

PART 2

**Modoc County Onsite Wastewater Treatment Systems (OWTS)
Technical Standards Policy**

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PART 3

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1.0 Definitions

"Absorption Area" means the entire area used for underground dispersion of the liquid portion of sewage including the area designated for a future replacement system. It may consist of a seepage pit, absorption field, or combination of the two. It may also consist of a cesspool, seepage bed, bottomless sand filter, or evapotranspiration-absorption system.

"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 that are designed to distribute effluent for oxidation and absorption by the soil within the zone of aeration.

"Absorption Field" means a system of absorption trenches, a seepage trench, or a system of seepage trenches.

"Absorption Trench" means a ditch or a trench installed into soil, permeable saprolite, or diggable bedrock, with vertical sides and a substantially flat bottom.

"Aerobic System" means an alternative system that incorporates a septic tank or other treatment facility, an aerobic sewage treatment facility, and an absorption facility to provide treatment before dispersal.

"Agent" means the Environmental Health Director or person authorized to act on behalf of the director who possesses a valid State of California Registered Environmental Health Specialist certificate.

"Alteration" means expansion or change in location of an existing system or any part thereof. Major alteration is the expansion or change in location of the soil absorption facility, treatment unit, or any part thereof. Minor alteration is the replacement or relocation of a septic tank or other components of the system other than the soil absorption facility, or a change in distribution technique or method.

"Alternative System" means any onsite wastewater treatment system approved by the director.

"Alternative Treatment Technologies" means an alternative system that incorporates aerobic and other treatment technologies or units not specifically described elsewhere in this policy.

"Approved Material" means construction items that have been approved for use by MCEH.

"Approved Criteria" means methods of design or construction that have been approved for use by MCEH.

"ASTM" means American Society of Testing Materials.

"Authorization Notice" means a written document issued by an agent establishing that an existing onsite wastewater treatment system appears adequate for its intended use.

"Authorized Representative" means a person with written authorization to act as another person's delegate.

"Automatic Siphon" means a hydraulic device designed to rapidly discharge the contents of a dosing tank between predetermined liquid levels.

"Bedroom" means any room within a dwelling accepted as a bedroom by state or local building departments.

"Biochemical Oxygen Demand" (BOD₅) means the quantity of oxygen used in the biochemical oxidation of organic matter in five days at 20 degrees centigrade under specified conditions and reported as milligrams per liter (mg/L).

"Black Waste" means human body wastes including feces, urine, other substances of body origin, and toilet paper.

"Capping Fill System" means an alternative system that incorporates an absorption trench with an effective sidewall installed a minimum of 12 inches into the natural soil below a soil cap of specified depth and texture.

"Carbonaceous Biochemical Oxygen Demand" (CBOD₅) means BOD minus the nitrogenous oxygen demand, typically measured in mg/L.

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"Chemical Recirculating Toilet Facility" means a toilet facility wherein black wastes are deposited and carried from a bowl by a combination of liquid waste and water that has been chemically treated and filtered.

"Chemical Toilet Facility" means a nonflushing, nonrecirculating toilet facility wherein black wastes are deposited directly into a chamber containing a solution of water and chemical.

"Clayey Soil" means mineral soil with over 40 percent clay that shrinks and develops wide cracks when dry and swells and shears when wet, forming slickensides and wedge-shaped structure. Clayey soil is very hard or extremely hard when dry, very firm when moist, and very sticky and very plastic when wet.

"Claypan" means a dense, compact clay layer in the subsoil. It has a much lower permeability 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 and impede movement of water, air, and growth of plant roots.

"Combustion Toilet Facility" means a toilet facility wherein black wastes are deposited directly into a combination chamber for incineration.

"Commercial Facility" means any structure or building or portion thereof other than a single-family dwelling.

"Commercial Food Service High Strength Waste Water" means wastewater that does not exceed 900 mg/L BOD and has a properly sized and functioning oil/grease interceptor.

"Community System" means an onsite system that serves more than one lot or parcel, more than one condominium unit, or more than one unit of a planned unit development.

"Completed Application" means an application form that is completed in full; is signed by the owner or owner's authorized representative and is accompanied by all required exhibits and fees.

"Conditions Associated with Saturation" means soil morphological properties that may indicate the presence of a water table that persists long enough to impair system function and create a potential health hazard. These conditions include depleted matrix chromas caused by saturation and not a relict or parent material feature, and the following:

- (a) High chroma matrix with iron depletions. Soil horizons whose matrix chroma is 3 or more in which there are some visible iron depletions having a value 4 or more and a chroma of 2 or less. Iron-manganese concentrations as soft masses or pore linings may be present but are not diagnostic of conditions associated with saturation.
- (b) Depleted matrix with iron concentrations. Soil horizons whose matrix color has a value of 4 or more and a chroma of 2 or less as a result of removal of iron and manganese oxides. Some visible zones of iron concentration are present as soft masses or pore linings.
- (c) Depleted matrix without iron concentrations. Soil horizons whose color is more or less uniform with a value of 4 or more and a chroma of 2 or less as a result of removal of iron and manganese oxides. These horizons lack visible iron concentrations as soft masses or pore linings.
- (d) Reduced matrix. Soil horizons whose color has a value of 4 or more and a chroma of 2 or less with hues that are often, but not exclusively, on the gley pages of the Munsell Color Book. Upon exposure to air, yellow colors form within 24 hours as some of the ferrous iron oxidizes.
- (e) Dark colored soils with organic matter accumulation. Mineral soils with a high amount of decomposed organic matter in the saturated zone, a value of 3 or less, and a chroma of 1 or less. Included in this category are organic soils with a minor amount of mineral matter.
- (f) Soils with a dark surface. The upper surface layer has a dark color with a value of 3 or less and a chroma of 1 or less immediately underlain by a layer with a chroma of 2 or less.
- (g) Iron stripping and staining in sandy soils. Soil horizons in which iron/manganese oxides or organic matter or both have been stripped from the matrix, exposing the primary base color of soil materials. The stripped areas and trans-located oxides or organic matter form a diffuse splotchy pattern of two or more colors.

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(h) Salt-affected soils. Soils in arid and semi-arid areas that have visible accumulations of soluble salts at or near the ground surface.

(i) Dark colored shrink-swell soils. Vertisols whose colors have values of 3 or less and chromas of 1 or less. Iron concentrations may be present but are not diagnostic of conditions associated with saturation.

"Confining Layer" means a layer associated with an aquifer that because of low permeability does not allow water to move through it perceptibly under head differences occurring in the groundwater system.

"Construction" includes the installation of a new system or part thereof or the alteration, repair, or extension of an existing system. The grading, excavating, and earth-moving work connected with installation, alteration, or repair of a system or part thereof is considered system construction.

"Conventional Sand Filter" means a filter with 2 feet or more of sand filter media designed to chemically and biologically process septic tank or other treatment unit effluent from a pressure distribution system operated on an intermittent basis.

"Curtain Drain" means a groundwater interceptor that is designed to divert groundwater from an absorption facility. The drain creates a "curtain" to block water from reaching the absorption facility.

"Department" means Modoc County Environmental Health (MCEH)

"Design Capacity" means the maximum daily flow a system is designed to treat and disperse.

"Design Criteria" means the criteria used in designing onsite wastewater treatment systems including but not limited to dimensions, geometry, type of materials, size of drain media or filter media, absorption field sizing, depth, grade or slope, hydraulic loading rate, or any other factor relevant to the successful operation of the system. It does not include absorption area siting criteria.

"Designer" means a person who plans onsite wastewater treatment and dispersal technology for an onsite system.

"Director" means the Director of the Modoc County Environmental Health Division.

"Disposal Trench" means "absorption trench."

"Distribution Box" means a watertight structure that receives septic tank or other treatment facility effluent and distributes it concurrently into 2 or more header pipes leading to the absorption area.

"Distribution Pipe" means an open-jointed or perforated pipe used in the dispersion of septic tank or other treatment facility effluent into absorption trenches, seepage trenches, or seepage beds.

"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.

"Diversion Valve" means a watertight structure that receives septic tank or other treatment facility effluent through one inlet and distributes it to 2 outlets, only one of which is used at a time.

"Dosing Tank" means a watertight receptacle placed after a septic tank or other treatment facility equipped with an automatic siphon or pump.

"Dosing Septic Tank" means a unitized device performing functions of both a septic tank and a dosing tank.

"Drainfield" means an "absorption field."

"Drain Media" means clean washed gravel or clean, crushed rock with a minimum size of 3/4 inch and a maximum size of 2-1/2 inches used in the distribution of effluent. The material must be durable and inert so that it will maintain its integrity, will not collapse or disintegrate with time, and will not be detrimental to the performance of the system. Drain media also includes any product or material approved by MCEH for distribution of effluent in an absorption field.

"Dwelling" means any structure or building or portion thereof that is used, intended, or designed to be occupied for human living purposes including but not limited to houses, houseboats, boathouses, mobile homes, recreational cabins, travel trailers, hotels, motels, and apartments.

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"Effective Seepage Area" means the sidewall area within an absorption trench or a seepage trench from the bottom of the trench to a level 2 inches above the distribution pipes; the sidewall area of any cesspool, seepage pit, unsealed earth pit privy, graywater waste absorption sump seepage chamber, or trench with drain media substitute; or the bottom area of a pressurized soil absorption facility installed in soil.

"Effective Soil Depth" means the depth of soil material above a layer that impedes movement of water and 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.

"Effluent Filter" means an effluent treatment device installed on the outlet of a septic tank or outside the septic tank in a separate enclosure and designed to prevent the passage of suspended matter larger than 3/16 inch in size. Filter shall be (NSF/ANSI) approved for septic tank effluent.

"Effluent Lift Pump" means a pump used to lift septic tank or other treatment facility effluent to a higher elevation.

"Effluent Sewer" means that part of the system of drainage piping that conveys partially treated sewage from a septic tank or other treatment facility into a distribution unit or an absorption facility.

"Emergency Repair" means immediate action to repair a failing system when sewage is backing up into a dwelling or building or to repair a broken pressure sewer pipe. It does not include the construction of new or additional absorption facilities but does include use of the septic tank as a temporary holding tank until new or additional absorption facilities can be permitted and constructed.

"Equal Distribution" means the distribution of effluent to a set of absorption trenches in which each trench receives effluent in equivalent or proportional volumes.

"Escarpment" means any naturally occurring slope greater than 50 percent that extends vertically 6 feet or more from toe to top, is characterized by a long cliff or steep slope that separates two or more comparatively level or gently sloping surfaces, and may intercept one or more layers that limit effective soil depth.

"Existing Onsite Wastewater Treatment System" means any installed onsite wastewater treatment system constructed in conformance with the rules, laws, and local ordinances in effect at the time of construction.

"Existing System" means "existing onsite wastewater treatment system."

"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 or that creates a public health hazard.

"Fecal Coliform" means bacteria common to the digestive systems of warm-blooded animals and cultured in standard tests. The term is typically used to indicate fecal pollution and the possible presence of enteric pathogens and is measured as colonies/100ml.

"Filter Fabric" means a woven or spun-bonded sheet material used to impede or prevent the movement of sand, silt, and clay into drain media.

"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, and they impede movement of water and air and growth of plant roots.

"Grade" means the rate of fall or drop in inches per foot or the percentage of fall of a pipe.

"Graywater" means household sewage other than "black wastes," such as bath water, kitchen waste water, and laundry wastes.

"Graywater Waste Sump" means a receptacle or series of receptacles designed to receive hand-carried graywater for dispersal into the soil.

"Grease and Oils" means a component of sewage typically originating from food stuffs, consisting of compounds of alcohol or glycerol with fatty acids.

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"Groundwater Interceptor" means any natural or artificial groundwater or surface water drainage system, including drain tile, curtain drain, foundation drain, cut banks, and ditches, that intercept and divert groundwater or surface water from the area of the absorption facility.

"Hardpan" means a hardened layer in soil caused by cementation of soil particles with silica, calcium carbonate, magnesium carbonate, iron, or organic matter. The hardness does not change appreciably with changes in moisture content. Hardpans impede movement of water and air and growth of plant roots.

"Header Pipe" means a tight-jointed part of the sewage drainage conduit that receives septic tank effluent from the distribution box, drop box, or effluent sewer and conveys it to the absorption area.

"Headwall" means a steep slope at the head or upper end of a land slump block or unstable landform.

"Holding Tank" means a watertight receptacle designed to receive and store sewage to facilitate treatment at another location.

"Holding Tank System" means an alternative system consisting of the combination of a holding tank, service riser, and level indicator (alarm), designed to receive and store sewage for intermittent removal for treatment at another location.

"Hydrosplitter" or **"hydrasplitter"** means a hydraulic device to proportion flow under pressure by the use of one or more orifices.

"Incinerator Toilet Facility" means "combustion toilet facility."

"Individual System" means a system that is not a community system.

"Individual Water Supply" means a source of water and a distribution system that provides water for drinking, culinary, or household uses and is not a public water supply system.

"Industrial Waste" means any liquid, gaseous, radioactive, or solid waste or a combination thereof resulting from any process of industry, manufacturing, trade, or business or from the development or recovery of any natural resources.

"Intermittent Sand Filter" means a conventional sand filter.

"Intermittent Stream" means any public surface 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.

"Invert" is the lowest portion of the internal cross section of a pipe or fitting.

"Lateral Pipe" means "distribution pipe."

"Maintenance" means taking the actions necessary to keep onsite system components properly functioning as designed. Maintenance is further defined as:

(a) Major Maintenance is cleaning, repairing or replacing a broken or plugged effluent sewer pipe that:

(A) Is the same make and model; or

(B) Meets the requirements in this division; and

(C) Is performed by a certified maintenance provider or certified licensed installer.

(b) Minor Maintenance includes, but is not limited to, repairing or replacing of a tank riser or lid, or pump, screen, filter, or other component internal to the tank that:

(A) Is the same make and model; or

(B) Meets the requirements in this division.

"Maintenance provider" means a person who performs maintenance of onsite systems and:

(a) Possesses adequate skills and knowledge regarding onsite wastewater treatment, absorption facilities, and system functions to competently inspect and maintain onsite systems, and

(b) Is certified by the system manufacturer if required.

"Mechanical Sewage Treatment Facility" or **"Mechanical Oxidation Sewage Treatment Facility"** means an aerobic sewage treatment facility.

"Nonwater-Carried Waste Facility" means any toilet facility that has no direct water connection, including but not limited to pit privies, vault privies, and portable toilets.

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"Occupant" means any person living or sleeping in a dwelling.

"Onsite Sewage Disposal System" means "onsite wastewater treatment system."

"Onsite Wastewater Treatment System" (OWTS) means any existing or proposed subsurface onsite wastewater treatment and dispersal system including but not limited to a standard subsurface, alternative, experimental, or nonwater-carried sewage system. It does not include systems that are designed to treat and dispose of industrial waste.

"Owner" means any person who alone, jointly, or severally:

- (a) Has legal title to any single lot, dwelling, dwelling unit, or commercial facility;
- (b) Has care, charge, or control of any real property as agent, executor, administrator, trustee, commercial lessee, or guardian of the estate of the holder of legal title; or
- (c) Is the contract purchaser of real property.

"Permanent Groundwater Table" means the upper surface of a saturated zone that exists year-round or for a period of time that develops soil features that would inhibit the effectiveness of a OWTS by causing a public health or environmental hazard. The thickness of the saturated zone and resulting elevation of the permanent groundwater table may fluctuate as much as 20 feet or more annually, but the saturated zone and associated permanent groundwater table is present at some depth beneath land surface throughout the year.

"Permit" means the written document, issued and signed by an agent, that authorizes a permittee to install a system or any part thereof and, in some cases, to operate and maintain the system in accordance with the permit.

"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.

"Pollution" or **"Water Pollution"** means any alteration of the physical, chemical, or biological properties of any waters of the state, including change in temperature, taste, color, turbidity, silt, or odor of the waters, or any discharge of any liquid, gaseous, solid, radioactive, or other substance into any waters of the state that, alone or in connection with any other substance, threatens to create a public nuisance or 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.

"Portable Toilet" means any self-contained chemical toilet facility that is housed within a portable toilet shelter and includes but is not limited to construction-type chemical toilets.

"Pressure Distribution Lateral" means piping and fittings in pressure distribution systems that distribute septic tank or other treatment unit effluent to drain media through small diameter orifices.

"Pressure Distribution Manifold" means piping and fittings in a pressure distribution system that supply effluent from pressure transport piping to pressure distribution laterals.

"Pressure Distribution System" means any system designed to uniformly distribute septic tank or other treatment unit effluent under pressure in an absorption facility or treatment unit.

"Pressure Transport Piping" means piping that conveys sewage effluent from a septic tank or other treatment or distribution unit typically by means of a pump or siphon.

"Pretreatment" means the wastewater treatment that takes place prior to discharging to any component of an onsite wastewater treatment system, including but not limited to pH adjustment, oil and grease removal, BOD5 and TSS reduction, screening, and detoxification.

"Privy" means a structure used for disposal of human waste without the aid of water. It consists of a shelter built above a pit or vault in the ground into which human waste falls.

"Projected Daily Sewage Flow" or **"design flow"** means the peak daily quantity of sewage production from a facility for which a system is sized and designed. The projected daily sewage flow allows for a safety margin and reserve capacity for the system during periods of heavy use.

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"Public Health Hazard" means the presence of sufficient types or amounts of biological, chemical, physical, or radiological agents relating to water or sewage that cause or threaten to cause human illness, disorders, or disability. These include but are not limited to pathogenic viruses, bacteria, parasites, toxic chemicals, and radioactive isotopes.

"Qualified professional" means an individual licensed or certified by a State of California agency to design OWTS and practice as professionals for other associated reports, as allowed under their license or registration. This shall include an individual who possesses a registered environmental health specialist certificate, registered geologist, or licensed as a professional engineer. Soil scientist certified by the Soil Science Society of America can be considered qualified professionals for purposes of site evaluations if approved by the director.

"Recirculating Gravel Filter (RGF)" means a gravel filter wastewater treatment system in which a portion of the filtered effluent is mixed with septic tank effluent in a recirculation/dilution tank and redistributed to the filter.

"Recirculating Gravel Filter System" means a recirculating gravel filter and an absorption facility used to treat wastewater.

"Redundant Absorption Field System" means a system in which two complete absorption fields are installed, the absorption trenches of each system alternate with each other, and only one system operates at a given time.

"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.

(a) Major repair is the replacement of the soil absorption facility, treatment unit, or any part thereof.

(b) Minor repair is the replacement of a septic tank.

"Residential Strength Wastewater" means septic tank effluent that does not typically exceed five-day biochemical oxygen demand (BOD₅) of 300 mg/L; total suspended solids (TSS) of 150 mg/L; total Kjeldahl nitrogen (TKN) of 150 mg/L; oil & grease of 25 mg/L; or concentrations or quantities of other contaminants normally found in residential sewage.

"Sand Filter Media" means a medium sand or other approved material used in a conventional sand filter. The media must be durable and inert so that it will maintain its integrity, will not collapse or disintegrate with time, and will not be detrimental to the performance of the system. The particle size distribution of the media must be determined through a sieve analysis conducted in accordance with ASTM C-117 and ASTM C-136. The media must comply with the following particle size distribution: 100 percent passing the 3/8 inch sieve, 95 percent to 100 percent passing the No. 4 sieve, 80 percent to 100 percent passing the No. 8 sieve, 45 percent to 85 percent passing the No. 16 sieve, 15 percent to 60 percent passing the No. 30 sieve, 3 percent to 15 percent passing the No. 50 sieve, and 4 percent or less passing the No. 100 sieve.

"Sand Filter Surface Area" means the area of the level plane section in the medium sand horizon of a conventional sand filter located 2 feet below the bottom of the drain media containing the pressurized distribution piping.

"Sand Filter System" means an alternative system that combines a septic tank or other treatment unit; a dosing system with effluent pump and controls or dosing siphon, piping and fittings; a sand filter; and an absorption facility to treat wastewater.

"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 has rock structure instead of soil structure and does not include hard bedrock or hard fractured bedrock.

"Saturated Zone" means a three-dimensional layer, lens, or other section of the subsurface in which all open spaces including joints, fractures, interstitial voids, and pores are filled with groundwater. The

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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.

"Scum" means a mass of sewage solids floating at the surface of sewage that is buoyed up by entrained gas, grease, or other substances.

