REGULATIONS OF THE EL PASO COUNTY BOARD OF HEALTH EL PASO COUNTY, COLORADO

Chapter 8

ON-SITE WASTEWATER TREATMENT SYSTEMS (OWTS) REGULATIONS

Most recently amended May 27, 2026 ~~May 23, 2018~~, effective ~~July 7, 2018~~ July 11, 2026

Table of Contents

8.1 Authority

This regulation is promulgated pursuant to the On-site Wastewater Treatment System Act, 25-10-101, et seq. C.R.S. (OWTS Act); and, Colorado Water Quality Control Commission On-Site Wastewater Treatment System Regulation Number 43, 5 CCR 1002-43 (Regulation 43).

8.2 Scope and Purpose

A. Declaration

1. In order to preserve the environment and protect the public health and water quality; to eliminate and control causes of disease, infection, and aerosol contamination; and to reduce and control the pollution of the air, land and water, it is declared to be in the public interest to establish minimum standards and regulations for On-site Wastewater Treatment Systems (OWTS) in ~~the County~~ El Paso County and to provide the authority for the administration and enforcement of such minimum standards and regulations.

2. This regulation will apply to On-site Wastewater Treatment Systems as defined in section 25-10-103(12), C.R.S.

B. Purpose

1. The purpose of this regulation as authorized by the OWTS Act is to establish minimum standards for the location, design, construction, performance, installation, alteration and use of OWTS within El Paso County, Colorado, and establish the minimum requirements for permit applications; transfer of title requirements; requirements for issuing permits; the inspection, testing, and supervision of installed systems; the operation, maintenance and cleaning of systems; the disposal of waste material; and the issuance of cease and desist orders.

C. Effluent Discharged to Surface Waters

1. Any system that will discharge into surface waters must be designed by a professional engineer. The discharge permit application must be submitted for preliminary approval to the EPCBoH. Once approved by the EPCBoH, the application must be submitted to the Water Quality Control Division for review in accordance with the Water Quality Control Act, C.R.S. 25-8-101, *et seq*, and all applicable regulations of the Water Quality Control Commission. Compliance with such a permit will be deemed full compliance with this regulation.

D. Jurisdiction of EPCBoH and El Paso County Public Health (EPCPH)

1. The jurisdiction of the EPCBoH and EPCPH extends over all unincorporated areas and over all municipal corporations within the territorial limits of El Paso County, Colorado, but not over the territory of any municipal corporation that maintains its own public health agency.

8.3 Definitions

1. "Absorption system" means a leaching field and adjacent soils or other system for the treatment of sewage in an On-site Wastewater Treatment System by means of absorption into the ground. See "Soil treatment area."

2. "Accessible" means easily reached, attained or entered by the necessary equipment or maintenance provider and is generally considered to be within 12" of grade or access point unless otherwise specified.

~~3. "Alteration" (Alter) means to change in character or composition of the OWTS. This includes any modification to the OWTS change to an issued but not yet completed OWTS permit resulting in a small yet significant difference. See "Modification."~~

~~4. "Alteration " means a small but significant change is required to a proposed OWTS system for which a permit has already been issued but the system has not yet received final approval.~~

5. "Applicant" means a person who submits an application for a permit for an On-site Wastewater Treatment System. The applicant must either be a licensed system contractor or property owner.

6. "Auxiliary building" means a non-residential structure located on the same lot or parcel as the principal structure and for an incidental use to the principal structure.

7. "Basal Area" means the effective surface area available to transmit the treated effluent from the filter media in a mound system into the in-situ receiving soils. The perimeter is measured at the interface of the imported fill material and in-situ soil. On sloping sites, only the area down-gradient from the up-slope edge of the distribution media may be included in this calculation.

8. "Bed" means a below-grade soil treatment area with a level sub-base, consisting of a shallow excavation greater than three feet wide containing distribution media and more than one lateral.

9. "Bedrock" means continuous rock that underlies the soil or is exposed at the surface. Bedrock is generally considered impervious, but if fractured or deteriorated, it may allow effluent to pass through without adequate treatment.

10. "Bedroom" means a room with an egress window, a closet, ~~a heat source~~, and/or is intended for sleeping purposes; or, a room designated by the local building code as a bedroom.

11. "Biochemical Oxygen Demand, Five-Day" (BOD_5) means a quantitative measure of the amount of oxygen consumed by bacteria while stabilizing, digesting, or treating biodegradable organic matter under aerobic conditions over a five-day incubation period; expressed in milligrams per liter (mg/L).

