line of contrasting color shall be provided on the outside of the pipe along the line furthest away and parallel to the two (2) rows of perforations. Markings, consisting of durable ink, shall cover at least fifty (50) percent of the pipe. Markings may consist of a solid line, letters or a combination of the two. Intervals between markings shall not exceed twelve (12) inches. The holes of each row shall be not more than five (5) inches on center and shall have a minimum diameter of one half (1/2) inch.
- (b) Polyvinyl chloride (PVC) pressure transport pipe, pressure manifolds and pressure lateral pipe and fittings shall meet the current requirements for Class 160 PVC 1120 pressure pipe as identified in ASTM Specification D-2241. The pipe and fittings shall be marked as required by ASTM Specification D-2241.

**APPENDIX 1
SPECIFICATIONS FOR
FOUR INCH HIGH DENSITY POLYETHYLENE SMOOTH WALL TUBING**

NOTE: All specifications are assumed to be for tubing cured at 78 degrees +/- 2 degrees Fahrenheit.

1. Outside diameter 4.12511 +/- 0.0009".
2. Permissible deviation 0.0501 for roundness.
3. Die center, a maximum of no more than 0.00711 between readings for all measurable points.
4. Pipe and fittings shall pass a deflection test withstanding three hundred fifty (350) pounds per foot without cracking or collapsing by using the method found in ASTM 2412.
5. Flattening, no splitting or cracking at 20 percent deflection.
6. Smooth Wall High Density Polyethylene Tubing shall have two rows of holes spaced one hundred twenty (120) degrees apart and sixty (60) degrees on either side of a center line. For distribution pipe, a line of contrasting color shall be provided on the outside of the pipe along the line farthest away and parallel to the two rows of perforations. Markings consisting of durable ink shall cover at least fifty (50) percent of the pipe. Markings may consist of a solid line, letters, or a combination of the two. Intervals between markings shall not exceed twelve (12) inches. The holes of each row shall be not more than five (5) inches on center and shall have a minimum diameter of one-half (1/2) inch.
7. The pipe shall have a belled end and have a length of 10 feet 3 inches +/- 1/4 inch.
8. The pipe shall be white in color with a UV stabilizer.
9. The following coding sequence shall be used:
(Manufacturer's Name) --- HDPE --- Leachfield --- 4 inch
(proper date and plant coding)
10. Appearance: pipe must have smooth I.D. and O.D. with a minimum amount of streaks, lines and pits on O.D., and must be free of any splits or blow holes. (Any questionable product must be approved through Quality Control.)
11. Belling depth (after 30 minute cure) 4.215 plug gauge depth one and three-quarters (1-3/4) inches minimum.

12. The maximum allowable warpage is one-quarter (1/4) inch (Dimension A). To measure warpage, place pipe on a flat floor with markings up (position No. 4, see sketch). Check warpage first at positions 1 and 2 by stretching a string the full length of the pipe and measuring warpage (Dimension A, see sketch), then rotate pipe 90 degrees and repeat procedure for positions 3 and 4.



13. The minimum wall thickness 0.100 inches

$$\text{SDR Number} = \frac{4.215}{0.110} = 38.3$$

14. The polyethylene plastic pipe compounds shall be found to conform to the following cell classification limits by the appropriate ASTM test method listed:

<u>Property</u>	<u>Test Method</u>	<u>Cell Classification Limits</u>
Density (g/cm ³)	D 1505	greater than 0.941
Melt Index	D 1238	less than 0.4
Flexural Modulus (PSI)	D 790	greater than 160,000
Tensile Strength at Yield (PSI)	D 638	greater than 4,000
Environmental Stress Crack Resistance	D 1693	no cracking

15. Each manufacturer of high density polyethylene smooth wall tubing shall certify, in writing to the Department, that the pipe to be distributed for use in absorption facilities within the County of Lake will comply with all requirements of this Section.