"Seepage Area" means "effective seepage area."

"Seepage Bed" means an absorption system having absorption trenches wider than 3 feet.

"Seepage Pit" means a cesspool that has a treatment facility such as a septic tank ahead of it.

"Seepage Trench System" means a system with absorption trenches with more than 6 inches of drain media below the distribution pipe.

"Self-Contained Nonwater-Carried Waste Containment Facility" means a system in which all waste is contained in a watertight receptacle, including but not limited to vault privies, chemical toilets, combustion toilets, recirculating toilets, and portable toilets.

"Septage" means the domestic liquid and solid sewage pumped from septic tanks, cesspools, holding tanks, vault toilets, chemical toilets or other similar domestic sewage treatment components or systems and other sewage sludge not derived at sewage treatment plants.

"Septic Tank" means a watertight receptacle that receives sewage from a sanitary drainage system and 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.

"Septic Tank Effluent" means partially treated sewage that is discharged from a septic tank.

"Serial Distribution" means the distribution of effluent to a set of absorption trenches constructed at different elevations in which one trench at a time receives effluent in consecutive order beginning with the uppermost trench by means of a drop box, a serial overflow, or another approved distribution unit. The effluent in an individual trench must reach a level of 2 inches above the distribution pipe before effluent is distributed to the next lower trench.

"Sewage" means water-carried human and animal wastes, including kitchen, bath, and laundry wastes from residences, buildings, industrial establishments, or other places, together with any groundwater infiltration, surface waters, or industrial waste that may be present.

"Sewage Disposal Service" means:

- (a) The construction of onsite wastewater treatment systems (including the placement of portable toilets) or any part thereof;
- (b) The pumping out or cleaning of onsite wastewater treatment systems (including portable toilets) or any part thereof;
- (c) The disposal of material derived from the pumping out or cleaning of onsite wastewater treatment systems (including portable toilets); or
- (d) Grading, excavating, and earth-moving work connected with the operations described in subsection (a) of this section.

"Sewage Stabilization Pond" means a pond designed to receive the raw sewage flow from a dwelling or other building and retain that flow for treatment without discharge.

"Site Evaluation Report" means a report on the evaluation of a site to determine its suitability for an onsite system prepared in accordance with section 6.0 of this policy.

"Slope" means the rate of fall or drop in feet per 100 feet of the ground surface. It is expressed as percent of grade.

"Soil Permeability" refers to the ability of a soil to transmit water or air.

"Soil Separate" means the size of soil particles described in Table 6.

"Soil Texture" means the amount of each soil separate in a soil mixture. Field methods for judging the texture of a soil consist 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 and shown in Table 5.

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(A) 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.

(B) Loamy Sand: Consists primarily of sand, but has enough silt and clay to make it somewhat cohesive. The individual sand grains can readily be seen and felt. Squeezed when dry, the soil will form a cast that will readily fall apart, but if squeezed when moist, a cast can be formed that will withstand careful handling without breaking.

(C) 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. 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.

(D) Loam: Consists of an even mixture of the different sizes of sand and of silt and clay. It is easily crumbled when dry and has a slightly gritty, yet fairly smooth feel. It is slightly plastic. Squeezed in the hand when dry, it will form a cast that will withstand careful handling. The cast formed of moist soil can be handled freely without breaking.

(E) 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 together in puddles. Either dry or moist, casts can be handled freely without breaking. When a ball of moist soil is passing between thumb and finger, it will not press out into a smooth, unbroken ribbon but will have a broken appearance.

(F) Clay Loam: Consists of an even mixture of sand, silt, and clay that 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.

(G) 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 or 1/8-inch wire can be formed between thumb and finger that will sustain its weight and will withstand gentle movement.

(H) 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 or 1/8 inch or smaller wire formed between thumb and finger will withstand considerable movement and deformation.

(I) Clay: Consists of large amounts of clay and moderate to small amounts of sand and silt. It breaks into very hard clods or lumps when dry. When moist, a thin, long ribbon or 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.

(b) Soil textural characteristics described in the United States Department of Agriculture Textural Classification Chart are incorporated herein by reference. This textural classification chart is based on the Standard Pipette Analysis as defined in the United States Department of Agriculture, **Soil Conservation Service Soil Survey Investigations Report No. 1 (See Table 5)**.

"Soil with Rapid or Very Rapid Permeability" means:

(a) Soil that contains 35 percent or more of coarse fragments 2 millimeters in diameter or larger by volume with interstitial soil of sandy loam texture or coarser;

(b) Coarse textured soil defined as loamy sand or sand in this rule; or

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(c) Stones, cobbles, gravel, and rock fragments with too little soil material to fill interstices larger than 1 millimeter in diameter.

"Split Waste Method" means a process where black waste sewage and graywater from the same dwelling or building are managed by separate systems.

"Standard Subsurface System" means an onsite wastewater treatment system consisting of a septic tank, distribution unit, and absorption facility constructed in accordance with this policy.

"SWRCB" means California State Water Resources Control Board.

"Steep Slope System" means a seepage trench system installed on slopes greater than 30 percent and less than or equal to 45 percent.

"Subsurface Absorption System" means the combination of a septic tank or other treatment unit and an effluent sewer and absorption facility.

"Subsurface Sewage Disposal" means "subsurface wastewater treatment."

"Subsurface Disposal System" means "subsurface absorption system."

"Subsurface Wastewater Treatment" means the dispersal of wastewater from a septic tank or other treatment unit into the zone of aeration to be further treated through physical, chemical, or biological processes.

"System" or "onsite system" means "onsite wastewater treatment system."

"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 wastewater treatment.

"Tile Dewatering System" means an alternative system in which the absorption facility is encompassed with field collection drainage tile to reduce and control a groundwater table and create a zone of aeration below the bottom of the absorption facility.

"Toilet Facility" means a fixture housed within a toilet room or shelter to receive black waste.

"Total Kjeldahl Nitrogen" (TKN) means the combination of ammonia and organic nitrogen, excluding nitrate and nitrite nitrogen.

"Total Nitrogen" (TN) means the sum of all nitrogen forms.

"Total Suspended Solids" (TSS) means solids in wastewater that can be removed readily by standard filtering procedures in a laboratory and reported as milligrams per liter (mg/L).

"Treatment" means the alteration of the quality of wastewaters by physical, chemical, or biological means or combination thereof to reduce potential degradation of water quality or the environment and risk to public health.

"Treatment Standard 1" means a 30-day average of less than 20 mg/L of BOD5 and 20 mg/L of TSS. A 30-day average of less than 17 mg/L of CBOD5 is acceptable in lieu of the BOD5 value.

"Treatment Standard 2" means a 30-day average of less than 20 mg/L of BOD5 and 20 mg/L of TSS, a 30-day geometric mean of less than 400 fecal coliform per 100 milliliters, and a 30-day average of 30 mg/L of TN. A 30-day average of less than 17 mg/L of CBOD5 is acceptable in lieu of the BOD5 value.

"Turbidity" means the optical condition of waters caused by suspended or dissolved particles or colloids that scatter and absorb light rays instead of transmitting light in straight lines through the water column. Turbidity may be expressed as nephelometric turbidity units (NTU) measured with a calibrated turbidimeter.

"Underdrain Media" means the material placed under the sand filter media in a sand filter and consists of clean, washed pea gravel with 100 percent passing the 1/2 inch sieve, 18 to 100 percent passing the 3/4 inch sieve, 5 to 75 percent passing the No. 4 sieve, 24 percent or less passing the No. 10 sieve, 2 percent or less passing the No. 16 sieve, and 1 percent or less passing the No. 100 sieve.

"Unstable Landforms" means areas showing evidence of mass downslope movement such as debris flow, landslides, rockfall, and hummock hill slopes with undrained depressions upslope. Examples are landforms exhibiting slip surfaces roughly parallel to the hillside; landslide scars and curving debris

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ridges; fences, trees, and telephone poles that appear tilted; and tree trunks that bend uniformly as they enter the ground. Active sand dunes are unstable landforms.

"**Vertisols**" means a mineral soil characterized by a high content of swelling-type clays that in dry seasons cause the soils to develop deep, wide cracks.

"**Wastewater**" means "sewage."

"**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.

2.0 Purpose

These rules establish requirements for the construction, alteration, repair, operation, and maintenance of onsite wastewater treatment 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 Modoc County.

3.0 Jurisdiction and Responsibility

This policy is approved by the Central Valley Regional Water Quality Control Board (CVRWQCB) and adopted by the Modoc County Board of Supervisors per Modoc County Code Chapter 13.04. CVRWQCB authorizes Modoc County to permit onsite systems, including receiving and processing applications, issuing permits, enforcing, and performing required inspections for onsite systems that do not require WDR permits. Identified general policy responsibility is as follows.

- (1) Each owner of real property is jointly and severally responsible for:
 - (a) Treating wastewater generated on that property in conformance with the rules adopted by the CVRWQCB and Modoc County;
 - (b) Connecting all plumbing fixtures from which wastewater is or may be discharged to a sewerage facility or approved onsite system;
 - (c) Maintaining, repairing, and replacing the onsite system on that property as necessary to ensure proper operation of the system; and
 - (d) Complying with all requirements for construction, installation, maintenance, replacement, and repair of onsite systems required in Modoc County Code and board approved policy.
- (2) Modoc County is responsible for:
 - (a) Shall submit an annual report to all the regional boards within the county containing the following information in tabular format.
 - (A) Number and location of complaints pertaining to OWTS and resolution, Attachment 1.
 - (B) Applications and registrations issued as part of the local septic tank cleaning registration program pursuant to Section 117400 et seq. of the California Health and Safety Code, Attachment 3.
 - (C) Number, location, type of permit issued, and tier for new and replacement OWTS, Attachment 2.
 - (b) MCEH shall maintain permit records filed according to township, range, and section. Permits may be filed electronically as budget allows. All permits are subject to MCEH public records request policy and procedure. Permit request will be processed within 10 working days as resources allow.
 - (c) Notification shall be made to a public water system and the California Department of Public Health upon discovery of a failing septic system or new installation or repair as described in the State Water Resources Control Board OWTS Policy Sections 3.5, 9.2.11 and 9.2.12.

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- (d) MCEH shall not issue permits for or have oversight of OWTS that discharge greater than 10,000 gallons per day.
- (e) MCEH shall maintain an OWTS owner education and outreach program. The Outreach could include a volunteer well monitoring program as budget permits. The program will be posted on MCEH website.

4.0 General Standards, Prohibitions and Requirements

- (1) Protection of public waters from public health hazards. An agent may not authorize installation or use of a system that is likely to pollute public waters or create a public health hazard. If, in the judgment of the agent, the minimum standards in this policy will not adequately protect public waters or public health on a particular site, the agent must require a system to meet requirements that are protective. This may include but is not limited to increasing setbacks, increasing drainfield sizing, or using an alternative system. The agent must provide the applicant with a written statement of the specific reasons why more stringent requirements are necessary.
- (2) Approved treatment and dispersal required. All wastewater must be treated and dispersed in a manner approved in accordance with these rules.
- (3) Prohibited discharges of wastewater. A person may not discharge untreated or partially treated wastewater or septic tank effluent directly or indirectly onto the ground surface or into public waters. Such discharge constitutes a public health hazard and is prohibited.
- (4) Prohibited discharges to systems. A person may not discharge into any system cooling water, air conditioning water, water softener brine, groundwater, oil, hazardous materials, roof drainage, or other aqueous or nonaqueous substances that are detrimental to the performance of the system or to groundwater.
- (5) Increased flows prohibited. Except where specifically allowed by this policy, a person may not 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-installation permit.
- (6) System capacity. Each system must have adequate capacity to properly treat and disperse the maximum projected daily sewage flow. The projected quantity of sewage flow must be determined from **Table 2** or other information the agent determines to be valid. The agent may approve a twenty-five percent reduction from flow estimates in **Table 2** if all the following apply:
 - (a) New construction or Remodels that result in utilizing or changing fixtures to current water efficiency standards and utilization of energy star appliances.
 - (b) Applicant requests the energy efficient twenty-five percent reduction in the application process.
 - (c) Permit lists the water efficiency requirements as a condition of use.
 - (d) Agent concurs with the reduction.
- (7) Material standards. All materials used in onsite systems must comply with general industry standards and be approved by MCEH. A list of approved materials and alternative septic systems can be obtained from MCEH.
- (8) Encumbrances. Before a permit to install a new system may be issued, the site for the new system must have any encumbrances identified, on the application, by the applicant (such as easements or deed restrictions) that could prevent the installation or operation of the system from conforming with this policy.
- (9) Plumbing fixtures connected. All plumbing fixtures in dwellings, commercial facilities, and other structures from which sewage is or may be discharged must be connected to and discharge into an approved area-wide sewerage system or an approved onsite system that is not failing.

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(10) Future connection to sewerage system. Placement of plumbing in buildings to facilitate connection to a sewerage system is encouraged in areas where a district has been formed to provide sewerage facilities.

(11) Property lines crossed: All or part of an onsite system, including areas for future repair or replacement, may not be located on one or more lots or parcels different from the lot or parcel on which the facility the system serves is located.

(12) Initial and replacement absorption area. Except as provided in specific rules, the absorption area, including installed system and replacement area, must not be subject to activity that is likely, in the opinion of the agent, to adversely affect the soil or the functioning of the system. This may include but is not limited to vehicular traffic, covering the area with asphalt or concrete, filling, cutting, livestock traffic, or other soil modification.

(13) Operation and maintenance. Owners of onsite systems must operate and maintain their systems in compliance with all permit conditions and applicable requirements in this policy and must not create a public health hazard or pollute public waters.

(14) Construction. An agent may limit the time period during which a system can be constructed to ensure that soil conditions, weather, groundwater, or other conditions do not adversely affect the reliability of the system.

(15) Permit requirements:

(a) A person may not cause or allow construction, alteration, or repair of a system or any part thereof without a permit issued by MCEH except for emergency repairs to existing systems as authorized under this policy.

(17) Annual permit fees and reports:

(a) Owners of sand filter, recirculating gravel filter, and alternative treatment technology systems that require a maintenance contract must submit annual fees and reports as follows:

(A) Owners must pay the annual report evaluation fee by the date specified for each year the system is in operation. A system is placed in operation when it first receives wastewater and remains in operation until MCEH receives notice the system has been decommissioned;

(B) Owners must submit written certification prepared by a maintenance provider on a MCEH approved form that assures the system has been maintained in accordance with the requirements of the rules in this policy during the reporting year and is operating in accordance with the approved design specifications.

(C) Owners are not required to submit fees or reports under this subsection that a maintenance provider has submitted on behalf of the owner in accordance with this section.

(18) Engineering plan review. Unless specifically exempted in this policy, all plans and specifications for the construction, installation, or modification of onsite systems must be submitted to the agent for approval or denial. The design criteria and rules governing the plan review are as follows:

(a) Plans and specifications for construction-installation permits for commercial sand filter, recirculating gravel filter, and advanced treatment technology systems with design capacities greater than 600 gpd may be required to be signed by a registered civil engineer.

(b) California Pines subdivision requires all OWTS plans to be signed by a California Registered Civil Engineer.

(19) Criteria and standards for design and construction. The criteria and standards for design and construction apply to all onsite systems:

(a) MCEH may authorize variances from the criteria, standards, and technologies in this policy through the Rural Area Consideration or by sound judgment of the director.

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(20) Manufacturer's specifications. All materials and equipment, including but not limited to tanks, pipe, fittings, solvents, pumps, controls, and valves, must be installed, constructed, operated, and maintained in accordance with this policy and manufacturer's specifications.

(21) Sewer and water lines. Effluent sewer and water line piping constructed of materials that are approved for use within a building may be run in the same trench if both of the following conditions are met:

- (a) The bottom of the water pipe at all points is at least 12 inches above the top of the sewer pipe;
- (b) The water pipe is placed on a solid shelf excavated at one side of the common trench with a minimum clear horizontal distance of at least 12 inches from the sewer pipe.

Effluent sewer pipe of material not approved for use in a building must not be run or laid in the same trench as water pipe. All effluent sewer pipe shall install a minimum 18 gauge, green-jacketed tracer wire or green color-coded metallic locate tape placed above all tight piping.

(22) Septage management. A person may not dispose of wastewater, septage, or sewage-contaminated materials in any location or manner not authorized by MCEH.

(23) Service Contracts for supplemental treatment when required by MCEH or the manufacturer. Service contracts for servicing and maintaining onsite systems must include:

- (a) A schedule for the first two years of operation that directs the maintenance provider to inspect, adjust and service the system a minimum of once every six months,
- (b) A schedule for subsequent years of operation that directs the maintenance provider to inspect, adjust and service the system:
 - (A) According to the manufacturer's specifications in the approved owner's manual; and
 - (B) At least once every 12 months.

(c) A clause stating that the maintenance provider must provide an effluent quality inspection that includes but is not limited to:

- (A) A visual assessment for color, turbidity, and scum overflow,
- (B) An olfactory assessment for odor, and
- (C) Any other performance assessment or operational diagnosis, which may include sampling of treated effluent (post-disinfection if disinfection is used) necessary to determine or ensure proper operation of the facility.

(d) A clause stating that the maintenance provider must notify the system owner in writing about any improper system function that cannot be remedied during the time of inspection and include an estimated date of correction.

(e) Other information and conditions of the agreement such as:

- (A) Owner's name and address;
- (B) Property address and legal description;
- (C) Permit requirements;
- (D) Contact information for the owner, maintenance provider, and agent;
- (E) Details of service to be provided, including the service required in this section;
- (F) Schedule of maintenance provider duties;
- (G) Cost and length of service contract and time period covered;
- (H) Details of any warranty; and
- (I) Owner's responsibilities under the contract for routine operation of the onsite system.

(24) A maintenance provider under a contract must:

- (a) Observe and record conditions in the drainfield during all operation and maintenance activities for the system and report those observations to the system owner;
- (b) Make repairs or alteration to comply with applicable requirements in this policy.

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(c) Maintain accurate records of their service contracts, customers, performance data, and time lines for renewing the contracts. These records must be available for inspection upon request by the agent;

(d) Notify the agent of service contracts that are terminated or not renewed within 30 days of their termination or expiration,

(e) Make emergency service available within 48 hours of a service request,

(f) Submit the annual report required in section (17) and the annual evaluation fee. for each system under contract to be serviced by the maintenance provider.

(g) System owners must report evidence of any system failures to the agent and take appropriate action approved by the agent to correct the problem.

(25) Groundwater levels. All groundwater levels must be predicted using conditions associated with saturation. In areas where conditions associated with saturation do not occur or are inconclusive, such as in soil with rapid or very rapid permeability, predictions of the high level of the water table must be based on past recorded observations of an agent. If such observations have not been made or are inconclusive, the application must be denied until observations can be made. Groundwater level observations must be made during the period of the year in which high groundwater normally occurs in an area. A properly installed nest of piezometers or other methods acceptable to MCEH must be used for making water table observations.

(26) Separation of the bottom of the dispersal system to permanent groundwater less than two feet, except for seepage pits, which shall not be less than ten feet is prohibited.

(27) A person may not submit information required by statute, rule, permit, or order that is false, inaccurate, or incomplete.

(28) Any new or replacement OWTS on sites greater than 30% slope shall have a qualified registered professional report approved by MCEH and comply with section 23.0 prior to permit issuance.

5.0 Approval of New or Innovative Technologies, Materials, or Designs for Onsite Systems

(1) Must demonstrate to the director the effectiveness of the product to reasonably prevent public health risk and degradation to water quality. Approval of any product or process is subject to annual review by MCEH.

6.0 Site Evaluation Procedures

(1) A site evaluation is the first step in the process of obtaining a construction-installation permit for an onsite system. Except as otherwise provided in these rules, before obtaining a permit to construct an onsite system, a person must obtain a site evaluation report finding the site suitable for an onsite system in accordance with this policy.

(2) Completed applications for site evaluations must be submitted to the agent with all required exhibits and the applicable site evaluation fee.

(a) Unless other procedures are approved by MCEH, applicants must provide at least two test pits, with dimensions and configuration as directed by the agent, located approximately 75 feet apart and within the area of the proposed system, including the repair/replacement area.

(b) The fee paid for a site evaluation report covers as many site inspections within ninety days of the initial inspection as necessary to determine the suitability of a single lot or parcel for a single system. A site is considered to be suitable as soon as it is found to meet the criteria for any type of onsite system.

(3) Site evaluation report.

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- (a) The agent or, or a qualified professional must evaluate the site of the proposed system, consider all system options, and provide a report of such evaluation.
 - (b) The site evaluation report must be on a form approved by MCEH.
 - (c) The report must contain, at a minimum, a site diagram and observations of the following site characteristics.
 - (A) Parcel size;
 - (B) Slope in absorption field and replacement areas (percent and direction);
 - (C) Surface streams, springs, other bodies of water;
 - (D) Existing and proposed wells;
 - (E) Escarpments;
 - (F) Cuts and fills;
 - (G) Unstable landforms;
 - (H) Soil profiles determined from test pits provided by applicant;
 - (I) Water table levels (as indicated by conditions associated with saturation or water table observations);
 - (J) Useable area for initial and replacement absorption areas;
 - (K) Encumbrances observed or listed on the application;
 - (L) Sewerage availability;
 - (M) Other observations including off-site features as appropriate.
 - (d) Site evaluation reports for subdivisions or other land divisions must be based on an evaluation of each lot.
 - (e) Specific conditions or limitations imposed on an approved site must be listed on the evaluation report.
 - (f) A site evaluation report approving a site for a system qualifies the property owner for a permit to construct a system on that property if other requirements for a permit are met.
 - (g) Example MCEH site evaluation forms are in **Attachments 4, 5, and 6**.
- (4) Approval or denial:
- (a) A site must be approved for a system if the site evaluation report documents the following:
 - (A) The site evaluation report identifies the types of the initial and replacement systems for which the site is approved.
 - (B) All criteria for approval of a specific type or types of systems, as described in this policy, are satisfied.
 - (C) Each lot or parcel has sufficient usable area available to accommodate an initial and replacement system. The usable area must be located within the same parcel. The initial and replacement systems may 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 must indicate the types of the initial and replacement systems for which the site is approved.
 - (D) A replacement area is not required in areas under control of a legal entity such as a city, county, or sanitary district if the legal entity gives a written commitment that sewerage service will be provided within five years.
 - (b) A site must be denied if the conditions identified in section (4)(a) of this rule are not met or conflicts with SWRCB OWTS Policy section 9.4.9 cannot be mitigated.
 - (c) Changes in technical requirements in this policy may not invalidate a site approval but may require design changes or use of a different type of system.

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7.0 Existing System Evaluation Report

(1) An evaluation of an existing onsite wastewater treatment system must meet the following requirements:

- (a) An evaluation must be performed by a person with one or more of the qualifications listed below:
 - (A) California Registered Engineer with knowledge and experience inspecting onsite systems;
 - (B) A California Registered Environmental Health Specialist with knowledge and experience inspecting onsite systems;
 - (C) A specific manufacturer certified installer with knowledge and experience inspecting onsite systems;
 - (D) A specific manufacturer certified maintenance provider with knowledge and experience inspecting onsite systems;
 - (E) A current NAWT inspector with training and certification accreditation;
 - (F) A C-36 or C-42 California licensed contractor with knowledge and experience inspecting onsite systems.
- (b) An evaluation must include the following:
 - (A) An examination of the records available on the existing system, including all permit records and pumping and other maintenance records.
 - (B) For existing systems without a permit record, the inspector must create a record to document system materials, components, and location. Methods used to create the record may include the use of soil probes, metal detectors, electronic pipe tracers, radio and video technology, and uncovering system components.
 - (C) A field inspection of the existing system.
 - (D) A report of findings on a form approved by MCEH including the information obtained relevant to system performance, such as age, usage, tank condition, records of installation, maintenance, and repairs; type, size, capacity, and condition of components; evidence of any failures; other relevant information (e.g., condition of repair area if known); and a complete sketch of the system showing location and distances of major components.
 - (E) The evaluation must include all portions of the system that serve the facility, including any portion located on a lot or parcel different from the lot or parcel on which the facility the system serves is located.

8.0 Permit Application Procedures -- Construction, Installation, Alteration, and Repair Permits

(1) Permittees. A permit for construction of a system may be issued under this rule only to the owner or authorized agent of the real property that the system will serve.

(2) Application. A completed application for a construction -- installation, alteration, or repair permit must be submitted to the appropriate agent on approved forms with all required exhibits the applicable permit application fee. Applications that are not completed in accordance with this section will not be accepted for filing. Except as otherwise allowed in this division, the exhibits must include:

- (a) A site evaluation report approving the site for the type and quantity of waste to be disposed. Agents may waive the requirement for the report and fee for applications for repair or alteration permits.
- (b) A land use compatibility statement from the appropriate land use authority as required by MCEH.

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- (c) Plans and specifications for the onsite system proposed for installation within the area identified and approved by the agent in a site evaluation report. The agent must determine and request the minimum level of detail necessary to insure proper system construction.
 - (d) Any other information the agent determines is necessary to complete the permit application.
- (3) Deadlines for action. The agent must either issue or deny the permit within 20 days after receipt of the completed application unless weather conditions or distance and unavailability of transportation prevent the agent from timely action. The agent must notify the applicant of any delay and the reason for delay.
- (4) Permit denial. The agent must deny a permit if any of the following occurs.
- (a) The application contains false information.
 - (b) The application was wrongfully received by the agent.
 - (c) The proposed system would not comply with applicable requirements in this policy, county code, or state law.
 - (d) The proposed system, if constructed, would violate a moratorium issued by the applicable regional water quality control board.
 - (e) The proposed system location is encumbered as described in General Standards, Prohibitions and Requirements.
 - (f) A sewerage system that can serve the proposed sewage flow is both legally and physically available, as described in paragraphs (A),(B), and (C) of this subsection.
 - (A) Physical availability.
 - (i) A sewerage system is considered available if topographic or man-made features do not make connection physically impractical.
 - (ii) For proposed subdivisions or other developments the agent will determine sewerage availability.
 - (B) Legal availability. A sewerage system is deemed legally available if the system is not under a connection permit moratorium and the sewerage system owner is willing or obligated to provide sewer service.
 - (C) Complies with SWRCB OWTS Policy section 9.4.9.
- (5) Permit effective dates. A permit issued for construction of a system pursuant to this rule is effective for one year from the date of issuance. After a system has been installed pursuant to the permit and finalized by agent in MCEH, conditions specified in the permit continue in force as long as the system is in use.
- (6) Permit renewal, reinstatement, or transfer. An agent may renew, reinstate, or transfer a permit if the following conditions are met.
- (a) The applicant submits a completed application for permit renewal before the permit expiration date or for reinstatement within one year after the permit expiration date.
 - (b) Applications for transfer of a permit from a permittee to another person must be filed before the permit expiration date. Only the name of the permittee may be changed in a transfer.
 - (c) Applications for permit renewal, reinstatement, or transfer must conform to the requirements of this policy and the permit will be issued or denied in accordance with this policy.
- (7) Temporary holding tank. If a permit has been issued pursuant to these rules but existing soil moisture conditions preclude the construction of the soil absorption system, an agent may approve installation of a septic tank for use as a temporary holding tank for up to 8 months. Before approval, the permittee must demonstrate that the outlet of the tank has been sealed with a water tight seal and that the permittee has entered into a pumping contract for the tank. Unless otherwise authorized by the agent, the septic tank must be designed and constructed in accordance with this policy.

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9.0 Pre-Cover Inspections

- (1) System installers must request a pre-cover inspection when construction, alteration, or repair of a system is complete except for backfill (cover) and as otherwise required by a permit. The agent must inspect the installation to determine whether it complies with this policy, unless the agent waives the inspection in accordance with section (2) of this rule.
- (2) The agent may waive inspections for a system proposed to serve a single family dwelling or for a system of similar flow and waste strength if:
 - (a) Upon request by the agent, the installer submits to the agent photographs of those portions of the construction for which the inspection is waived.
- (3) To request a pre-cover inspection, the installer must submit the following information to the agent at the time construction of the system is complete.
 - (a) A detailed and accurate as-built plan of the constructed system.
 - (b) A list of all materials used in the construction of the system.
- (4) An agent may require an owner to pay the re-inspection fee when a pre-cover inspection correction notice requires correction of improper construction and, at a subsequent inspection, the agent finds system construction deficiencies have not been corrected.

10.0 Decommissioning of Systems

- (1) The owner must decommission a system when:
 - (a) A sewerage system becomes available and the facility the system serves has been connected to that sewerage system;
 - (b) The source of sewage has been permanently eliminated;
 - (c) The system has been operated in violation of Modoc County Code and a repair permit has not subsequently been issued for the system;
 - (d) The system has been constructed, installed, altered, or repaired without a permit required in this policy, and a permit has not subsequently been issued for the system; or
- (2) Procedures for decommissioning.
 - (a) Tanks, cesspools, and seepage pits must be pumped by a MCEH registered sewage disposal service to remove all septage.
 - (b) Tanks, cesspools, and seepage pits must be filled with reject sand, bar run gravel, or other material approved by the agent, or the container must be removed and properly disposed.
- (3) If, in the judgment of the agent, compliance with section (2) of this rule is not reasonably possible or necessary to protect public health, welfare, safety, or public waters, the agent may waive one or both of those requirements.

11.0 Prior Construction Permits or Approvals

All construction-installation permits issued before the effective date of this policy and not finalized by MCEH, shall be void upon board adoption, regional water board concurrence, and passing of the effective start date.

12.0 Authorization to Use Existing Systems

- (1) Authorization Notice required. Except as specifically allowed in this rule, a person may not place into service, reconnect to, change the use of, or increase the projected daily sewage flow into an existing onsite system without first obtaining an Authorization Notice, construction-installation permit, or alteration permit as appropriate.
- (2) Exceptions.

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- (a) An Authorization Notice is not required to replace a mobile home with a similar mobile home in a mobile home park or a recreation vehicle with another recreation vehicle in a lawful recreation vehicle park if the onsite wastewater system has adequate capacity for safe treatment of wastewater generated within the park.
- (b) An Authorization Notice is not required to place into service a previously unused system for which a finalized permit has been issued within five years of the date such system is placed into service if the projected daily sewage flow does not exceed the design flow and the system is in compliance with the requirements of the permit and applicable requirements in this policy.
- (3) A completed application for the Authorization Notice must be submitted to an agent with all required exhibits and the authorization notice fee. The exhibits must include:
 - (a) A land use compatibility statement from the appropriate land use authority.
 - (b) An accurate property development plan;
 - (c) An onsite system description;
 - (d) A lot map or equivalent plat map for the property;
 - (e) All other information the agent finds necessary to complete the application.
- (4) If an alteration or repair requires a permit in accordance with this policy the agent must credit the Authorization Notice fee submitted with the Authorization Notice application toward the permit fee.
 - (a) The agent may require submittal of additional exhibits to complete the permit application and must issue or deny the permit in accordance with this policy.

13.0 Alteration of Existing Onsite Wastewater Treatment Systems

- (1) Permit required. A person may not alter or increase the design capacity of an existing onsite wastewater treatment system without first obtaining an alteration permit in accordance with this policy or a construction-installation permit as applicable.
- (2) An agent may issue an alteration permit if the requirements of either subsections (a) or (b) of this section are met.
 - (a) Alterations do not increase the system's design capacity above the original design flow and:
 - (A) The existing system is not failing;
 - (B) The site setbacks in **Table 1** can be met except that if the setbacks in **Table 1** for septic tanks, treatment units, effluent sewers, and distribution units cannot be met, the agent may allow a reasonable installation; and
 - (C) In the opinion of the agent, use of the onsite system would not create a public health hazard or result in water pollution.
 - (b) Alterations do not exceed the existing system design capacity by more than 300 gpd or 50 percent, and:
 - (A) The existing system is not failing;
 - (B) The setbacks in **Table 1** can be met; and
 - (C) In the opinion of the agent, use of the onsite system would not create a public health hazard or result in water pollution.
- (3) An application for a construction-installation permit is required when the existing system design capacity is proposed to be exceeded by more than 300 gpd or more than 50 percent.

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14.0 Repair of Existing Systems

- (1) A failing system must be immediately repaired unless, in the opinion of the agent, adverse soil conditions resulting from climatic conditions would likely preclude a successful repair. In that circumstance, the agent may allow a delay in commencing or completing repairs until the soil conditions improve. If a delay is authorized, the agent must issue a notice of noncompliance to the system owner specifying a compliance date and any interim provisions required to prevent a public health hazard and protect public waters.
- (2) Except for emergency repairs, a person may not repair a failing system without first obtaining a repair permit in accordance with this rule. Emergency repairs may be made without first obtaining a permit if a repair permit application is submitted to the agent within three working days after the emergency repairs are begun.
- (3) Criteria for permit issuance.
 - (a) If the site characteristics and standards can be met, the repair installation must conform to the requirements.
 - (b) If the site characteristics or standards cannot be met, the agent may allow a reasonable repair installation to eliminate a public health hazard, including the installation of an alternative system as necessary.
- (4) Notwithstanding the permit duration specified in this policy, a permit issued pursuant to this rule may be effective for a period of less than one year from the date of issue if specified by the agent.
- (5) System owners must decommission failing systems in accordance with this policy if the systems cannot be repaired.

15.0 Standard Subsurface Systems

- (1) Criteria For standard subsurface systems. Each site must meet all of the conditions in this section to be approved for a standard subsurface system.
 - (a) Effective soil depth must extend 24 inches or more below the ground surface as shown in Table 3. A minimum 6-inch separation must be maintained between the layer that limits effective soil depth and the bottom of the absorption facility.
 - (b) Water table levels must be predicted using standards described in this policy.
 - (A) The permanent water table must follow **Table 8** separation distances below the bottom of the absorption facility, except in defined geographic areas where the SWRCB has determined through a groundwater study that less separation will not degrade groundwater or threaten public health. In these exception areas, the permanent water table must be at least 24 inches below the ground surface.
 - (B) A groundwater interceptor may be used to intercept or drain water from an absorption area on sites with adequate slope to permit proper drainage. An agent may require a demonstration that the site can be de-watered before issuing a site evaluation report approving the site. Where required, groundwater interceptors are an integral part of the system but do not need to meet setback requirements to property lines, wells, streams, lakes, ponds, or other surface water bodies that are required for the wastewater absorption area.
 - (c) Except as provided in subsection (d) of this section, soil with rapid or very rapid permeability must be 36 inches or more below the ground surface. A minimum 18-inch separation must be maintained between soil with rapid or very rapid permeability and the bottom of absorption trenches.
 - (d) Sites may be approved with no separation between the bottom of absorption trenches and soil with rapid or very rapid permeability if any of the following conditions occur.

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- (A) A confining layer occurs between the bottom of absorption trenches and the groundwater table and a minimum 6-inch separation is maintained between the bottom of absorption trenches and the top of the confining layer.
- (B) A layer of nongravelly (less than 15 percent gravel) soil with sandy loam or finer texture at least 18 inches thick occurs between the bottom of the absorption trenches and the groundwater table.
- (C) The projected daily sewage flow does not exceed a loading rate of 450 gallons per acre per day.
- (e) Slopes do not exceed 30 percent or the slope/effective soil depth relationship set forth in **Table 4**.
- (f) 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.
- (g) The site is not on an unstable land form that might adversely affect operation of the system.
- (h) The site of the initial and replacement absorption facility is not covered by asphalt or concrete or subject to vehicular traffic, livestock, or other activity that would adversely affect the soil.
- (i) The site of the initial and replacement absorption facility will not be subjected to excessive saturation from artificial drainage of ground surfaces, driveways, roads, roof drains, or other circumstances.
- (j) Setbacks in **Table 1** except as modified by this subsection can be met.
 - (A) Surface waters setbacks. Setback from streams or other surface waters must be measured from bank drop-off or mean yearly high water mark, whichever provides the greatest separation distance.
 - (B) Water lines and sewer lines. Effluent sewer and water line piping constructed of materials that are approved for use within a building by the Modoc County Building Department may be run in the same trench or may cross. Where the effluent sewer pipe material is not approved for use in a building, it may not be run or laid in the same trench as water pipe unless:
 - (i) The bottom of the water pipe at all points is set at least 12 inches above the top of the sewer pipe; and
 - (ii) The water pipe is placed on a solid shelf excavated at one side of the common trench with a minimum, clear, horizontal distance of at least 12 inches from the sewer pipe.
 - (C) Septic tank setbacks. The agent must encourage the placement of septic tanks and other treatment units as close as feasible to the minimum separation from the building foundation to minimize clogging of the building sewer.
 - (D) Pressure transport pipe setback to well. Notwithstanding the setback distance in Table 1, the agent may allow the separation distance between a pressure transport pipe and a well to be less than 50 feet but no less than 25 feet when:
 - (i) The pressure transport pipe is PVC Sch. 40 or heavier pressure-rated piping meeting ASTM Specification D-2241;
 - (ii) The pressure transport pipe is placed within a larger diameter PVC or ABS Sch. 40 or heavier encasement pipe, with the pipe ends located at least 50 feet away from the well; and
 - (iii) All pipe joints in the pressure transport pipe and encasement pipe are solvent welded.
 - (E) Encroachment on well setbacks shall be determined by the agent and used for existing development. Encroachment on wells for new development shall demonstrate

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equal or greater protection methods acceptable to MCEH. Such methods could include, but not limited to, increased well seal depth, pressure distribution, or advanced treatment.

(2) Criteria for sizing absorption fields. Absorption fields must be designed and sized based on the criteria in this section.

(a) **Table 2**, specifying quantities of sewage flows, or other information the agent determines is reliable with the following exception: A system must be sized on the basis of 300 gallons sewage flow per day plus 75 gallons per day for the third bedroom when the system:

(A) Is proposed to serve a single family dwelling on a recreational lot.

(B) The agent may approve a twenty-five percent reduction from flow estimates in **Table 2** if all the following apply:

(a) New construction or Remodels that result in utilizing or changing fixtures to current water efficiency standards and utilization of energy star appliances.

(b) Applicant requests the energy efficient twenty-five percent reduction in the application process.

(c) Permit lists the water efficiency requirements as a condition of use.

(d) Agent concurs with the reduction.

(b) **Table 3**, specifying the minimum length of absorption trenches based on soil texture and effective soil depth.

(c) **Table 8**, specifying the minimum distance to permanent groundwater based on soil texture and structure.

(d) Strength of the wastewater. If the strength of the wastewater exceeds the maximum limits for residential strength wastewater the contents of the wastewater are atypical of residential strength wastewater or pose a threat to groundwater, public health, or the environment, the wastewater must be pretreated to acceptable levels before being discharged into a standard or alternative system except for:

(1) Commercial Food Service High Strength Waste Water is acceptable for food service facilities when all required setbacks can be maintained.

(3) Septic tank.

(a) Liquid capacity.

(A) The quantity of daily sewage flow projected for a facility must be estimated from **Table 2**. The agent must determine the projected daily sewage flow for establishments not listed in **Table 2**.

(B) A septic tank that serves a commercial facility must have a liquid capacity of at least two times the projected daily sewage flow unless otherwise determined from **Table 9** or authorized by the agent. In all cases the capacity must be at least 1,000 gallons.

(C) The capacity of a septic tank that serves a single family dwelling must be based on the number of bedrooms in the dwelling in **Table 9**. For a dwelling with 3 or fewer bedrooms, the tank capacity must be at least 1,000 gallons. Septic tank capacity must be at least 1,500 gallons for dwellings with more than 4 bedrooms.

(D) The agent may require a larger capacity than specified in this subsection as needed for special or unique waste characteristics, such as flow patterns, volumes, waste strength, or facility operation.

(b) Installation requirements.

(A) Septic tanks must be installed on a level, stable base that will not settle, and to manufacturers specifications.

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(B) Septic tanks located in high groundwater area must be weighted or provided with an antibuoyancy device to prevent flotation in accordance with the manufacturer's instructions.

(C) Tanks must be installed with a watertight riser extending to the ground surface or above. The riser must have a minimum diameter of 20 inches when the soil cover above the tank does not exceed 36 inches. The riser must have a minimum diameter of 30 inches when the soil cover above the tank exceeds 36 inches or when the tank capacity exceeds 3,000 gallons. A gasketed cover must be provided and securely fastened or weighted to prevent unauthorized access. All 20 inch and larger risers shall have a secondary anti intrusion grate installed to help prevent accidental tank entry.

(D) Tanks must be installed in a location that provides access for maintenance.