NONWATER-CARRIED WASTE DISPOSAL FACILITIES, MATERIALS AND CONSTRUCTION

LCR 3-90 PRIVIES AND PORTABLE TOILET SHELTERS:

- (1) Privies and portable toilet shelters shall comply with the following general requirements:
 - (a) Structures shall be free of hostile surface features, such exposed nail points, sharp edges, and rough or broken boards and shall provide privacy and protection from the elements.
 - (b) Building ventilation shall be equally divided between the bottom and top halves of the room. All vents shall be screened with sixteen (16) mesh screen of durable material.
 - (c) Building shall be of fly-tight construction and shall have self-closing doors with an inside latch.
 - (d) Tanks or vaults shall be vented to the outside atmosphere by a flue or vent stack having a minimum inside diameter of four (4) inches. Vents shall extend not less than twelve (12) inches above the roof.
 - (e) Interior floors, walls, ceilings, partitions and doors shall be finished with readily cleanable impervious materials resistant to wastes, cleansers and chemicals. Floors and risers shall be constructed of impervious material and in a manner which will prevent entry of vermin.
 - (f) Seat tops shall be not less than twelve (12) inches nor more than sixteen (16) inches above the floor. The seat openings shall be covered with attached, open-front toilet seats with lids, both of which can be raised to allow use as a urinal.
 - (g) The distance between the front of the riser and the building wall shall not be less than twenty-one (21) inches.
- (2) Privies. In addition to complying with the requirements specified in section 1 of this Rule, privies shall be provided with:
 - (a) Vents equal in area to not less than one-fifth (1/5) the floor area or a minimum of three (3) square feet.
 - (b) A minimum clear space of twenty-four (24) inches between seats in multiple-unit installations and a clear space of twelve (12) inches from the seat opening to the building wall in both single and multiple units.

- (3) Portable Toilet Shelters. Portable toilet shelters may be prefabricated, skid mounted or mobile. In addition to complying with the requirements specified in Section 1 of this Rule, portable toilet shelters shall:
 - (a) Provide screened ventilation to the outside atmosphere having a minimum area of one (1) square foot per seat.
 - (b) Provide a minimum floor space outside of the riser of nine (9) square feet per seat.
 - (c) Be furnished with a toilet tissue holder for each seat.
 - (d) Be located in areas readily accessible to users and to pumping/cleaning services.
 - (e) Provide separate compartments with doors and partitions or walls of sufficient height to insure privacy in multiple unit shelters except that separate compartments are not required for urinals.

LCR 3-100 SELF-CONTAINED NONWATER-CARRIED TOILET FACILITIES

- (1) General Standards. All self-contained nonwater-carried toilet facilities shall comply with the following requirements.

They shall have watertight chambers constructed of reinforced concrete, plastic, fiberglass, metal, or of other material of acceptable durability and corrosion resistance, approved by the Department, and designed to facilitate the removal of the wastes.

- (b) Black wastes shall be stored in an appropriate chamber until removal for final disposal elsewhere. Wastes shall be removed from the chamber whenever necessary to prevent overflow.
 - (c) Chemicals containing heavy metals, including but not limited to copper, cadmium and zinc, shall not be used in self-contained toilet facilities.
 - (d) All surfaces subject to soiling shall be impervious, easily cleanable and readily accessible.
- (2) Vault Toilet Facilities:
 - (a) The minimum capacity of vaults shall be three hundred-fifty (350) gallons or, in places of employment, one hundred (100) gallons per seat.
 - (b) Caustic shall be added routinely to vault chambers to control odors.
 - (3) Chemical Toilet Facilities:
 - (a) Toilet bowls shall be constructed of stainless steel, plastic, fiberglass, ceramic or of other material approved by the Department.

- (b) Waste passages shall have smooth surfaces and be free of obstructions, recesses or cross braces which would restrict or interfere with flow of black wastes.
- (c) Biocides and oxidants shall be added to waste detention chambers at rates and intervals recommended by the chemical manufacturer and approved by the Department.
- (d) Chambers and receptacles shall provide a minimum storage capacity of fifty (50) gallons per seat.
- (e) Portable shelters housing chemical toilets shall display the business name of the licensed sewage disposal service that is responsible for servicing them.

LCR 3-110 CONSTRUCTION OF SEEPAGE PITS, CESSPOOLS AND GRAY WATER WASTE DISPOSAL SUMPS

- (1) Seepage Pits or Cesspools:
 - (a) The liquid capacity of a seepage pit or cesspool shall be at least equal to the calculated volume of the required septic tank capacity for the dwelling or establishment served.
 - (b) The minimum inside diameter of the lining shall be four (4) feet.
 - (c) Two or more seepage pits shall be separated from each other by a minimum distance equal to twelve (12) feet of undisturbed earth. Whenever a pit with an inside diameter greater than four (4) feet is used, pits shall be separated by a distance equal to three (3) times the diameter of the largest pit. For pits over twenty (20) feet in depth, the minimum space between pits shall be twenty (20) feet.
 - (d) Maximum depth of seepage pits and cesspools shall be thirty-five (35) feet below the ground surface.
 - (e) The seepage pit or cesspool shall be lined with stone, fired clay brick, building tile, adequately reinforced perforated precast concrete rings at least two and one-half (2 1/2) inches thick, or other materials approved by the Department. A six (6) inch space shall be required between the lining of the pit and the soil, and it shall be backfilled with clean, coarse filter material.
 - (f) The inlet pipe of the seepage pit or cesspool shall be an elbow constructed of cast-iron or other material approved by the Department.
 - (g) Pits shall be covered with reinforced concrete tops equivalent in strength to septic tank covers required under LCR 3-10 and LCR 3-20.