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

(F) The agent may allow a removable plug to be placed in the top of a septic tank inlet sanitary tee if the septic tank discharges directly into a gravity-fed absorption facility.

(G) A demonstration of water tightness may be required for all tanks after installation upon request by the agent.

(H) Unless otherwise allowed by the agent, an effluent filter meeting the requirements of this policy must be installed at the septic tank outlet. A watertight service access riser and cover must be placed above the effluent filter.

(c) Construction Standards. Tank construction must comply with minimum standards contained in this policy.

(4) Distribution techniques. Absorption trenches must be constructed according to one of the methods in this section.

(a) Gravity-fed equal distribution (including loop).

(A) Equal distribution must be used on generally level ground. All trenches and piping must be level within a tolerance of plus or minus 1 inch. All lateral piping must be at the same elevation.

(B) A pressure-operated hydrosplitter may be used to achieve equal distribution.

(C) To determine the total useable area of a looped soil absorption facility, the agent must add the sum of the lengths of the parallel absorption trenches and the lengths of up to two absorption trenches intersecting the parallel trenches.

(b) Serial distribution. Serial distribution is generally used on sloping ground. Each trench must be level within a tolerance of plus or minus 1 inch. Serial distribution may be a combination of equal distribution and serial distribution.

(c) Pressurized distribution systems. Pressurized distribution must satisfy the additional requirements in this policy.

(5) Distribution boxes and drop boxes.

(a) Construction. Construction of distribution boxes and drop boxes must comply with standards in this policy.

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

(c) In all gravity distribution techniques, the connection of the effluent piping to the distribution piping must include at least one distribution or drop box or other device acceptable to the agent as a means for locating and monitoring the absorption field.

(6) Dosing tanks and dosing septic tanks.

(a) Tank construction must comply with the standards in this policy.

(b) The tank must be installed on a stable, level base at a location that provides access for maintenance.

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(c) The tank must be provided with at least one watertight service access riser extending to the ground surface or above. The riser must have a minimum diameter of 20 inches when the soil cover above the tank does not exceed 36 inches. The riser must have a minimum diameter of 30 inches when the soil cover above the tank exceeds 36 inches. A gasketed cover must be securely fastened or weighted to prevent unauthorized access.

(d) A tank located in a high groundwater area must be weighted or provided with an antibuoyancy device to prevent flotation in accordance with the tank manufacturer's instructions.

(7) Absorption trenches.

(a) Absorption trenches must be constructed in accordance with the standards in this section unless otherwise authorized by the agent.

(A) Minimum bottom width of trench -- 24 inches.

(B) Minimum depth of trench:

(i) Equal or looped distribution -- 18 inches.

(ii) Serial distribution -- 24 inches.

(iii) Pressure distribution -- 18 inches.

(C) Maximum depth of trench -- 36 inches.

(D) Maximum length of an individual trench -- 150 linear feet, unless otherwise authorized in writing by the agent.

(E) Minimum distance of undisturbed earth between trenches -- 8 feet.

(b) The bottom of the trench must be level within a tolerance of plus or minus 1 inch end to end and level from side to side.

(c) When the sidewall within a trench has been smeared or compacted, sidewalls must be raked to ensure permeability.

(d) Trenches must be constructed to prevent septic tank effluent from flowing backwards from the distribution pipe to undermine the distribution box, the septic tank, or any portion of the distribution unit.

(e) Drain media must extend the full width and length of the trench to a depth of at least 12 inches with at least 6 inches of drain media under the distribution pipe and at least 2 inches over the distribution pipe.

(f) Chamber systems do not receive any surface area reduction compared to gravel media and may require rodent protection as determined by the agent.

(g) Before backfilling the trench, the drain media must be covered with filter fabric, untreated building paper, or other material approved by the agent.

(h) If trenches are installed in sandy loam or coarser soils, filter fabric or other nondegradable material approved by the agent must be used to cover the drain media.

(i) Each leachline shall have a 3 or 4 inch water tight riser that will allow for inspection. The riser shall be located at the ground surface.

(8) Trench backfill.

(a) The installer must backfill the system. Backfill must be carefully placed to prevent damage to the system.

(b) A minimum of 6 inches of backfill is required; in serial systems 12 inches is required.

(c) Backfill must be free of large stones, frozen clumps of earth, masonry, stumps, waste construction materials, or other materials that could damage the system.

(9) Header pipe. Header pipe must be watertight, have a minimum diameter of 3 inches, and be bedded on undisturbed earth. Where distribution boxes or drop boxes are used, the header pipe between the box and the distribution pipe must be at least 4 feet in length and be installed level.

(10) Distribution pipe.

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- (a) Distribution pipes must have a minimum diameter of 3 inches.
 - (b) Each disposal trench must have distribution piping that is centered in the trench and laid level within a tolerance of plus or minus 1 inch.
 - (c) Distribution pipe must comply with standards in this policy.
 - (d) All perforated pipe must be installed with centerline markings up.
- (11) Effluent sewer. The effluent sewer must extend at least 5 feet beyond the septic tank before connecting to the distribution unit. It must be installed with a minimum fall of 4 inches per 100 feet and at least 2 inches of fall from one end of the pipe to the other. In addition, there must be a minimum difference of 8 inches between the invert of the septic tank outlet and either the invert of the header to the distribution pipe of the highest lateral in a serial distribution field or the invert of the header pipe to the distribution pipes of an equal distribution absorption field. A minimum 18-gauge, green-jacketed tracer wire or green color-coded metallic tape must be placed above the effluent sewer pipe.
- (12) Curtain drain construction. Unless otherwise authorized by the agent, curtain drains must comply with the following requirements.
- (a) Ground slope must be at least 3 percent, or other landform features such as an escarpment must allow for effective drainage.
 - (b) The curtain drain must extend at least 6 inches into the layer that limits effective soil depth or to a depth adequate to effectively dewater the site.
 - (c) Trench width must be a minimum of 12 inches.
 - (d) Perforated pipe must have a minimum diameter of 4 inches and must meet the requirements in this policy.
 - (e) Perforated pipe must be installed at least 2 inches above the bottom and along the full length of the trench and must be covered by a minimum of 10 inches of drain media.
 - (f) The curtain drain must be filled with drain media to within 12 inches of the ground surface.
 - (g) Outlet pipe must be rigid, smooth-wall, solid PVC pipe meeting or exceeding ASTM Standard D-3034 with a minimum diameter of 4 inches. A flap gate or rodent guard must be installed.
 - (h) Filter fabric must be placed over the drain media.

16.0 Alternative Systems, General

- (1) Application requirements. The requirements in this policy for siting, construction, and maintenance of standard subsurface systems apply to alternative systems unless the standards for alternative systems in this policy provide otherwise.
- (2) Periodic inspections.
- (a) Agents may perform periodic inspections of installed alternative systems. System owners must pay the inspection fee for the inspection upon billing by the agent.
 - (b) The agent must prepare a report of each inspection listing system deficiencies, corrections required, and timetables for correction, and will provide a copy to the system owner. The agent may follow up as necessary to ensure proper corrections.

17.0 Capping Fills

- (1) Criteria for approval. Each site approved for a capping fill system must meet all the following conditions.
- (a) Slope does not exceed 12 percent.
 - (b) Where a permanent water table is present, a minimum separation outlined in **Table 8** must be maintained between the bottom of the absorption trench and the water table.
 - (c) Effective soil depth is 12 inches or more below the natural soil surface.

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- (d) Soil texture from the ground surface to the layer that limits effective soil depth is no finer than a clay loam.
 - (h) A minimum 6-inch separation is maintained between the bottom of the absorption trench and the layer that limits effective soil depth unless less is approved by agent.
 - (i) The system can be sized according to effective soil depth in **Table 3**.
 - (j) Pressure distribution may be required if less than a 18-inch separation between soil with rapid or very rapid permeability and the bottom of absorption trenches.
- (2) Installation requirements. The cap must be constructed in accordance with the permit. Unless otherwise required by the agent, construction must follow this sequence.
- (a) The soil must be examined and approved by the agent before placement of the cap. The texture of the soil used for the cap must be the same textural class as or one textural class finer than the natural topsoil unless otherwise allowed in this policy.
 - (b) Construction of capping fills must occur between June 1 and October 1 unless otherwise allowed by the agent. The upper 18 inches of natural soil must not be saturated or have a moisture content that causes loss of soil structure and porosity when worked.
 - (c) The absorption area and the borrow site must be scarified to destroy the vegetative mat.
 - (d) The system must be installed as specified in the construction-installation permit with a minimum 10-foot separation between the edge of the fill and the absorption facility.
 - (e) Filter fabric must be used between the drain media and the soil cap, unless otherwise authorized by the agent.
 - (f) Fill must be applied to the fill site and worked in so that the two contact layers, native soil and fill, are mixed. Fill material must be evenly graded to a final depth of 10 inches over the drain media for an equal system or 16 inches over the drain media for a serial system to allow for appropriate settled depths. Both initial cap and repair cap may be constructed at the same time.
 - (g) The site must be landscaped according to permit conditions and be protected from livestock, automotive traffic, and other activity that could damage the system.
 - (h) Each leachline shall have a 3 or 4 inch water tight riser that will allow for inspection. The riser shall be located at the ground surface.
- (3) Required inspections. Unless waived by the agent, the following inspections must be performed for each capping fill installed.
- (a) Inspection of both the absorption area and borrow material before cap construction for scarification, soil texture, and moisture content.
 - (b) Pre-cover inspection of the installed absorption facility.
 - (c) Inspection after the cap is placed to determine adequate contact between fill material and native soil (no obvious contact zone visible), adequate depth of material, and uniform distribution of fill material.
 - (d) Final inspection after landscaping or other erosion control measures are established.

18.0 Pressurized Distribution Systems

- (1) Pressurized distribution systems receiving residential strength wastewater may be permitted on any site meeting the requirements for installation of a standard onsite system and on other sites where this method of effluent distribution is preferable and the site conditions in this policy can be met.
- (2) Except following a non-standard OWTS, pressurized distribution systems must be used where depth to soil with rapid or very rapid permeability is less than 20 feet to permanent ground water or as determined in **Table 8**.

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(3) Pressurized distribution systems installed in soil with rapid or very rapid permeability in areas with permanent water tables may not discharge more than 450 gallons of effluent per 1/2 acre per day except where:

- (a) Groundwater is degraded and designated as a non-developable resource by the applicable Regional Water Quality Control Board; or
- (b) A detailed hydrogeological study discloses loading rates exceeding 450 gallons per 1/2 acre per day would not increase the nitrate-nitrogen concentration in the groundwater beneath the site or at any down gradient location to above 5 mg/L.

(4) Materials and construction.

(a) General.

- (A) All materials used in pressurized systems must be structurally sound, durable, and capable of withstanding normal stresses incidental to installation and operation.
- (B) Pump wiring must comply with applicable building, electrical, or other codes. An electrical permit and inspection from the Modoc County Building Department is required for pump wiring installation.
- (C) A single compartment dosing septic tank is required in addition to the primary septic tank.

(b) Pressurized distribution piping. Piping, valves, and fittings for pressurized systems must meet the following minimum requirements.

- (A) All pressure transport, manifold, lateral piping, and fittings must meet the requirements in 45.0 Pipe Materials and Construction.
- (B) Pressure transport piping must be uniformly supported along the trench bottom. The agent may require the piping to be bedded in sand or other material approved by the agent. A minimum 18 gauge, green-jacketed tracer wire or green color-coded metallic locate tape must be placed above piping.
- (C) Orifices must be located on top of the pipe, except as noted in paragraph (b)(I) of this section.
- (D) The ends of lateral piping must be constructed with long sweep elbows or an equivalent method to bring the end of the pipe to finished grade. The ends of the pipe must be provided with threaded plugs, caps, or other devices acceptable to the agent to allow for access and flushing of the lateral.
- (E) All joints in the manifold, lateral piping, and fittings must 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 shut off valve must be placed on the pressure transport pipe in or near the dosing tank when appropriate.
- (G) A check valve must be placed between the pump and the shut off valve when appropriate.
- (H) All orifices must be covered by a protective, durable, noncorrosive orifice shield designed to keep orifices from being blocked by drain media or other system components.
- (I) The agent may specify alternate orifice orientation and valve arrangements for conditions such as extended freezing temperatures, temporary or seasonal use, or effluent characteristics.
- (J) Where the operation of a pump could result in siphonage of effluent to below the normal off level of the pump, an anti-siphon measure in the form of a non-discharging valve designed for the specific purpose must be used. The anti-siphon valve must be installed and operated in accordance with manufacturer's specifications.

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(c) Absorption trench sizing and construction.

(A) A system using absorption trenches must be designed and sized in accordance with the requirements of **Table 3**.

(B) Absorption trenches must be constructed using the specifications for the standard disposal trench unless otherwise authorized by the agent.

(C) The trench must contain drain media at least 12 inches deep, with at least 6 inches of media under the pressure distribution laterals and sufficient media above the laterals to meet or cover the orifice shields to provide a smooth, even cover.

(D) The top of the drain media must be covered with filter fabric or other non-degradable material permeable to fluids that will not allow passage of soil particles coarser than very fine sand. In unstable soils, sidewall lining may be required.

(E) Each leachline shall have a 3 or 4 inch water tight riser that will allow for inspection. The riser shall be located at the ground surface.

(d) Seepage bed construction.

(A) Seepage beds may be used instead of absorption trenches in soil as defined if flows do not exceed 600 gpd.

(B) The effective seepage area must be based on the bottom area of the seepage bed. The area must be at least 200 square feet per 150 gallons per day waste flow.

(C) Beds must be installed at least 18 inches deep (12 inches with a capping fill) but not deeper than 36 inches into the natural soil. The seepage bed bottom must be level.

(D) The top of the drain media must be covered with filter fabric or other non-degradable material that is permeable to fluids but will not allow passage of soil particles coarser than very fine sand.

(E) The bed must contain drain media at least 12 inches deep with at least 6 inches of media under the pressure distribution laterals and sufficient media above the laterals to meet or cover the orifice shields to provide a smooth, even cover.

(F) Pressurized distribution piping must be horizontally spaced not more than 4 feet apart and not more than 2 feet away from the seepage bed sidewall. At least 2 parallel pressurized distribution pipes must be placed in the seepage bed.

(G) A minimum of 10 feet of undisturbed earth must be maintained between seepage beds.

(5) Hydraulic design criteria. Pressurized distribution systems must be designed for appropriate head and capacity.

(a) Head calculations must include maximum static lift, pipe friction, and orifice head requirements.

(A) Static lift where pumps are used must be measured from the minimum dosing tank level to the level of the perforated distribution piping.

(B) Pipe friction must be based upon a Hazen Williams coefficient of smoothness of 150. All pressure piping and fittings on laterals must have a minimum diameter of 2 inches unless submitted plans and specifications show a smaller diameter pipe is adequate.

(C) A minimum head of 5 feet at the remotest orifice and no more than a 10 percent flow variation between the nearest and remotest orifice in an individual unit are required.

(b) The capacity of a pressurized distribution system refers to the rate of flow given in gallons per minute (gpm).

(A) Lateral piping must have discharge orifices drilled a minimum diameter of 1/8 inch and evenly spaced no more than 24 inches apart in coarse textured soils or no more than 4 feet apart in finer textured soils.

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(B) The system must be dosed at a rate not to exceed 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 must be evaluated for its impact upon the dosing tank and system operation.

(6) The owner of a pressurized distribution system must receive a maintenance manual prior to operation. The maintenance manual shall also be filed with the completed permit at MCEH.

19.0 Seepage Trench System

(1) Criteria for approval. Construction permits may be issued for seepage trench systems on lots if all the following apply:

(a) Lot or parcel size will not accommodate standard subsurface system disposal trenches with a projected flow of 450 gpd.

(b) All other requirements for standard subsurface systems can be met.

(2) Design criteria.

(a) The maximum depth allowed for a seepage trench is 42 inches.

(b) The seepage trench system must be sized according to the following formula: length of seepage trench = $4 \times (\text{length of standard disposal trench}) \div (3 + 2D)$, where D = depth of drain media below distribution pipe in feet. Maximum depth of drain media (D) is 2 feet.

(c) The projected daily sewage flow is limited to a maximum of 450 gallons.

20.0 Conventional Sand Filter Systems

(1) Criteria for approval. Construction of conventional sand filter systems may be approved for single family dwellings or commercial facilities.

(2) Sites approved for sand filter systems. Sand filters may be permitted on any site meeting requirements for standard onsite systems or for pressurized distribution systems if site conditions in this section can be met.

(a) Separation from the permanent groundwater table must satisfy the requirements in this subsection.

(A) The high level attained by a permanent groundwater table is:

(i) Twenty four inches or more below ground surface where:

(I) The ground slope does not exceed 12 percent;

(II) Equal distribution methods are achieved by gravity or the use of either a hydrosplitter or pressurized distribution method; and

(III) A capping fill is placed in accordance with this policy.

(ii) Twenty four inches or more below ground surface where equal distribution methods are achieved by gravity or through the use of a hydrosplitter or pressurized distribution.

(B) Methods used in dewatering systems may be used to achieve separation distances from groundwater.

(C) The minimum backfill depth within the absorption trenches is 6 inches for trenches using equal distribution methods and 12 inches for trenches using serial distribution.

(b) Separation from the permanent groundwater table must satisfy the requirements in this subsection.

(A) The highest level attained by a permanent water table does not exceed the minimum separation distance from the bottom of the absorption area as follows:

(i) For gravel and Soil Group A: sand, loamy sand, sandy loam - 24 inches;

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- (ii) For Soil Group B: loam, silt loam, sandy clay loam, clay loam - 18 inches if the site can meet the requirements of a Rural Area Consideration in this policy;
 - (iii) For Soil Group C: silty clay loam, silty clay, clay, sandy clay - 12 inches if the site can meet the requirements of a Rural Area Consideration in this policy.
- (B) Shallow absorption trenches placed not less than 12 inches into the original soil profile may be used with a capping fill to achieve separation distances from permanent groundwater. The fill must be placed in accordance this policy.
- (C) Methods used in this policy for tile dewatering systems may be used to achieve separation distances from permanent groundwater.
- (c) Sand filter systems installed in soils with rapid or very rapid permeability, as defined, in areas with permanent water tables may not discharge more than 450 gallons of effluent per 1/2 acre per day except where:
- (A) Groundwater is degraded and designated as a nondevelopable resource by the applicable Regional Water Quality Control Board; or
 - (B) A detailed hydrogeological study determines loading rates exceeding 450 gallons per ½ acre per day would not increase nitrate-nitrogen concentration in the groundwater beneath the site or any downgradient location to above 5 mg/L.
- (d) Sand filter systems may be installed in soils, fractured bedrock, or saprolite diggable with a backhoe if, in the judgment of the agent, the soils, fractured bedrock, or saprolite is permeable to the extent that effluent will absorb adequately and not hinder the performance of the filter or absorption field. The agent may require that an absorption test be conducted to determine the permeability of the bedrock or saprolite. Test methods must be acceptable to MCEH.
- (A) Where ground slope does not exceed 12 percent, a capping fill, 12-inch deep trench may be installed in accordance with this policy, except that when installed in fractured bedrock or saprolite, the cap material must be Soil Group B.
 - (B) Where ground slope exceeds 12 percent but is not greater than 30 percent, a standard 24- inch deep trench may be installed.
- (e) A sand filter absorption facility may be installed on slopes of 30 percent or less if other conditions in this section are satisfied.
- (f) An absorption facility following a sand filter may be installed on slopes above 30 percent and up to 45 percent where:
- (A) Projected daily flow does not exceed 450 gallons and the installation is sized in accordance with sand filter absorption area criteria;
 - (B) The soil is diggable with a backhoe to a depth of at least 36 inches and 12 inches below the bottom of the trench;
 - (C) The permanent water table is at least 36 inches below the ground surface and 18 inches below the bottom of the trench; and
 - (D) A slope stability report is completed by a registered professional.
- (g) Setbacks in **Table 1** can be met, except the minimum separation distance between the sewage absorption area and surface waters must be at least 50 feet.
- (3) Absorption trenches. Absorption trenches for sand filter absorption facilities must satisfy the requirements in this section.
- (a) The minimum length of a standard absorption trench per 150 gallons of projected daily sewage flow is:
 - (A) For gravel and Soil Group A: sand, loamy sand, sandy loam -- 35 linear feet;
 - (B) For Soil Group B: loam, silt loam, sandy clay loam, clay loam -- 45 linear feet;
 - (C) For Soil Group C: silty clay loam, silty clay, sandy clay, clay -- 50 linear feet;
 - (D) For permeable saprolite or fractured bedrock -- 50 linear feet;

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- (E) For high shrink-swell clays (Vertisols) -- 75 linear feet.
- (b) On lots created before this policy, which do not have sufficient, suitable area for an absorption facility sized in accordance with this section, the agent may allow seepage trenches if:
 - (A) The design criteria and limitations in Seepage Trenches are met;
 - (B) The soil is not a high shrink-swell clay; and
 - (C) All other requirements of this rule are met.
- (c) Trench designs in Vertisols.
 - (A) Absorption trenches in Vertisols must contain 24 inches of drain media and 24 inches of soil backfill in areas with an annual rainfall of 25 inches or less, minimum slopes of 5 percent, and a temporary water table at least 48 inches below the ground surface.
 - (B) Seepage trenches in Vertisols containing less than 24 inches of drain media may be used if designed in accordance with the criteria and limitations in Seepage Trenches in areas with an annual rainfall of 25 inches or less, minimum slopes of 5 percent, and a temporary water table at least 60 inches below the ground surface.
- (4) Bottomless sand filter. Sites may use a bottomless sand filter if the site meets the criteria in this section and section (3) of this rule.
 - (a) Saprolite; fractured bedrock; gravel; or soil textures of sand, loamy sand, or sandy loam occur in a continuous section at least 2 feet thick in contact with and below the bottom of the sand filter.
 - (b) The agent determines the saprolite, fractured bedrock, gravel, or soil is permeable over the basal area to the extent that effluent will absorb adequately and not hinder the performance of the filter. The agent may require that an absorption test be conducted to determine the permeability of the basal area. Test methods must be acceptable to MCEH.
 - (c) The application rate is based on the design sewage flow in **Table 2** and the basal area of the sand.
 - (d) The water table is at least 24 inches below the ground surface throughout the year, and a minimum 24-inch separation is maintained between a water table and the bottom of the sand filter.
- (5) Materials and construction.
 - (a) All materials used in sand filter system construction must be structurally sound, durable, and capable of withstanding normal installation and operation stresses. Component parts subject to malfunction or excessive wear must be readily accessible for repair and replacement.
 - (b) All filter containers must be placed over a stable, level base.
 - (c) In a gravity-operated distribution system, the invert elevation of the outlet end of the underdrain pipe must be at or above the final settled ground elevation of the highest absorption trench.
 - (d) Piping and fittings for the sand filter distribution system must comply with the requirements for pressure distribution systems in this policy.
 - (e) Septic tanks, dosing tanks, and other components must comply with the requirements in this policy unless this rule specifies different requirements.
 - (f) The design and construction requirements in 21.0 Conventional Sand Filter Design and Construction must be met. A bottomless sand filter unit does not require a watertight floor, but does require watertight walls unless otherwise authorized by the agent.
 - (g) A bottomless sand filter unit does not require a minimum 10-foot separation between the original and replacement unit.
- (6) Gravelless absorption method.

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(a) Absorption trenches following a sand filter may be constructed without the use of drain media if they meet the criteria in this section.

(A) Absorption trenches must be 12 inches wide by 10 inches deep and incorporate pressurized distribution and a chamber constructed of half sections of 12-inch diameter plastic irrigation pipes (PIP). MCEH may consider deviations to the depth requirement in this rule for alternative drainfield products.

(B) Trenches must be level end to end and across their width.

(C) The agent may allow trenches on minimum 3-foot centers maintaining at least 2 feet of undisturbed earth between parallel trench sidewalls.

(D) Pressurized distribution piping must meet the requirements of this policy, except that orifice shields are not required.

(E) Distribution piping must be perforated with 1/8 inch diameter orifices on maximum 2-foot centers at the 12 o'clock position. The hydraulic design must provide at least a 2-foot residual head at the distal orifice.

(F) The chambers must have an adequate footing to support the soil cover and all normal activity and at a minimum must be constructed of 12-inch PIP rated at 43 pounds per square inch and meeting the appendix standards of ASTM D-2241. Each line must be equipped with a minimum 6-inch diameter inspection port.

(b) Except as noted in subsection (a) of this section, all construction and siting criteria for conventional sand filter systems in this division must be met. This includes but is not limited to the absorption field sizing for sand filter systems in 20.0 Conventional Sand Filter Systems(3) and area sizing for an initial and replacement absorption facility meeting standard trench separations 15.0 Standard Subsurface Systems (7)(a)(E). Plans must verify that a system can be installed on the parcel that will meet the requirements in 20.0 Conventional Sand Filter Systems(3) and 15.0 Standard Subsurface Systems (7)(a)(E) and all other applicable rules before a gravelless absorption method is approved.

(c) A gravelless absorption method may be used wherever this policy allows a standard or alternative-type absorption trench for sand filter systems, except in Vertisols.

(d) A method to prevent burrowing animals from entering the chamber must be provided in areas where this is likely to occur.

(7) Operation and maintenance. Owners of conventional and other sand filter systems must ensure the sand filter and all other components of the system are continuously operated and timely maintained in accordance with the requirements on the permit and this rule.

(a) Owners of conventional and other sand filter systems must comply with the operation and maintenance requirements in this section. The owner of a sand filter system must inspect the septic tank and other components of the system at least annually for sludge accumulation, pump calibration, and cleaning of the laterals. Tanks must be pumped when there is an accumulation of floating scum less than 3 inches above the bottom of the outlet tee fitting, holes or ports, or an accumulation of sludge less than 6 inches below the bottom of the outlet tee fitting, holes or ports. Pump calibration, cleaning of the laterals, and other maintenance must be completed as necessary. (b) Service Contracts. The owner of a residential sand filter system and all sand filter systems serving commercial facilities must maintain a contract, in accordance with 4.0 General Standards, Prohibitions and Requirements (23), with a maintenance provider to serve and maintain the onsite system. A service contract must be entered before the system is installed and must be maintained until the system is decommissioned.

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21.0 Conventional Sand Filter Design and Construction

(1) Criteria for sizing. Systems must be sized based on quantities of sewage flow in accordance with this policy.

(2) Minimum filter area:

(a) A sand filter proposed to serve a single family dwelling must have an effective medium sand surface area of at least 360 square feet. If the design sewage flow exceeds 450 gallons per day, the medium sand surface area must be determined with the following equation: Area = projected daily sewage flow divided by 1.25 gallons per square foot.

(b) A bottomless sand filter following an ATT system must have an effective medium sand surface area of at least 250 square feet. If the design sewage flow exceeds 450 gallons per day, the medium sand surface area must be determined with the following equation: Area = projected daily sewage flow divided by 1.80 gallons per square foot.

(c) Sand filter influent may not exceed concentrations of 300 mg/L BOD₅, 150 mg/L TSS, or 25 mg/L oil and grease.

(3) Design criteria.

(a) The interior base of the filter container must be level or constructed at a grade of 1 percent or less to the underdrain piping elevation.

(b) Except for sand filters without a bottom, underdrain piping must meet the requirements in this policy and must be installed in the interior of the filter container at the lowest elevation. The piping must be level or on a grade of 1 percent or less to the point of passage through the filter container. The pipe perforations or slots must be oriented in the upright or sideways position.

(c) The base of the filter container with the underdrain piping in place must be covered with a minimum of 6 inches of drain media or underdrain media. Unless waived by the agent, the "underdrain media" proposed for a sand filter must be sieved to determine conformance with the criteria as defined and a report of the analysis must be provided to the agent.

Where underdrain media is used, the underdrain piping must be enveloped in an amount and depth of drain media to prevent migration of the underdrain media to the pipe perforations.

(d) Where drain media is used at the base of the filter, it must be covered by a layer of filter fabric meeting the specifications in 40.0 Filter Fabric. Where underdrain media is used, filter fabric is not required.

(e) A minimum of 24 inches of approved sand filter media must be installed over the filter fabric or underdrain media. The sand filter media must be damp at the time of installation. The top surface of the media must be level. Unless waived by the agent, the sand filter media proposed for each sand filter must be sieve-tested to determine conformance with the criteria "sand filter media" as defined in this policy, and a report of the analysis must be provided to the agent.

(f) A minimum of 3 inches of clean drain or underdrain media is required below the distribution laterals, and sufficient media is required above the laterals to meet or cover the orifice shields to provide a smooth, even cover.

(g) A pressurized distribution system meeting the requirements of 18.0 Pressure Distribution (4) and (5) must be constructed as described in subsection (f) of this section.

(A) Distribution laterals must be spaced a maximum of 30 inches center to center. Orifices must be spaced no more than 30 inches apart.

(B) The ends of the distribution laterals must be designed and constructed to allow flushing of the piping, collectively or individually, using a corrosion-resistant and accessible valve or threaded endcap. The flushed effluent may be discharged to the septic tank or into the sand filter.

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(C) The diameters of the distribution manifold and laterals must be at least 1/2 inch in diameter.

(D) A sand filter must be dosed at a rate not to exceed 10 percent of the projected daily sewage flow.

(h) The top of the media in which the pressure distribution system is installed must be covered with filter fabric meeting the specifications in this policy.

(i) The top of the sand filter area must be backfilled with a soil cover free of rock, vegetation, wood waste, and other materials that may harm the filter. The soil cover must have a textural class no finer than loam unless otherwise authorized by the agent. The soil cover must be at least 6 inches and no more than 12 inches deep.

(j) All piping passing through the sand filter container must be watertight.

(4) Container design and construction.

(a) A reinforced concrete container with watertight walls and floors must be used where watertightness is necessary to prevent groundwater from infiltrating into the filter or to prevent the effluent from exfiltrating from the filter except as otherwise allowed in this policy. The container structure may require a building permit for construction.

(b) The container may be constructed of materials other than concrete where equivalent function, workmanship, watertightness, and at least a 20-year service life can be documented.

(A) Flexible membrane liner (FML) materials must have properties at least equivalent to 30 mil unreinforced polyvinyl chloride (PVC) described in 50.0 Flexible Membrane Liners for Sand Filters Treating Septic Tank. For FML materials to be approved for installation:

(i) Field repair instructions and materials must be provided to the purchaser with the liner; and

(ii) The final materials must 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 must be installed in accordance with this policy.

(C) The backfill around the container must be no steeper than a 3:1 slope (3 feet for every vertical foot) unless otherwise authorized by the agent.

(5) Internal pump option. Where a pump is used to discharge effluent from a sand filter to another treatment unit, a distribution unit, or an absorption facility, the design and construction of the filter may include an internal pump station if the following conditions are met.

(a) The location, design, and construction of the pump station must not conflict with design, construction, and operation of the sand filter system.

(b) The design and construction of the pump, discharge plumbing, controls, and alarm must meet the requirements in 43.0 Dosing Assemblies: Effluent Pumps, Controls and Alarms, and Dosing Siphons except subsections (4)(d) and (4)(h).

(c) The pump and related apparatus must be housed in a corrosion-resistant vault designed to withstand stresses and prevent the migration of drain media, sand, or underdrain media to its interior. The vault must have a durable, affixed floor. The vault must provide watertight access to finished grade with a diameter equal to that of the vault and designed to receive treated effluent from the bottom of the sand filter.

(d) The depth of underdrain media and the operating level of the pump cycle and alarm may not allow effluent to come within 2 inches of the bottom of the sand filter media. The pump off-level may be no lower than the invert of the perforations of the underdrain piping.

(e) The internal sand filter pump must be electrically linked to the sand filter dosing apparatus to prevent effluent from entering the sand filter if the internal sand filter pump fails.

22.0 Recirculating Gravel Filter (RGF)

(1) Siting and absorption area construction criteria.

(a) RGFs approved for treatment standard 1 may be sited and sized as follows.

(A) In areas with permanent groundwater, where 4 feet of separation can be maintained between the bottom of the trench and groundwater and the other criteria in 20.0 Conventional Sand Filter Systems can be met.

(B) On sites meeting criteria for standard onsite systems or for pressurized systems.

(b) RGFs used in conjunction with approved disinfection and approved nitrogen reduction processes and expected to meet treatment standard 2 may be sited and sized as follows.

(A) On sites meeting the criteria for treatment standard 1 in subsection (a) of this section.

(B) In areas with a permanent water table, in accordance with specifications for sand filters in areas with a permanent water table.

(c) Any type of absorption area permitted for a sand filter system, including the gravel-less absorption method, may be permitted for an RGF system.

(2) Design criteria.

(a) Filter design and dosing.

(A) The basal or bottom area of the filter must be sized based on a maximum organic load. For residential strength wastewater that has been pretreated through a septic tank, the maximum hydraulic load allowable is 5 gal/ft²/day.

(B) For BOD₅ waste strengths stronger than residential strength wastewater but not exceeding 400 mg/L, the filter size must be increased proportionately.

(C) Higher strength wastewaters must be pretreated or will require special consideration. In no case may the concentration of greases and oil applied exceed 30 mg/L.

(b) Filter media.

(A) Where CBOD₅ removal must be at least 85 percent based upon the raw sewage concentration applied to the septic tank and nitrification of wastewater is necessary, a filter media must consist of 3 feet of very fine washed gravel, 100 percent passing a 3/8-inch sieve with an effective size between 3 and 5 millimeters and a uniformity coefficient of 2 or less. Washed means that negligible fines (less than 1.0 percent) pass a No. 10 sieve.

(B) Where additional removal of BOD₅ and denitrification is intended or required, a treatment media may consist of 2 feet of very coarse washed sand, 100 percent passing a 3/8-inch sieve with an effective size between 1.5 and 2.5 millimeters and a uniformity coefficient of 2 or less. Washed means that negligible fines (less than 4.0 percent) pass the No. 100 sieve. (C) Sieves of 3/8 inch, 1/4 inch, and Nos. 4, 6, 8, 10, 50, and 100 must be used in gradation analysis.

(D) The permittee must provide fresh samples of the intended media for each project before shipment to the project site. A laboratory gradation analysis must be performed and the gradation data plotted on semi-log paper as a gradation curve. Lab data, gradation curve, and a 5-pound sample of the media must be submitted to the agent for approval. Only approved media may be used.

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(c) Filter media must be overlain by a 3-inch bed of 1/2-inch to 3/4-inch washed gravel. The media and gravel may only lightly cover the distribution piping. Unless otherwise authorized, each orifice must be covered by an orifice shield to prevent aerial spray drift.

(d) Filter dosing must use a low pressure distribution piping system operating under adequate head to pressurize the system. The operating head must be a minimum of 5 feet at the remotest orifice and have no more than 10 percent flow variation between the nearest and remotest orifice in an individual unit. Each lateral pipe end must terminate with a screwed plug or cap accessible for removal and flushing. Wherever practical, a valved backflush system must be installed to flush groups of laterals back to a septic tank or elsewhere.

(e) Pressure-distribution piping must be spaced 2 feet center to center in a parallel grid. Orifice spacing must be every 2 feet on laterals. Piping grid edges should be within 1 foot of the filter basal edge.

(f) Filter media must be underlain by a 6-inch bed of a 1/2 to 3/4-inch washed gravel underdrain media. No filter fabric may cover the underdrain media.

(g) Perforated collection pipes must meet requirements in 45.0 Pipe Materials and Construction(2) and be bedded in the underdrain media. Pipes must be at least 4 inches in diameter with no filter fabric wrap. At least 15 lineal feet of collection pipe is required for each 225 square feet of filter basal area.

(h) The filter container must be watertight to suit the design conditions. Underflow must be contained. Groundwater must be excluded. A concrete container may be used. Other materials may be used if equivalent function, workmanship, watertightness, and at least a 20-year service life can be expected.

(3) Recirculation/dilution tank.

(a) A recirculation tank receives septic tank effluent and underflow from the filter. A pumping system at this tank delivers flow to the filter dose piping network according to a project design. The recirculation tank volume measured from tank floor to tank soffit must be at least equal to the projected daily sewage flow volume.

(b) The recirculation ratio at design flow must be at least 4. Recirculation ratio is the daily volume of recycle divided by design daily volume of the wastewater. A fabricated "T" or "Splitter T" float valve located in the recirculation tank must be used whenever possible. Minimum recirculation tank liquid volume must be at least 80 percent of the gross tank volume when a float valve is used. Alternatively, where required and reasonable, a splitter basin using orifice or weir control may be used to divide underflow 20 percent to the absorption field and 80 percent to recycle on a daily basis. This alternative must use orifice control wherever possible. Minimum recirculation tank liquid volume must be at least 50 percent of the required tank volume when a splitter basin is used.

(c) Evaluation of and design for overflow and surge control at the recirculation tank must be included in the design plans.

(d) An audible or visual high water alarm must be included in the recirculation tank immediately below the overflow level. A latching electrical relay must retain the audible or visual alarm until acknowledged by a site attendant.

(e) Parallel pump start/stop electric controls (usually floats) must be installed to correct any unforeseen high liquid level event and keep sewage contained. This pump start function precludes overflow and must operate in parallel with the start/stop function of a timer and must not interfere with or depend upon a timer position.

(f) All areas of the filter must be wetted 48 times a day or every 30 minutes to achieve the recirculation ratio of at least 4 unless otherwise authorized by the agent.

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- (g) Testing must demonstrate the recirculation tank is watertight. Testing must be witnessed by the designer. Test protocol must be included in the design plans.
 - (h) Access onto the filter must be restricted by a fence or other effective means. Surface water entry onto the filter must be prevented by design and construction.
 - (i) Access openings to the recirculation tank must be provided at each end. Larger tanks must have additional openings. The smallest dimension of any access must be 18 inches. Larger openings must be provided if partially obstructed with piping or other objects. Provisions must be made to remove dregs (settleable solids). Pumps must be readily removable and replaceable without demolition of piping or other components.
- (4) Operation and Maintenance standards. The owner of an onsite system using an RGF must ensure the RGF and all other components of the onsite system are properly operated and timely maintained or decommissioned.
- (5) Operation and maintenance manual. The designer of an RGF system must ensure that comprehensive and detailed operation and maintenance instructions are provided to the onsite system owner at the time of installation. The instructions must emphasize operating and maintaining the entire system within the parameter ranges for which it is designed. The information must be presented in a manner that can be easily understood by the owner and include at a minimum:
- (a) As-built plans with the name and contact number of the installer;
 - (b) A description of how the process functions, including diagrams illustrating basic system design and flow path;
 - (c) A maintenance schedule for all critical components;
 - (d) Requirements and recommended procedures for periodic removal of residuals from the system;
 - (e) A detailed procedure for visually evaluating the function of system components;
 - (f) A description of olfactory and visual techniques for confirming correct process parameters and system performance;
 - (g) A recommended method for collecting and transporting effluent samples;
 - (h) Safety concerns that may need to be addressed; and
 - (i) Emergency contact numbers for maintenance providers and pumpers.
- (6) Service contracts. The owner of an RGF system must maintain a contract, in accordance with 4.0 General Standards, Prohibitions and Requirements(23), with a maintenance provider to serve and maintain the onsite system. A service contract must be entered before the system is installed and must be maintained until the system is decommissioned.

23.0 Steep Slope Systems

- (1) General conditions for approval. Construction-installation permits may be issued for steep slope systems serving single-family dwellings on slopes in excess of 30 percent if all the following requirements can be met.
- (a) Slope does not exceed 45 percent.
 - (b) The soil is well-drained with no evidence of saturation to a depth of 60 inches.
 - (c) The soil has a minimum effective soil depth of 60 inches.
- (2) Construction requirements.
- (a) Seepage trenches must be installed at a minimum depth of 30 inches and a maximum depth of 36 inches below the natural soil surface on the downhill side of the trench and must contain a minimum of 18 inches of drain media and 12 inches of native soil backfill.
 - (b) The system must be sized at a minimum of 75 linear feet per 150 gallons projected daily sewage flow.

24.0 Tile Dewatering System

(1) General conditions for approval. Construction permits may be issued for tile dewatering systems if 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 are silty clay loam or coarser textured and drainable.
- (c) Soils must have a minimum effective soil depth of at least 72 inches in soils with permanent groundwater unless otherwise authorized by the agent.
- (d) Slope does not exceed 3 percent.
- (e) All other requirements for the system, except depth to groundwater, can be met. After the field collection drainage tile is installed, the groundwater levels must conform to the requirements of this policy for the desired treatment and system.

(2) Construction requirements.