- (h) An inspection port, not less than six (6) inches across its shortest dimension shall provide access at the top of the seepage pit over the inlet. (See Division 1, Diagrams 14 and 15.)
 - (i) Connecting building and/or effluent sewer lines shall be laid on a firm bed of undisturbed earth throughout their length.
 - (j) When multiple pits are used, or in the event new pits are added to an existing system, they should be connected in parallel.
- (2) Gray Water Waste Disposal Sumps. A gray water waste disposal sump shall consist of a receiving chamber, settling chamber, and either a seepage chamber or disposal trench. Gray water waste disposal sumps shall be constructed of materials approved by the Department. (See Division 1, Diagrams 12 and 13.)

LCR 3-120 FLEXIBLE MEMBRANE LINERS FOR SAND FILTERS TREATING SEPTIC TANK EFFLUENT

- (1) Unsupported polyvinyl chloride (PVC) shall have the following properties:

<u>Properties</u>	<u>Test Method</u>
(a) Thickness	ASTM D 1593/30 mil.minimum Para 8.1.3
(b) Specific Gravity (minimum)	ASTM D 792 Method A
(c) Minimum Tensile Properties (each direction)	ASTM D 882
(A) Breaking Factor (pounds/inch width)	Method A or B 69 (1 inch wide)
(B) Elongation at Break	Method A or B 300
(C) Modulus (force) at 100% Elongation (pounds/inch width)	Method A or B 27
(d) Tear Resistance (pounds minimum)	ASTM D 1004 8 Die C
(e) Low Temperature	ASTM d 1790 -20 degrees F
(f) Dimensional Stability	ASTM D 1204 +/- 5
(each direction, percent change maximum)	212 degrees F, 15 min.
(g) Water Extraction	ASTM D 1239 -9.35% max.

(h) Volatile Loss	ASTM D1203 Method A	0.7% max.
(i) Resistance to Soil Burial (percent change maximum in original value)	ASTM D 3093	
(A) Breaking Factor		-5
(B) Elongation at Break		-20
(C) Modulus at 100% Elongation		+/- 10
(j) Bonded Seam Strength (factor seam, breaking factor, ppi width)	ASTM D 3083	
(k) Hydrostatic Resistance	ASTM D 751 Method A	82

(2) Installation Standards:

- (a) Patches, repairs and seams shall have the same physical properties as the parent material.
- (b) Site considerations and preparation:
 - (A) The supporting surface slopes and foundation to accept the line shall be stable and structurally sound including appropriate compaction. Particular attention shall be paid to the potential of sinkhole development and differential settlement.
 - (B) Soil stabilizers such as cementations or chemical binding agents shall not adversely affect the membrane; cementations and chemical binding agents may be potentially abrasive agents.
- (c) Only fully buried membrane liner installation shall be considered to avoid weathering.
- (d) Unreinforced liners have high elongation and can conform to irregular surfaces and follow settlements within limits. Unreasonable strain reduces effective thickness and may reduce life expectancy by lessening the chemical resistance of the thinner (stretched) material. Every effort shall be made to minimize the strain (or elongation) anywhere in the flexible membrane liner.
- (e) Construction of site:
 - (A) Surface condition:
 - (i) Preparation of earth subgrade. The prepared subgrade shall be of soil types no larger than Unified Soil Classification

System (USCS) sand (SP) to a minimum of four (4) inches below the surface and free from loose earth, rock, fractured stone, debris, cobbles, rubbish and roots. The surface of the completed subgrade shall be properly compacted, smooth, uniform and free from sudden changes in grade. Importing suitable soil may be required.

- (ii) Maintenance of subgrade. The earth subgrade shall be maintained in a smooth, uniform and compacted condition during installation of the lining.