- (a) Field collection drainage tile must be installed on a uniform grade of 0.2 to 0.4 feet of fall per 100 feet. The tile drainage trench must be constructed to the minimum depth required in the approved site evaluation report.
- (b) A field collection drainage tile trench must be constructed at least 12 inches wide.
- (c) Maximum drainage tile spacing must be 70 feet center to center.
- (d) The minimum horizontal separation distance between the drainage tile and absorption facility must be 20 feet.
- (e) Field collection drainage tile must be rigid, smooth-wall, perforated pipe or other pipe material approved by the agent with a minimum diameter of 4 inches.
- (f) Field collection drainage tile must be enveloped in clean drain media or underdrain media to within 30 inches of the soil surface in soils with permanent groundwater. Drain media must be covered with filter fabric, treated building paper, or other nondegradable material approved by the agent.
- (g) Outlet tile must be rigid, smooth-wall, solid PVC pipe meeting or exceeding ASTM Standard D- 3034 with a minimum diameter of 4 inches. A flap gate or rodent guard may be required by the agent.
- (h) A silt trap with a 12-inch minimum diameter must be installed between the field collection drainage tile and the outlet pipe unless otherwise authorized by the agent. The bottom of the silt trap must be at least 12 inches below the invert of the drainage pipe outlet.
- (i) The discharge pipe and tile drainage system are integral parts of the system but do not need to meet setback requirements to property lines, wells, streams, lakes, ponds, or other surface waterbodies.
- (j) Before issuing a final site evaluation report approving the site, the agent may require demonstration that a proposed tile dewatering site can be effectively drained.
- (k) The absorption facility must use equal or pressurized distribution.

25.0 Split Waste Method

Criteria for approval. In a split waste method, wastes may be disposed of as follows.

(1) Black wastes may be disposed of by use of nonwater or water carried plumbing units such as incinerator toilets or compost toilets approved by the State Building Codes Division. Recirculating oil flush toilets are not approved at this time in Modoc County due to current septage disposal methods.

(2) Gray water may be disposed of by discharge to:

- (a) An existing onsite system which is not failing;

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- (b) A new onsite system with a soil absorption facility 2/3rds normal size if a full-size initial absorption area and replacement absorption area of equal size are available; or
- (c) A public sewerage system.

26.0 Nonwater-Carried Systems

(1) A person may not cause or allow the installation, placement, or use of a nonwater-carried waste disposal facility without a letter of authorization or permit from the agent, except in accordance with this section.

- (a) A sewage disposal service business registered in Modoc County may install portable toilets without written approval of the agent if all other requirements of this rule when **Table 7** setbacks are met.

(2) Nonwater-carried waste disposal facilities may be approved for temporary or limited-use areas, including but not limited to recreation parks, camp sites, seasonal cabins, farm labor camps, or construction sites, if:

- (a) All liquid wastes can be handled in a manner to prevent a public health hazard and to protect public waters; and
- (b) The separation distances in **Table 7** can be met; and
- (c) Permit conditions in section 16.0 (1) and (2) are adhered; and
- (d) Use must be compatible with Modoc County zoning and building ordinances.

(3) Construction. Non-water carried waste disposal facilities must be constructed in accordance with Nonwater-carried Waste Disposal Facilities, Materials, and Construction.

(4) Maintenance. Nonwater-carried waste disposal facilities must be maintained to prevent health hazards and pollution of public waters.

(5) General. A person may not place water-carried sewage in nonwater-carried waste disposal facilities. The contents of nonwater-carried waste disposal facilities must be removed by a registered sewage disposal service with a pumper and taken to an authorized treatment site.

(6) Pit privy.

- (a) Unsealed earth-pit type privies may be approved where the highest level attained by groundwater is not closer than 20 feet below the bottom of the privy pit.
- (b) The privy must be constructed as per this policy and to prevent surface water from running into the pit.
- (c) When the pit becomes filled to within 16 inches of the ground surface, a new pit must be excavated and the old pit backfilled with at least 2 feet of earth.
- (d) Rural Area Consideration (1) applies.
- (e) Cannot be used for a seasonal dwelling larger than one bedroom or a dwelling that has more than limited use during the year.
- (f) Use must be compatible with Modoc County zoning and building ordinances.
- (g) A minimum 200' separation from surface water.

(7) A person may not 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 pumping service registered with MCEH. Each portable toilet must display the name of the pumping service responsible for servicing.

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27.0 Cesspools and Seepage Pits

- (1) A person may not construct new cesspool sewage disposal systems in Modoc. Any Cesspool in use shall apply for a major repair permit immediately upon adoption of this policy.
- (2) Seepage pit sewage disposal systems may be used only to serve existing sewage loads and replace existing failing seepage pit and cesspool systems on lots that are too small to accommodate a standard system or other alternative onsite system.
- (3) Construction requirements.
 - (a) Each seepage pit must be installed in a location to facilitate future connection to a sewerage system when such facilities become available.
 - (b) Maximum depth of seepage pits is 15 feet below ground surface.
 - (c) The seepage pit depth must terminate at least 10 feet above the water table.

28.0 Holding Tanks

- (1) Criteria for approval. Installation of a holding tank system requires a construction-installation permit. A construction-installation permit may be issued for sites that meet all the following conditions.
 - (a) Permanent use.
 - (A) The site cannot be approved for installation of a standard subsurface system.
 - (B) No community or areawide sewerage system is available or expected to be available within five years.
 - (C) The tank is intended to serve a small industrial or commercial building, an occasional use facility such as a county fair or a rodeo, or a seasonal dwelling.
 - (D) Unless otherwise allowed by MCEH, the projected daily sewage flow is not more than 200 gallons.
 - (E) Setbacks required for septic tanks can be met.
- (2) Operations and maintenance. At all times the holding tank is being used, the owner of the tank must maintain a service contract with a MCEH approved sewage disposal service to provide for regular inspection and pumping of the holding tank.
- (3) Design and construction requirements. Holding tanks must comply with the following requirements:
 - (a) Plans and specifications for each holding tank proposed to be installed must be submitted to the agent for review and approval.
 - (b) Each tank must:
 - (A) Have a minimum liquid capacity of 1,500 gallons;
 - (B) Comply with tank standards in this policy; except for two compartment requirement.
 - (C) Be located and designed to facilitate removal of contents by pumping
 - (D) Be equipped with both an audible and a visual alarm placed in locations acceptable to the agent to indicate when the tank is 75 percent full. Only the audible alarm may be user cancelable;
 - (E) Have no overflow vent at an elevation lower than the overflow level of the lowest fixture served; and
 - (F) Be designed for antibuoyancy if test hole examination or other observations indicate seasonally high groundwater may float the tank when empty.
- (4) Special requirements. The application for a holding tank permit must include:
 - (a) A copy of a contract with a licensed sewage disposal service that requires the tank to be pumped periodically at regular intervals or as needed and the contents treated in a manner and at a facility approved by the agent; and

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(b) Evidence that the owner or operator of the proposed treatment facility will accept the pumping for treatment.

29.0 Alternative Treatment Technologies (ATTs)

(1) Criteria for approval. Construction-installation permits may be issued for onsite systems incorporating alternative treatment technologies (ATTs) for single family dwellings and commercial facilities if the following criteria are met:

- (a) MCEH has listed the ATT, including brand and model or type where applicable, for use in onsite systems pursuant to section (2) of this rule.
- (b) The ATT meets the performance and model selection criteria specified for the proposed use in section (4) of this rule.
- (c) The site meets the appropriate siting criteria in section (8) of this rule, and the agent has approved the site.
- (d) The owner of the property served by the onsite system incorporating the ATT has a written service contract as required in section (14) of this rule.

(2) ATT listing and delisting.

- (a) MCEH will maintain a list of ATTs that meet the performance requirements in section (3) of this rule.
- (b) Any person may submit an application for listing an ATT. The application must include:
 - (A) Documentation that the ATT meets the performance requirements in section (3) of this rule;
 - (B) Documentation that the ATT has been tested to NSF/ANSI as a class 1 or equivalent residential wastewater treatment system;
 - (C) A guide for inspecting the ATT installation;
 - (D) A plan for training agents on inspection of the ATT and training and certifying system installers on installation of the ATT;
 - (E) A plan for training and certifying maintenance providers on system maintenance for the ATT;
 - (F) Documentation that the ATT complies with sections (5)-(7) and (9) of this rule; and
 - (G) The alternative technology review fee.
- (c) MCEH will approve applications to list ATTs that MCEH determines meet the performance requirements in section (3) of this rule under normal operating conditions. ATTs will be listed by brand and model or type for the treatment standards they achieve.
- (d) MCEH may approve ATTs that vary from standards in this policy.
- (e) MCEH may remove ATTs from the list if it determines the requirements for approval in subsection (c) of this section are no longer satisfied or if:
 - (A) Ten percent or more of systems under 10 years of age fail;
 - (B) The manufacturer fails to submit the annual report in section (g) of this rule by the date specified by MCEH; or
 - (C) The manufacturer goes out of business; or
 - (D) No manufacture approved service provider is available in Modoc County.
- (f) MCEH may choose to accept another county or state approval in lieu of an application and testing in Modoc County.

(3) Performance testing and standards for listing ATTs.

- (a) Product testing. ATTs must be tested according to the product standards and testing protocols of NSF/ANSI Standard No. 40 for residential wastewater treatment systems – 2013, NSF/ANSI Standard No. 245 for nitrogen reduction – 2012, or another NSF/ANSI protocol

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approved by MCEH. For purposes of demonstrating performance to the fecal coliform concentration in treatment standard 2, the ATT shall be followed by a nonchlorinating disinfection device that has been tested according to NSF/ANSI Standard No. 46 – 2012, or the ATT be tested by collecting and analyzing influent and effluent grab samples at a minimum frequency of three days per week and the same duration (26 consecutive weeks) and hydraulic loadings (design and stress loadings) as the NSF/ANSI sample collection requirements for the BOD5, CBOD5, and TSS parameters. The testing must be performed by an ANSI accredited, third-party testing and certification organization whose accreditation is specific to onsite wastewater treatment products.

(b) Product performance. An ATT must produce effluent quality equal to or better than “treatment standard 1 or 2” as defined.

(4) ATT model type and size selection. The model, type, and size of the ATT proposed for a system must be consistent with manufacturer recommendations and match the daily design wastewater flow anticipated from the dwelling or facility.

(5) Access ports.

(a) At a minimum, the ATT must have ground-level access ports sized and located to facilitate installation, removal, sampling, examination, maintenance, and servicing of components or compartments that require routine maintenance or inspection. Access ports must facilitate:

- (A) Visually inspecting and removing mechanical or electrical components;
- (B) Removing components that require periodic cleaning or replacement;
- (C) Visually inspecting and collecting samples; and
- (D) Removing (manual or pumping) accumulated residuals.

(b) Access ports must be protected against unauthorized intrusion. Acceptable protective measures include but are not limited to padlocks or covers that can be removed only with tools.

(6) Malfunction, failure sensing, and signaling equipment.

(a) The system must be designed to prevent the passage of untreated waste into the absorption field if the plant malfunctions.

(b) The ATT must possess a mechanism or process capable of detecting:

- (A) Failure of electrical and mechanical components that are critical to the treatment process; and
- (B) High liquid level conditions above the normal operating specifications.

(c) The ATT must possess a mechanism or process capable of notifying the system owner of failures. The mechanism must have circuits separate from pump circuits and deliver a visible and audible signal.

(A) The visual alarm signal must be conspicuous at a distance of 50 feet from the system and its appurtenances.

(B) The audible alarm signal strength must be between 70 and 90 dbA at 5 feet and discernible at a distance of 50 feet from the system and its appurtenances.

(C) The visual and auditory signals must continue to function in the event of electrical, mechanical equipment, or hydraulic malfunction of the system. The audible signal may be disabled for service as long as the visual signal remains active while cause for the alarm is identified and alleviated.

(d) A clearly visible label or plate with instructions for obtaining service must be permanently located near the failure signal.

(7) Data plate.

(a) The ATT must have permanent and legible data plates located on:

- (A) The front of the electrical control box if the ATT has an electrical control box or panel; and

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- (B) The tank, aeration equipment assembly, or riser at a location accessed during maintenance cycles and inspections.
- (b) Each data plate must include:
 - (A) Manufacturer's name and address;
 - (B) Model number;
 - (C) Serial number (required on one data plate only);
 - (D) Rated daily hydraulic capacity of the system; and
 - (E) The performance expectations as determined by performance testing and evaluation.
- (8) Siting and absorption area construction criteria.
 - (a) ATTs approved for treatment standard 1 may be sited and sized as follows.
 - (A) In areas with permanent groundwater, where 4 feet of separation can be maintained between the bottom of the trench and groundwater and the other criteria in 20.0 Conventional Sand Filter Systems can be met.
 - (C) On sites meeting criteria for standard onsite systems or for pressurized systems defined in this policy.
 - (b) ATTs used in conjunction with approved disinfection and approved nitrogen reduction processes and approved for treatment standard 2 may be sited and sized as follows.
 - (A) On sites meeting the criteria for treatment standard 1 in subsection (a) of this section.
 - (B) In areas with a permanent water table, in accordance with specifications for sand filters in areas with a permanent water table in 20.0 Conventional Sand Filter Systems.
 - (c) Any type of absorption area permitted for a sand filter system, including the gravel-less absorption method, may be permitted for an ATT system.
- (9) Limited warranty. The ATT manufacturer must:
 - (a) Warrant all components of the ATT to be free from defects in material and workmanship for a minimum of two years from the date of installation; and
 - (b) Fulfill the terms of the warranty by repairing or exchanging any components that the manufacturer determines may be defective.
- (10) Installation. ATTs must be installed in accordance with the manufacturer's instructions and this division. The installer must be certified by the ATT manufacturer to install the system and provide written certification to the agent that the ATT component was installed in accordance with the manufacturer's instructions and this rule.
- (11) Sampling ports. A sampling port must be designed, constructed, and installed to provide easy access for collecting a free falling or undisturbed sample from the effluent stream. The sampling port may be located within the ATT or other system component (such as a pump chamber) if the wastewater stream being sampled is representative of the effluent stream from the ATT.
- (12) Operation and maintenance standards. The owner of an ATT system must ensure the ATT and all components of the onsite system are properly operated and timely maintained or decommissioned and the effluent standards in section (3) of this rule are met.
- (13) Owner's manual. The designer of each onsite system using an ATT must provide a comprehensive owner's manual prepared by the manufacturer or designer to the system owner, manufacturer's representative, installer, and if requested, the agent before or at the time of installation. The manual may be a collection of individual system component manuals and must include information on system specifications, system installation, operation and maintenance, and troubleshooting and repair. The information must be presented in a manner that can be easily understood by the owner.
- (14) Service contracts.

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- (a) The owner of an ATT system must maintain a contract, in accordance with this policy, with a maintenance provider to serve and maintain the onsite system. A service contract must be entered before the system is installed and must be maintained until the system is decommissioned.
- (b) A maintenance provider must be certified by the manufacturer to provide service on an ATT.

30.0 Absorption Trenches in Saprolite

(1) General conditions for approval. An onsite system construction-installation permit may be issued for a single family dwelling on a site with soil shallow to saprolite if requirements in either subsection (a) or (b) of this section can be met.

(a) If slope does not exceed 30 percent:

- (A) The saprolite is sufficiently weathered so that it can be textured, crushed, or broken with hand pressure to a depth of 24 inches and can be dug from a test pit wall with a spade or other hand tool to a depth of 48 inches; and
- (B) Clay films or iron coatings with moist values of 5 or less and moist chromas of 4 or more, organic coatings with moist values of 3 or less and moist chromas of 2 or more, or both occur on fracture surfaces of the saprolite to a depth of 48 inches.

(b) If slope exceeds 30 percent but not 45 percent:

- (A) The saprolite is sufficiently weathered so that it can be textured, crushed, or broken with hand pressure to a depth of 24 inches and can be dug from a test pit wall with a spade or other hand tool to a depth of 60 inches; and
- (B) Clay films or iron coatings with moist values of 5 or less and moist chromas of 4 or more, organic coatings with moist values of 3 or less and moist chromas of 2 or more, or both occur on fracture surfaces of the saprolite to a depth of 60 inches.

(c) For saprolite derived from granite or other deposits where clay films or iron coatings are not present, a soil absorption test and the degree of consolidation may be used to predict hydraulic conductivity of the saprolite. Agents may approve sites where conductivity is sufficiently high to ensure adequate drainage.

(2) Construction Requirements.

(a) Standard absorption trenches must be installed where slope does not exceed 30 percent.

(A) The trenches must be installed at a minimum depth of 24 inches and a maximum depth of 30 inches below the natural soil surface and contain 12 inches of filter material and a minimum of 12 inches of native soil backfill.

(B) The trenches must be sized at a minimum of 100 linear feet (24 inch width) per 150 gallons projected daily sewage flow.

(b) Seepage trenches must be installed where slope exceeds 30 percent but not 45 percent.

(A) Seepage trenches must be installed at a minimum depth of 30 inches and at a maximum depth of 36 inches below the natural soil surface and contain a minimum of 18 inches of filter material and 12 inches of native soil backfill.

(B) Seepage trenches must be sized at a minimum of 75 linear feet (24 inch width) per 150 gallons of projected daily sewage flow.

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31.0 Geographic Area Special Considerations.

- (1) No area in Modoc County has been identified at this time.

32.0 Monitoring and Identification of High Risk Areas Due to Impacts From OWTS, Local Hydrogeology, and Site Conditions

- (1) No area in Modoc County has been identified to be negatively impacted by OWTS. Modoc County Environmental Health is committed to monitoring water quality information submitted by realtors in an effort to identify vulnerable areas that warrant further investigation. Information that warrants investigation shall be remitted in the annual report to the applicable regional water quality control board.
- (2) MCEH shall follow local ordinance pertaining to size requirement for parcel creation, requirements of OWTS, and potential impacts to water quality.
- (3) A refined water quality monitoring program that will provide relevant information to the function of OWTS in Modoc County is planned to be developed by year five when the State Water Board renews the waiver. At this time MCEH will endeavor to compile data relevant to OWTS and comply with State Water Resources Control Board policy section 9.3.3.
- (4) Upon completion of MCEH geographic information system (GIS) training and system installation, areas that do not meet the criteria for a standard OWTS shall be identified on a GIS layer with limiting criteria identified.

33.0 Impaired Water Bodies Attributed to OWTS

- (1) No 303(d) listed water body impaired by OWTS has been identified in Modoc County at this time.

34.0 Rural Area Consideration

- (1) An agent may approve a new design and construction of standard or alternative systems that depart from this policy in designated rural zones if the following requirements are met.
 - (a) A minimum parcel size of at least 20 acres.
 - (b) The parcel as proposed or existing is at least 20 acres and does not have an accessible area approvable for a standard onsite system.
 - (c) The parcel cannot be reduced to less than 20 acres.
 - (d) The permit is for an onsite system designed to serve a single family dwelling or a commercial facility allowed in the zone with a flow no greater than 600 gpd.
 - (e) The onsite system will unlikely create a public health hazard or pollute public waters.
 - (f) Requiring strict compliance with standards, would in the judgment of the agent, be unreasonable, burdensome, or impractical.
- (2) An agent may approve a repair application for an existing system that would deviate from the standards in this policy if all the following conditions are met:
 - (a) The permit is for an onsite system designed to serve a single family dwelling or a commercial facility allowed in the zone with a flow no greater than 600 gpd.
 - (b) Prior to failure, there is no evidence the previous OWTS created an unforeseen public health hazard.
 - (c) There is no substantial evidence that the replacement OWTS will pollute public waters or create a public health hazard.

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- (d) With no financial assistance mechanism in place, as per the intent of AB 885, to assist the property owner. Requiring strict compliance with standards, would in the judgment of the agent, be economically unreasonable.
- (e) The following conditional use is stated on the repair permit: "The repaired OWTS does not meet current policy to best protect public health and water quality." If a system evaluation is required at the time of property sale, MCEH will state "The repaired OWTS does not meet current standards and has an increased risk to negatively impact public health or water quality."

35.0 Community Systems

- (1) A person may not construct a community system without a permit.
- (2) Plans for all community systems must describe the system and how it is to be operated, maintained, and financed.
- (3) Community systems must satisfy the siting criteria in this division for standard or alternative systems.
- (4) Operation responsibility. Municipalities, homeowner associations, or associations of unit owners must operate and maintain community systems including inspections annually or as required by a permit, or these rules.
- (5) Community systems discharging more than 10,000 gpd shall apply to the applicable regional water quality control board for permitting and compliance.
- (6) Community systems shall comply with local zoning ordinances and be approved by the Modoc County Planning Department.

36.0 Sewage Disposal Service Registrations

- (1) Registration required. A person may not perform sewage disposal services or advertise or represent himself as being in the business of performing such services without a valid Registration issued by MCEH to perform those services. A separate Registration is required for each business, organization, or other person conducting sewage disposal services.
- (2) The duration of a sewage disposal service Registration may not exceed three years following the date of issuance. MCEH may issue Registrations for periods of less than three years to adjust for a calendar year renewal. MCEH will provide Registrations written notice of the expiration date assigned and date application for renewal is due.
- (3) Requirements for pumping vehicles and equipment. A Registrations who pumps onsite systems must ensure that all pumping vehicles and equipment comply with the following requirements.
 - (a) Tanks used for pumping or transporting septage must:
 - (A) Have a liquid capacity of at least 550 gallons, except that tanks for equipment used exclusively for pumping chemical toilets not exceeding 80 gallons capacity must have a liquid capacity of at least 150 gallons;
 - (B) Be of watertight metal construction;
 - (C) Be fully enclosed; and
 - (D) Have suitable covers to prevent spillage.
 - (b) Vehicles used for pumping or transporting septage must be equipped with either a vacuum or other type of pump that is self-priming and will not allow seepage from the diaphragm or other packing glands.
 - (c) The sewage hose on vehicles must be drained, capped, and stored in a manner that will not create a public health hazard or nuisance.
 - (d) The discharge nozzle must be:

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- (A) Provided with either a camlock quick coupling or threaded screw cap;
 - (B) Sealed by threaded cap or quick coupling when not in use;
 - (C) Located to minimize flow or drip onto any portion of the vehicle;
 - (D) Protected from accidental damage or breakage.
 - (e) Pumping equipment must not have spreader gates.
 - (f) Each vehicle must at all times be supplied with a pressurized wash-water tank, disinfectant, and implements for cleanup.
 - (g) Except as specified in subsection (h) of this section or otherwise authorized in writing by the agent, pumping equipment must be used exclusively for pumping sewage disposal facilities.
 - (h) The following may be pumped or serviced using pumping equipment without written authorization, whether or not they are connected to an onsite system or a centralized community sewer system: pump stations, lift stations, food grease tanks, vaults or tanks used for domestic sewage not contaminated with industrial or hazardous waste, and spills and backups of uncontaminated domestic sewage.
 - (i) Chemical toilet pumping equipment may not be used for any other purpose if the pump tank has a liquid capacity of less than 550 gallons.
 - (j) Equipment must be maintained in a reasonably clean condition at all times and must be operated in a manner that does not create a public health hazard or nuisance.
- (4) Vehicle identification. The onsite sewage disposal services Registrations must identify vehicles as follows.
- (a) The Registrations's name or assumed business name must be displayed on both sides of the vehicle or the attached tank and on both sides of a tank trailer.
 - (A) Letters must be at least 3 inches high unless otherwise authorized by DEQ.
 - (B) Letters must be in a color contrasting with the background.
 - (b) Tank capacity must be printed on both sides of the tank.
 - (A) Letters must be at least 3 inches high unless otherwise authorized by DEQ.
 - (B) Letters must be in a color contrasting with the background.
- (5) Septage management requirements. The Registrations and all persons managing septage:
- (a) Must avoid spilling sewage or septage during pumping, cleaning, or transport and must immediately clean up any spill and disinfect the spill area.
 - (b) Must dispose of septage and sewage only in disposal facilities approved by MCEH.
 - (c) At all times during pumping, transport, or disposal of septage, must possess origin-destination records for sewage disposal services rendered.
 - (d) Must maintain on file for at least 3 years complete origin-destination records for sewage disposal services rendered. The records must be made available for review upon the request of MCEH. Origin and destination records must include the following information for each pumping, transport, and disposal occurrence:
 - (A) Source of septage, including name and address;
 - (B) Specific type of material pumped;
 - (C) Quantity of material pumped;
 - (D) Name and location of disposal site where septage was deposited;
 - (E) Quantity of material deposited; and
 - (F) The Registration numbers or vehicle numbers assigned by the Registrations for all vehicles or trailers used for pumping, transport, and disposal.
 - (e) Must transport septage in a manner that will not create a public health hazard or nuisance
 - (f) Must possess a current septage management plan approved by MCEH. The plan must be kept current, with any revisions approved by MCEH before implementation.

CONSTRUCTION STANDARDS

37.0 Tank Construction

The following construction and manufacturing requirements apply to all septic tanks, holding tanks, dosing tanks, multiple-compartment combination septic and dosing tanks, and dosing septic tanks manufactured for use in Modoc County.

- (1) Compartments.
 - (a) Single-compartment tank can only be used as a dose tank.
 - (b) Multiple-compartment tanks must comply with the following requirements:
 - (A) The liquid capacity of the first compartment must be at least 2/3 of the total required liquid capacity, as measured from the invert elevation of the first compartment's outlet Tee fitting;
 - (B) A compartment may not have an inside horizontal dimension of less than 24 inches.
 - (c) The liquid depth of any compartment must be at least 30 inches. Liquid depths greater than 72 inches may not be considered in determining the working liquid capacity unless the tank has a capacity greater than 3,000 gallons.
- (2) Service access manhole. All tanks must have a service access manhole measuring at least 18 inches across its shortest dimension in each compartment.
- (3) Watertightness. After installation, all tanks must be watertight. The installer must test each tank for watertightness by filling the tank to a point at least 2 inches above the point of riser connection to the top of the tank. During the test there may be no more than a one gallon leakage over a 24 hour period. The tank manufacturer must deliver watertight tanks and should test each tank for watertightness before the tank is shipped from the manufacturing plant.
- (4) If the tank manufacturer does not fully assemble the tank, as with a two-piece concrete tank, the manufacturer must provide the bonding and sealing agents and an instruction manual for assembling the tank.
- (5) Structure: All tanks must be able to support an earth load of at least 300 pounds per square foot when the maximum coverage does not exceed 3 feet. Tanks installed with more than 3 feet of cover must be reinforced to support the additional load. Lateral load must be 62.4 pcf of equivalent fluid pressure (EFP). Tanks must be able to withstand long-term external hydrostatic loads in addition to soil loads. Internal hydrostatic pressures must be omitted to allow for septage pumping during critical groundwater conditions. A 2,500 pound wheel load concentrated over the critical elements of the tank shall also be considered.
- (6) Service access riser and cover. All tanks must be manufactured to accommodate installation of a watertight service access riser above one service access manhole. The riser must have a minimum nominal diameter of 20 inches when tank burial depths do not exceed 36 inches. Tanks designed for burial depths deeper than 36 inches must also be designed to accommodate installation of a 30-inch minimum diameter service access riser above each service access manhole. A gasketed riser cover must be provided and securely fastened or weighted to prevent unauthorized access.
- (7) Inlet and outlet Tee fittings.
 - (a) The inlet and outlet Tee fittings must be of Schedule 40 P.V.C. plastic, Schedule 40 ABS plastic, or other equally durable materials approved by the department with a minimum diameter of 4 inches.
 - (b) The distance between the inlet and outlet Tee fittings in a single-compartment tank must at least equal the liquid depth of the tank.
 - (c) The inlet and outlet Tee fittings in a single compartment tank, where applicable, must be located at opposite ends of the tank. The inlet Tee fitting must be readily accessible by way of a watertight, 8-inch minimum diameter riser (with cover) and access hole positioned directly above the inlet Tee. The fittings must be attached in a watertight manner acceptable to the

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department.

- (d) The inlet fitting in all single-compartment tanks, except dosing tanks, and in each compartment of multiple-compartment tanks, must be a "sanitary tee" extending at least 6 inches above and at least 12 inches below the normal high and low liquid levels, respectively.
 - (e) The outlet Tee fitting, holes, or ports provided in a vault or outlet effluent filter must be positioned to withdraw effluent horizontally from the clear zone at an elevation measured from the inside bottom of the tank to 65 to 75 percent of the lowest operating liquid depth. The net area of the ports must be at least 6 square inches. The outlet fitting in single-compartment tanks and in each compartment of multiple-compartment tanks must extend at least 6 inches above the highest normal liquid depth to provide scum storage. When the single-compartment tank is used as a holding tank, dosing septic tank, or dosing tank, the outlet Tee fitting must be provided with a watertight plug or omitted. The outlet Tee fitting may also be plugged or omitted in the last compartment of a multiple-compartment tank when a pump or siphon is placed in that last compartment.
 - (f) Ventilation must be provided through the fittings by means of a 2-inch minimum space between the top of the inlet Tee fittings and the adjacent tank surfaces.
 - (g) The invert of the inlet fitting must be at least 1 inch and preferably 3 inches above the invert of the outlet fitting or the highest normal liquid level.
 - (h) A convenient means of monitoring sludge and scum accumulation must be provided, with access extending to ground level.
 - (i) The tank manufacturer must provide with each Tee fitting an appropriate coupler that will provide a watertight connection between the fittings and the building and effluent sewer pipes.
- (8) At least 10% of the inside volume of a tank must be above the highest normal liquid level to provide scum storage and reserve.
 - (9) Tanks shall be constructed of concrete, fiberglass, or other noncorrosive materials approved by the department. All tanks shall be approved a California Registered Engineer and be supplied with a specification sheet detailing design and installation criteria.
 - (10) All prefabricated tanks must be marked on the uppermost tank surface over the outlet with the liquid capacity of the tank, the burial depth limit, date of manufacture, and the manufacturer's full business name.
 - (11) A septic tank used for primary treatment or two compartment tank cannot be used as a dosing tank.

38.0 Distribution Boxes

- (1) Distribution boxes must be constructed of concrete, fiberglass, or other materials acceptable to the department.
- (2) Distribution boxes must be constructed of durable, watertight materials resistant to deterioration and be designed to accommodate watertight connections for the effluent sewer and header pipes. The top, walls, and bottom of concrete distribution boxes must be at least 1-1/2 inches thick. All distribution boxes must be able to support an earth load of at least 200 pounds per square foot.
- (3) The invert elevation of all outlets must be the same and must be at least 2 inches below the inlet invert.
- (4) Each distribution box must be provided with a sump extending at least 2 inches below the invert of the outlets unless otherwise authorized by the department.

39.0 Drop Boxes

- (1) Drop boxes must be constructed of concrete, fiberglass, or other materials acceptable to the department.
- (2) Drop boxes must be constructed of durable, watertight materials resistant to deterioration and be

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designed to accommodate watertight connections for the effluent sewer and header pipes. The top, walls, and bottom of concrete drop boxes must be at least 1-1/2 inches thick. All drop boxes must be able to support an earth load of at least 200 pounds per square foot.

- (3) The inverts of the inlet and overflow port must be at the same elevation. The invert of the header pipe port(s) leading to the absorption trench(es) must be 6 inches below the inlet invert unless otherwise approved by the agent.

40.0 Filter Fabric

Except as otherwise allowed by the department, filter fabric used as a barrier between the lower lens of drain media and the medium sand in a conventional sand filter system must meet the following specifications:

- (1) Material synthetic fabric, either spunbonded or woven.
- (2) Burst strength not less than 25 psi.
- (3) Air permeability not less than 500 cfm per sq. ft.
- (4) Water flow rate not less than 500 gpm per sq. ft. at 3 inches of head.
- (5) Hydrophilic surface reaction to water.
- (6) Equivalent opening size of 70 to 100 sieve.
- (7) Chemical properties:
 - (a) Nonbiodegradable.
 - (b) Resistant to acids and alkalis within a pH range of 4 to 10.
 - (c) Resistant to common solvents.

41.0 Diversion Valves

- (1) Diversion valves must be constructed of material that is durable, corrosion-resistant, watertight, and designed to accommodate the inlet and outlet pipes in a secure and watertight manner.
- (2) Diversion valves must be constructed with access to finished grade and large enough to provide for ease of operation and service of valve.

42.0 Dosing Tanks

- (1) Dosing tanks must be single compartment meet the material standards described for septic tanks.
- (2) Each dosing tank employing one or more pumps must have a minimum liquid capacity equal to the projected daily sewage flow for flows up to 1,200 gallons per day. The department will determine tank sizing for dosing tanks with projected daily sewage flows greater than 1,200 gallons per day. The liquid capacity of dosing tanks must be as measured from the invert elevation of the inlet fitting.
- (3) Each dosing tank must be provided with a service access manhole having a minimum horizontal measurement of 18 inches.
- (4) Each dosing tank proposed to serve a commercial facility containing more than one pump or siphon must be provided with at least one service access manhole that provides adequate space to construct, install, service, and operate the equipment in accordance with the requirements of the permit or manufacture.
- (5) The installation manual must include additional information about siphon selection, installation of the pump or siphon screen, pump control and alarm levels, and the watertight pass-through methods for electric wiring and pipe.
- (6) Dosing tanks with siphons must be designed and sized for each specific project. The tank manufacturer must specify the type or model of siphon, screen, and related apparatus that are compatible with each dosing tank.
- (7) The inlet fitting must extend below the lowest operating level of the pump or siphon.

43.0 Dosing Assemblies: Effluent Pumps, Controls and Alarms, and Dosing Siphons

- (1) Design and equipment must emphasize ease of maintenance, longevity, and reliability of components and must be proven suitable by operational experience, test, or analysis acceptable to the department.
- (2) Easy means of electrical and plumbing disconnect must be provided. All apparatus must be constructed and installed to facilitate ease of service without having to alter any other component.
- (3) Component materials must be durable and corrosion-resistant such as Type 316 stainless steel, suitable plastics, or 85-5-5 bronze.
- (4) Pumps, Siphons, Controls, and Alarms. All pumps, siphons, controls and related apparatus must be field tested under working conditions and found to operate and perform satisfactorily. Electrical components used in onsite systems must comply with applicable requirements of the State of California Electrical Code and the standards in this section.
 - (a) Motors must be continuous-duty with overload protection.
 - (b) Pumps must have durable impellers of bronze, cast iron, or other materials approved by the department.
 - (c) Submersible pumps must 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 agent, the pump or siphon must be placed within a corrosion-resistant screen or vault with a filtering device that extends into or above the tank's service access manhole. The screen or filtering device must have at least 12 square feet of surface area, with 1/8-inch openings. In lieu of the screen, the agent may allow other methods with equal or better performance in preventing the passage of suspended solids to the pump or siphon.
 - (e) Pumps must be automatically controlled by float switches with a minimum rating of 12 amps at 115 volts A.C. or by a department-approved, equally reliable switching mechanism. Except as otherwise required in this division, the switches must be installed so that no more than 20% of the projected daily sewage flow is discharged each cycle. The pump "off" level must be set to maintain the liquid level above the top of the pump or to the designer and pump manufacturer's specifications.
 - (f) An audible and visual high water level alarm with manual silence switch must be located in or near the building served by the pump. Only the audible alarm may be user-cancelable. The switching mechanism within a dosing tank or chamber controlling the high water level alarm must be located so that at time of activation the tank has a remaining volume equal to 1/3 or more of the system's design flow, as measured below the invert of the inlet, for effluent storage. The alarm and pump must be on separate circuits. Commercial applications using duplex pumps are not subject to the 1/3 storage reserve requirement.
 - (g) When a system has more than one pump, the department may require the pumps to be wired into the electrical control panel to function alternately after each pumping cycle. If either pump should fail, the other pump will continue to function while the high water level alarm activates. A cycle counter must be installed in the electrical control panel for each pump.
 - (h) All pump installations must be designed with adequate sludge storage volume below the effluent intake level of the pump.
 - (i) All commercial systems with a design flow greater than 600 gallons must be constructed in duplex (two or more alternating pumps) unless otherwise authorized in writing by the department. Controls must be provided such that an alarm will signal when one of the pumps malfunctions.
 - (j) All pumps serving commercial systems must be operated through a pre-manufactured electrical

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control panel. A means of monitoring pump performance through the use of elapsed-time meters and cycle counters is required.

- (k) Where multiple pumps are operated in series, an electrical control panel must be installed to prevent the operation of a pump or pumps preceding a station that experiences a high level alarm event.
- (5) Dosing Siphons. Dosing siphons used in onsite systems must comply with the following minimum requirements.
 - (a) The siphon must be constructed of corrosion-resistant materials.
 - (b) The siphon must be installed within a compatible tank in accordance with the siphon manufacturer's recommendations.
 - (c) The siphon manufacturer must provide installation and maintenance instructions to the owner.
 - (d) The installation must include a device that tracks the operation of the siphon by measuring cycle events and records them by means of an event counter mounted within the dwelling or structure served.

44.0 Effluent Filters

- (1) Effluent filters used in onsite systems must meet the following criteria.
 - (a) Filters must be of durable, resilient, corrosion resistant, non-degradable materials resistant to deformation under normal operating conditions.
 - (b) Filters must be designed to prevent the escape of sludge or scum during normal operation and in the event of a malfunction, including filter clogging.
 - (c) The filter must retain all particles greater than 3/16 inch.
 - (d) The filter assembly must baffle the sludge and scum layers to prevent the escape of gross solids during sludge bulking or gas ebullition.
 - (e) Filters must be designed and positioned to allow for easy, trouble-free removal from and reinstallation to the screen apparatus from the assembly.
 - (f) The assembly must be capable of withstanding stresses placed upon it by installation, operation, and service.
 - (g) The assembly in the septic tank must perform as a conventional tank outlet that meets the requirements of 37.0 Tank Construction(6) when the filter is removed.
 - (h) The filter must be designed to handle the flow of the system it is to serve without excessive maintenance. For a single family dwelling, maintenance is considered "excessive" when the filter requires service or cleaning more than one time per year. Service must be performed each time the tank is pumped and in accordance with the manufacturer's specifications.
 - (i) To obtain department approval, the manufacturer of an effluent filter must provide the department with the necessary technical data to show that the design and materials comply with this rule. The manufacturer must provide an operation and maintenance manual with each unit distributed.
 - (j) Effluent filter units external to the tank must be watertight.

45.0 Pipe Materials and Construction

- (1) Effluent Sewer Pipe: The effluent sewer must be constructed with materials in conformance with state building sewer standards. The effluent sewer pipe must have a minimum diameter of 3 inches. When the septic tank is fitted with an effluent filter, the minimum nominal diameter of piping may be reduced to 1-1/4 inches.
- (2) Underdrain pipe. Underdrain pipe must meet or exceed the requirements for Class 125 PVC pressure pipe as identified in ASTM Specification D 2241. The pipe and fittings must be marked as required by ASTM Specification D 2241. The underdrain pipe must be perforated in accordance with subsection (4)(d) of this rule or with 1/4-inch slots cut halfway through the pipe at 4 inches center to center.

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- (3) Polyvinyl chloride (PVC) pressure transport pipe, pressure manifolds, and pressure lateral pipe and fittings must meet or exceed the current requirements for Class 160 PVC 1120 pressure pipe as identified in ASTM Specification D 2241. The pipe and fittings must be marked as required by ASTM Specification D 2241. For pipe diameters of 1 inch or less, the minimum pressure rating is 200 pounds per square inch (psi). For pipe diameters greater than 1 inch, the minimum pressure rating is 160 psi.
- (4) Distribution and Header Pipe and Fittings.
 - (a) Polyethylene distribution pipe in 10 foot lengths and header pipe in lengths of 10 feet or greater must meet the current ASTM Specification F 405. Pipe and fittings must also pass a deflection test withstanding 350 pounds per foot without cracking or collapsing using the method in ASTM 2412. Pipe used in absorption facilities must be heavy duty. Markings must meet requirements in ASTM F 405.
 - (b) Polyvinyl chloride (PVC) distribution and header pipe and fittings must meet the most current ASTM Specification D 2729. Pipe and fittings must pass a deflection test withstanding 350 pounds per foot without cracking or collapsing using the method found in ASTM 2412. Markings must meet requirements in ASTM Specification D 2729.
 - (c) Polyethylene smooth wall distribution and header pipe in 10-foot length and fittings must meet the most current ASTM Specification F 810. Pipe and fittings must also pass a deflection test of 350 pounds per foot without cracking or collapsing by using the method found in ASTM 2412. Markings shall meet the requirements in ASTM Specification F 810, Section 9.
 - (d) The three types of plastic pipe described above must have two rows of holes spaced 120 degrees apart and 60 degrees on either side of a center line. For distribution pipe, a line of contrasting color must be provided on the outside of the pipe along the line furthest away and parallel to the two rows of perforations. Durable ink markings must cover at least 50% of the pipe. Markings may consist of a solid line, letters, or a combination of the two. Intervals between markings must not exceed 12 inches. The holes of each row may not be more than 5 inches on center and must have a minimum diameter of 1/2 inch.