(B) Climatic Conditions:

- (i) Temperature. The desirable temperature range for membrane installation is 42 degrees F to 78 degrees F. Lower or higher temperatures may have an adverse effect on transportation, storage, field handling and placement, seaming and backfilling and attaching boots and patches may be difficult. Placing liner outside the desirable temperature range shall be avoided.
- (ii) Wind. Wind may have an adverse effect on liner installation such as interfering with liner placement. Mechanical damage may result. Cleaning of areas for boot connection and patching may not be possible. Alignment of seams and cleanliness may not be possible. Placing the liner in high wind shall be avoided.
- (iii) Precipitation. When field seaming is adversely affected by moisture, portable protective structures and/or other methods shall be used to maintain a dry sealing surface. Proper surface preparation for bonding boots and patches may not be possible. seaming, patching and attaching boots shall be done under dry conditions.

- (C) Structures. Penetration of a flexible liner by any designed means shall be avoided. Where penetrations are necessary, such as horizontal and vertical pipes, it is essential to obtain a secure, liquid-tight seal between the pipes and the flexible liner. Liners shall be attached to pipes with a mechanical type seal supplemented by a chemically compatible caulking or adhesive to effect a liquid-tight seal. The highest order of compaction shall be provided in the area adjacent to pipes to compensate for any settlement.

(D) Liner Placement:

- (i) Size. The final cut size of the liner shall be carefully determined and ordered to generously fit the container geometry without field seaming or excess straining of the liner material.

- (ii) Transportation, handling and storage. Transportation, handling and storage procedures shall be planned to prevent material damage. Material shall be stored in a secured area and protected from adverse weather.
- (iii) Site inspection. A site inspection shall be carried out by the Agent and the installer prior to liner installation to verify surface conditions, etc.
- (iv) Deployment. Panels shall be positioned to minimize handling. Seaming should not be necessary. Bridging or stressed conditions shall be avoided with proper slack allowances for shrinkage. The liner shall be secured to prevent movement and promptly backfilled.
- (v) Anchoring trenches. The liner edges should be secured at regular intervals in a backfilled trench.
- (vi) Field seaming. Field seaming, if absolutely necessary, shall only be attempted when weather conditions are favorable. The contact surfaces of the materials should be clean of dirt, dust, moisture, or other foreign materials. The contact surfaces shall be aligned with sufficient overlap and bonded in accordance with the suppliers' recommended procedures. Wrinkles shall be smoothed out and seams should be inspected by nondestructive testing techniques to verify their integrity. As seaming occurs during installation, the field seams shall be inspected continuously and any faulty area repaired immediately.
- (vii) Field repairs. It is important that traffic on the lined area be minimized. Any necessary repairs to the liner shall be patched using the same lining material and following the recommended procedure of the supplier.
- (viii) Final inspection and acceptance. As completed, the liner installation should be tested for functional integrity. All joints, seams and mechanical seals should be checked both during and after installation. Hydrostatic testing to evaluate watertightness of the completed liner installation before placement of any backfill may be required at the discretion of either the Agent or the owner/purchaser. The lined basin shall be filled to the four (4) foot level with water after the pipe inlets and outlets have been fitted with temporary plugs. Acceptance of workmanship shall be based upon a leakage rate of no more than 0.25 inches in a 24 hour period. Virtually no leakage should result from good workmanship, however.

- (3) Operation and Maintenance Standards. The owner/purchaser of a sand filter system must recognize that he assumes the continuous responsibility to preserve the installation as near as practical in its "as built" state. This responsibility includes the control of erosion of any "mound," the control and removal of large perennial plants, the fencing out of livestock and the control of burrowing animals.

**INFORMATION SUMMARY SHEET
STANDARD SEPTIC SYSTEM DIMENSIONS**

Some important dimensions for standard subsurface systems include, but are not limited to:

Building Sewer Minimum Length Minimum Fall	5' 1/4" per foot
Effluent Sewer Minimum distance to distribution box Minimum Fall	5' 4" per 100 feet, but not less than 2" from one end of pipe to the other
Disposal Trenches and Lateral Piping Maximum fall	1"
Header Pipe Minimum Length Disposal Trenches Maximum Length Minimum Bottom Width Minimum Depth, using: <ol style="list-style-type: none"> 1. Equal or loop distribution 2. Serial distribution 3. Pressure distribution Maximum Depth Minimum Distance of Undisturbed Earth between disposal trenches	4' 125' 24" 18" 24" 18" 36" 8'
Filter Material Minimum Depth (total) <ol style="list-style-type: none"> 1. Minimum depth above distribution pipe 	12" 2"
<ol style="list-style-type: none"> 2. Minimum depth below distribution pipe 	6"
Backfill Minimum Depth, using: <ol style="list-style-type: none"> 1. Equal or Loop Distribution 2. Serial Distribution 	6" 12"