46.0 Nonwater-Carried Waste Disposal Facilities, Materials, and Construction

Privies and Portable Toilet Shelters

- (1) Privies and portable toilet shelters must comply with the following general requirements.
 - (a) Structures must be free of hostile surface features, such as exposed nail points, sharp edges, and rough or broken boards, and must provide privacy and protection from the elements.
 - (b) Building ventilation must be equally divided between the bottom and top halves of the room and must be adequate to allow for the free escape of gases and odors. All vents must be screened with 16 mesh screen of durable material.
 - (c) Buildings must be of fly-tight construction and must have self-closing doors with an inside latch.
 - (d) Pits, tanks, or vaults must be vented to the outside atmosphere by a flue or vent stack having a minimum inside diameter of 4 inches. Vents must extend at least 12 inches above the roof.
 - (e) Interior floors, walls, ceilings, partitions, and doors must be finished with readily cleanable, impervious materials resistant to wastes, cleansers, and chemicals. Floors and risers must be constructed of impervious material and prevent entry of vermin.
- (2) Portable Toilet Shelters. Portable toilet shelters may be prefabricated, skid mounted, or mobile. In addition to the requirements in section (1) of this rule, portable toilet shelters must:
 - (a) Provide at least 1 square foot of screened ventilation to the outside atmosphere for each seat;
 - (b) Provide at least 9 square feet of floor space for each seat;
 - (c) Be furnished with a toilet tissue holder for each seat;

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- (d) Be located in areas readily accessible to users and to pumping and cleaning services; and
- (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.

47.0 Unsealed Earth Pits for Privies

- (1) The pit must be constructed with material and in a manner to prevent rapid deterioration, provide adequate capacity, and facilitate maintenance under ordinary use.
- (2) Unless otherwise approved by the agent, the pit must provide a capacity of 50 cubic feet for each seat installed in the privy building and must be at least 5 feet deep. The area within 16 inches of the surface grade may not be counted as part of the 50 cubic-foot capacity.
- (3) Pit cribbing must fit firmly and be in uniform contact with the earth walls on all sides and must rise at least 6 inches above the original ground line and descend to the full depth of the pit. Pit cribbing below the soil line may be omitted in rock formations.

48.0 Self-Contained Nonwater-Carried Toilet Facilities

- (1) General Standards. All self-contained, nonwater-carried toilet facilities must comply with the following requirements.
 - (a) They must have water-tight chambers constructed of reinforced concrete, plastic, fiberglass, metal, or other material of acceptable durability and corrosion resistance, approved by the department, and designed to facilitate the removal of the wastes.
 - (b) Black wastes must be stored in an appropriate chamber until removal for final treatment elsewhere. Wastes must be removed from the chamber whenever necessary to prevent overflow.
 - (c) Chemicals containing heavy metals such as copper, cadmium, and zinc, must not be used in self-contained toilet facilities.
 - (d) All surfaces subject to soiling must be impervious, easily cleanable, and readily accessible.
- (2) Vault Toilet Facilities.
 - (a) The capacity of vaults must be at least 350 gallons or, in places of employment, 100 gallons per seat.
 - (b) Caustic must be added routinely to vault chambers to control odors.
- (3) Chemical Toilet Facilities.
 - (a) Toilet bowls must be constructed of stainless steel, plastic, fiberglass, ceramic, or other material approved by the department.
 - (b) Waste passages must have smooth surfaces and be free of obstructions, recesses, or cross braces that would restrict or interfere with flow of black wastes.
 - (c) Biocides and oxidants must be added to waste detention chambers at rates and intervals recommended by the chemical manufacturer and approved by the department.
 - (d) Chambers and receptacles must provide a minimum storage capacity of 50 gallons per seat.
 - (e) Portable shelters housing chemical toilets must display the business name of the licensed sewage disposal service that is responsible for servicing them.

49.0 Construction of Gray Water Waste Disposal Systems

- (1) A gray water waste disposal system must consist of a minimum 1,000 gallon tank that complies with tank construction standards in this policy, and an absorption trench designed to 2/3 capacity of a standard OWTS system. All other components shall meet the material qualities described within this policy or specifically approved by MCEH.
- (2) Absorption trenches shall be constructed to prevent surfacing effluent and contamination of a permanent groundwater table. Gray water systems are designed as a water saving system that is

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intended to reduce the use of potable water for landscape irrigation.

(3) No black waste can be disposed of in the gray water system. Black waste can be handled by a non-water system, holding tank, or standard OWTS design.

50.0 Flexible Membrane Liners for Sand Filters Treating Septic Tank Effluent

- (1) Unsupported polyvinyl chloride (PVC) must have the following properties (Property -- Test Method).
 - (a) Thickness -- ASTM D1593, Para 9.1.3, 30 mil, minimum
 - (b) Specific Gravity (minimum) -- ASTM D792, Method A
 - (c) Minimum Tensile Properties (each direction) -- ASTM D882
 - (A) Breaking Factor (pounds/inch width) -- Method A or B (1 inch wide), 69
 - (B) Elongation at Break (percent) -- 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 D1004, Die C, 8
 - (e) Low Temperature -- ASTM D1790, -20° F
 - (f) Dimensional Stability (each direction, percent change maximum) -- ASTM D1204, 212° F, 15 min., ±5
 - (g) Water Extraction -- ASTM D1239, 0.35% max
 - (h) Volatile Loss -- ASTM D1203, Method A, 0.7% max
 - (i) Resistance to Soil Burial (percent change maximum in original value) -- ASTM D3083:
 - (A) Breaking Factor, -5
 - (B) Elongation at Break, -20
 - (C) Modulus at 100% Elongation, ±10.
 - (j) Bonded Seam Strength (factory seam, breaking factor, ppi width) -- ASTM D3083, 55.2
 - (k) Hydrostatic Resistance -- ASTM D751, Method A, 82.
- (2) Installation Standards.
 - (a) Patches, repairs, and seams must have the same physical properties as the parent material.
 - (b) Site considerations and preparation.
 - (A) The supporting surface slopes and foundation to accept the liner must be stable and structurally sound with appropriate compaction. Particular attention must be paid to the potential of sink hole development and differential settlement.
 - (B) Soil stabilizers such as cementations or chemical binding agents may not adversely affect the membrane; cementations and chemical binding agents may be potentially abrasive agents.
 - (c) Only fully buried membrane liner installation may 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 must be made to minimize the strain (or elongation) anywhere in the flexible membrane liner.
 - (e) Construction and installation.
 - (A) Surface condition.
 - (i) Preparation of earth subgrade. The prepared subgrade must be of soil types no larger than Unified Soil Classification System (USCS sand (SP) to a minimum of 4 inches below the surface and free from loose earth, rock, fractured stone, debris, cobbles, rubbish and roots. The surface of the completed subgrade must 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 must be maintained in a smooth, uniform, and compacted condition during installation of the lining.

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- (B) Climatic conditions.
 - (i) Temperature. Placing liner outside the desirable temperature range must be avoided. The desirable temperature range for membrane installation is 42° F. to 78° 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.
 - (ii) Wind. Placing the liner in high wind must be avoided. Wind may have an adverse effect on liner installation such as interfering with liner placement. Mechanical damage may result. Cleanliness of areas for boot connection and patching may not be possible. Alignment of seams and cleanliness may not be possible.
 - (iii) Precipitation. Seaming, patching, and attaching "boots" must be done under dry conditions. When field seaming is adversely affected by moisture, portable protective structures and other methods must be used to maintain a dry sealing surface. Proper surface preparation for bonding boots and patches may not be possible.
- (C) Structures. Where penetrations are necessary, liners must be attached to pipes with a mechanical type seal supplemented by a chemically compatible caulking or adhesives to effect a liquid-tight seal. Maximum compaction must 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 must 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 must be planned to prevent material damage. Material must be stored in a secured area and protected from adverse weather.
 - (iii) Site inspection. A site inspection must be carried out by the agent and the installer before liner installation to verify surface conditions and other conditions important to installation.
 - (iv) Deployment. Panels must be positioned to minimize handling. Seaming should not be necessary. Bridging or stressed conditions must be avoided with proper slack allowances for shrinkage. The liner must be secured to prevent movement and promptly backfilled.
 - (v) Anchoring trenches. The liner edges must be secured frequently in a backfilled trench.
 - (vi) Field seaming. Field seaming, if absolutely necessary, must be attempted only when weather conditions are favorable. The contact surfaces of the materials must be clean of dirt, dust, moisture, or other foreign materials. The contact surfaces must be aligned with sufficient overlap and bonded in accordance with the suppliers recommended procedures. Wrinkles must be smoothed out and seams must be inspected by nondestructive testing techniques to verify their integrity. As seaming occurs during installation, the field seams must be inspected continuously, and any faulty area repaired immediately.
 - (vii) Field repairs. Traffic on the lined area must be minimized. Any necessary repairs to the liner must be patched using the same lining material and following the recommended procedure of the supplier.
 - (viii) Final inspection and acceptance. Completed liner installations must be visually checked for punctures, rips, tears, and seam discontinuities before placement of any backfill. At this time the installer must also manually check all factory and field seams with an appropriate tool. In lieu of or in addition to manual checking seams, either of the following tests may be performed:

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- (I) Wet Test. The lined basin must be flooded with water to the 1-foot level after inlets and outlets have been plugged. There may not be any loss of water in a 24 hour test period.
- (II) Air Lance Test. All bonded seams must be checked using a minimum 50 PSI (gauge) air supply directed through a 3/16 inch (typical) nozzle held not more than 2 inches from the seam edge and directed at the seam edge. Riffles indicate unbonded areas within the seam or other undesirable seam construction.

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Table 1
Minimum Separation Distances

Items Requiring Setback	From Subsurface Absorption Area Including Replacement Area	From Septic Tank and Other Treatment Units, Effluent Sewer and Distribution Units
Groundwater Supplies and Wells*	100'	50'
Surface Waters - Year round**	100'	50'
Surface Waters - Seasonal**	50'	50'
Groundwater Interceptors	20'	10'
Irrigation Canals - Lined	25'	25'
Irrigation Canals - Unlined (Upgradient/Downgradient)	25'/50'	25'/50'
Downgradient Escarpments/Cuts Which Intersect Layers that Limit Effective Soil Depth	50'	25'
Downgradient Escarpments/Cuts Which Do Not Intersect Layers that Limit Effective Soil Depth	25'	10'
Property Lines	5'	10'
Water Lines	10'	10'
Foundation Lines of Any Building	10'	5'
Underground Utilities	10'	-
<p>*Additional setbacks for public water systems are in section 9.4.10, 9.4.11, and 9.4.12 in the State Water Resources Control Board OWTS Policy.</p> <p>** Does not prevent stream crossings of pressure effluent sewers.</p>		
<p>If the Health Officer has determined that there is inadequate area to obtain the distances required in Table 1, he or she may nevertheless approve the construction of the system if it is a replacement system and a reasonable low risk assessment to public health and the environment can be made.</p>		

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TABLE 2
Quantities of Sewage Flows

Type of Establishment		Gallons Per Day*	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 w/central comfort stations	35 (per person)	700
	W/ 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 (day/night) w/ limited plumbing	50 (per person)	1000
Luxury camps		100 (per person)	2000
Churches		5 (per seat)	150
Country clubs (per resident member)		100 (per resident member)	2000
County clubs (per non-resident member present)		25 – (per non-resident member)	0
Dwellings	Boarding houses	150 (per bedroom)	600
	Boarding houses- additional for non-residential boarders	10 (per person)	0
	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
Single family dwellings with 3 or more bedrooms		75 (fourth & each succeeding bedroom)	450
Factories (exclusive of industrial waste- w/shower facilities)		35 (per person per shift)	300
Factories (exclusive of industrial waste- w/o 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 – w/ bath, toilet, and kitchen waste		100 (per bedroom)	500
Motels- w/o kitchens		80 (per bedroom)	400
Picnic Parks- toilet waste only		5 (per picnicker)	150
Picnic Parks- w/ bathhouses, showers, and flush toilets		10 (per picnicker)	300
Restaurants		40 (per seat)	800
Restaurants – single service		2 (per customer)	300
Restaurants – w/ bars and/or lounges		50 (per seat)	1000
Schools	Boarding	100 (per person)	3000
	Day – w/o gyms, cafeterias, or showers	15 (per person)	450
	Day – w/ gyms, cafeterias and showers	25 (per person)	750
	Day – w/ cafeteria, but w/o gyms or showers	20 (per person)	600
Service Stations		10 (per vehicle served)	500
Swimming pools and bathhouses		10 (per person)	300
Theater	Movie	5 (per seat)	300
	Drive-In	20 (per car space)	1000
Travel Trailer Parks – w/o individual water and sewer hookups		50 (per space)	300
Travel Trailer Parks – w/ individual water and 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
*The agent may reduce the above design flow estimates as provided in this policy.			

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TABLE 3

Design Soil Application Rates*

Absorption rates per 150 gallons projected daily sewage flow determined from soil texture verses effective soil depth.									
	Linear Leach Length Calculation per Bedroom						Bottom Area + sidewall 24" + 12" = 36"		
	Linear feet 2'			Linear feet 3' (chamber only)			Equivalent Application Rate (gal/day/ft2)		
	Soil Group			Soil Group			Soil Group		
Effective Soil Depth	A	B	C	A	B	C	A	B	C
18" to less than 24"	125	150	175	95	115	130	0.40	0.33	0.29
24" to less than 36"	100	125	150	75	95	115	0.50	0.40	0.33
36" to less than 48"	75	100	125	55	75	95	0.67	0.50	0.40
48"+	50	75	125	40	55	95	1.00	0.67	0.40
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								
*Agent may reduce the above design flow criteria as provided in this policy.									
* If sand grains are fine or very fine, site according to Group B soils.									

Table 4

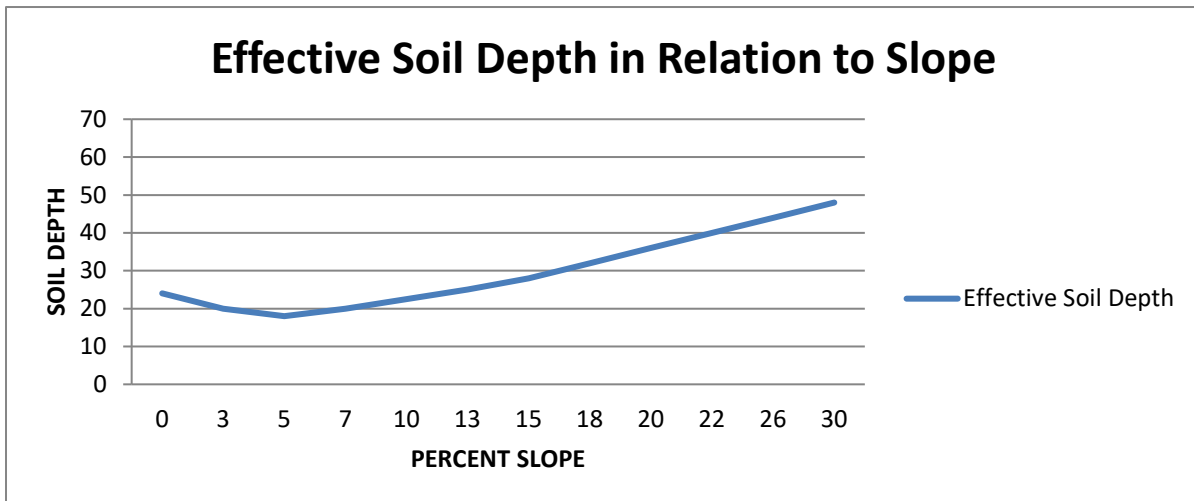
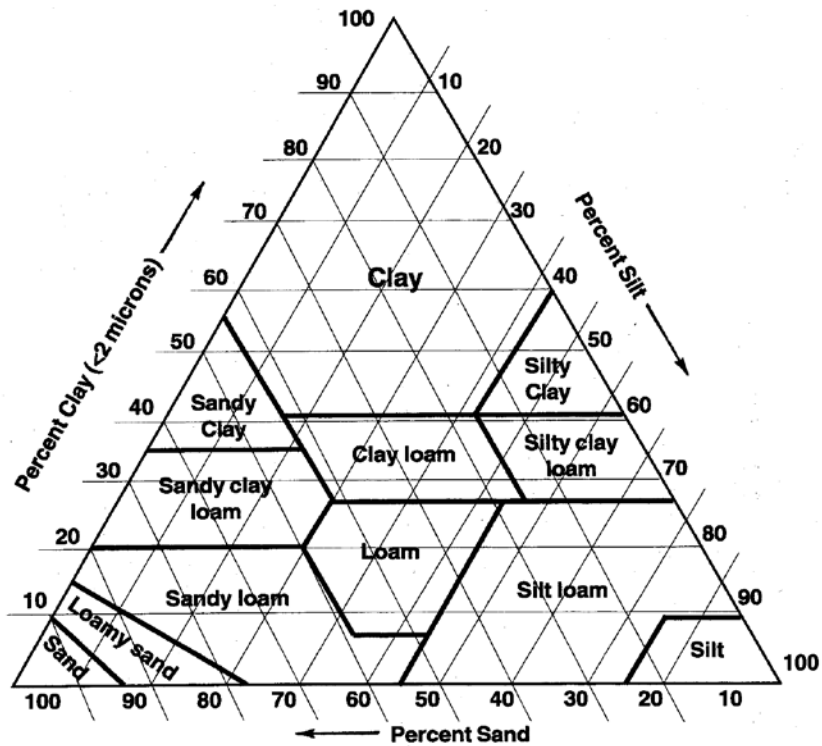


Table 5
Soil Textural Classification Chart



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Table 6
USDA Soil Classification Sizes of Soil Separates

Particle	Sieve Size	Millimeters
Clay	-	0.002
Silt	270	0.050
Very Fine Sand	200	0.075
	140	0.10
Fine Sand	60	0.25
Medium Sand	35	0.50
Coarse Sand	18	1.00
Very Coarse Sand	10	2.00
Fine Gravel	4	4.75
	3/8"	9.50
	1/2"	12.50
Coarse Gravel	3"	76.20
Cobbles	-	-

Table 7
Minimum Separation Distances for Nonwater -Carried Waste Disposal Facilities

	Self-Contained Nonwater-Carried Waste Disposal	Unsealed Earth Type Privies, Graywater Waste Disposal Sump and Seepage Chambers
Groundwater supplies including springs and cisterns	50'	100'
Surface public waters, excluding intermittent streams	50'	100'
Intermittent streams	50'	50'
Property line	25'	25'

Table 8
Minimum Depths to Permanent Groundwater According to Soil Type and Percolation Rate

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Percolation Rate	Soil Type	Minimum Depth From Bottom of Dispersal System*
1 MPI < TO ≤ 5 MPI	A -(structureless coarse sand)	Twenty (20) feet
5 MPI < TO ≤ 60 MPI	A/B	Eight (8) feet
60 MPI < TO ≤ 120 MPI	C	Five (5) feet
<p>*Minimum Depth can be reduced by 50% if a confining layer below the leach line is > 6 inches, has a permeability rate > 120 MPI or structure is massive, and (at a minimum) pressure distribution is used. Separation to permanent groundwater can be reduced to 24" in any soil type with supplemental treatment of effluent to Treatment Standards 1 or 2 as defined in this policy and approved by the agent.</p>		

**Table 9
Septic Tank Sizing Criteria**

Dwelling - Number of Bedrooms	1 to 4	5 to 6
Tank Size	1,000 gal	1,500 gal
<p>More than 6 bedrooms and all other facilities use the following design formulas:</p>		
<p>1) Waste/sewage flow, up to 1,500 gallons/day Flow x 1.5 = septic tank size</p>		
<p>2) Waste/sewage flow, over 1,500 gallons/day Flow x 0.75 + 1125 = septic tank size</p>		

ATTACHMENTS