12. "Biochemical Oxygen Demand, Carbonaceous Five Day" ($CBOD_5$) means a quantitative measure of the amount of oxygen consumed by bacteria while stabilizing, digesting, or treating the organic matter under aerobic conditions over a five-day incubation period while in the presence of a chemical inhibitor to block nitrification; expressed in milligrams per liter (mg/L).

13. "Building sewer" means piping that conveys wastewater to the first system component or the sewer main.

14. "Carbonaceous Biochemical Oxygen Demand" See "Biochemical Oxygen Demand, Carbonaceous, Five Day."

15. "Certified Inspector" means a person certified by the National Association of Wastewater Technicians or an equivalent program approved by EPCPH to conduct evaluations and observations of an existing OWTS serving a structure to assess if the system is functioning as intended.

16. "Certified Operation and Maintenance (O & M) Specialist" means a person certified by the National Association of Wastewater Technicians, or an equivalent program approved by EPCPH, to perform operation and maintenance inspections and service for OWTS.

17. "Cesspool" means an open unlined or partially lined underground pit or underground-perforated receptacle into which raw household wastewater is discharged and from which the liquid seeps into the surrounding soil. Cesspool does not include a septic tank.

18. "Chamber" means an ~~open~~ arch-shaped structure providing an open-bottom soil interface with permeable sidewalls, used for distribution of effluent in a soil absorption system. ~~Also is often called a gravel less chamber.~~

19. "Cistern" means an ~~underground~~ enclosed unpressurized reservoir or tank for storing water as part of a potable water supply system.

20. "Cleaning" means the act of removing septage or other wastes from a wastewater treatment system component or grease/waste from a grease interceptor.

21. "Colorado Plumbing Code" means Rules and Regulations of the Colorado State Plumbing Board (3 CCR 720-1).

22. "Commission" means the Water Quality Control Commission created by section 25-8-201, C.R.S.

~~23. "Competent technician" means a person designated by EPCPH who has the appropriate expertise and is able to conduct and accurately interpret the results of soil profile test pit excavations, profile holes, percolation tests, and site evaluations. This individual has also met the required competencies for a "Competent Technician" as defined in section 8.5.I.~~

24. "Component" means a subsection of an On-site Wastewater Treatment System; a component may include multiple devices.

25. 'Composting toilet," means a self-contained waterless toilet designed to decompose non-water- carried human wastes through microbial action and to store the resulting matter for disposal.

26. "Consistence" means the degree and kind of cohesion and adhesion that soil exhibits and/or the resistance of soil to deformation or rupture under an applied stress to an extent that the soil density would restrict permeability. Aspects of consistence are used to determine if the horizon will have permeability lower than that of the defined soil type. Additional insight to consistence can be found in the U~~DS~~SDA-NRCS Field book for Describing and Sampling Soils; Version 3.0, Sept. 2012.

27. "Crest" means the highest point on the side of a dry gulch or cut bank.

28. “Cut-bank” means a nearly vertical slope caused by erosion or construction that has exposed historic soil strata.

29. "Deep gravel system" means a soil treatment area for repairs only where the trenches utilize a depth of gravel greater than 6 inches below the distribution pipe and sidewall area is allowed according to a formula specified in this regulation.

30. ~~“Deficiency” See Malfunction~~

31. "Department" means the Department of Public Health and Environment created by section 25-1- 102, C.R.S.

32. "Design" means 1. the process of selecting, sizing, locating, specifying, and configuring treatment components that match site characteristics and facility use as well as creating the associated written documentation; and 2. written documentation of size, location, specification and configuration of a system.

33. "Design capacity" See Flow, Design.

34. "Design flow" See Flow, Design.

35. "Designer, on-site wastewater treatment system" means a practitioner and utilizing site evaluation and investigation information to select an appropriate OWTS and prepare a design document in conformance with this regulation.

36. “Disinfection” means the process of destroying pathogenic microorganisms in sewage through the application of ultraviolet light, chlorination, or ozonation.

37. "Distribution" means the process of ~~conveying~~ dispersing wastewater or effluent to one or more components, devices, or throughout a soil treatment area.

38. "Distribution box" means a watertight component that receives effluent from a septic tank or other treatment unit and distributes effluent via gravity in approximately equal portions to two or more distribution laterals in the soil treatment area.

39. "Division" means the division of administration of the department of which the Water Quality Control Division is a part.

40. "Domestic wastewater" See Wastewater, domestic.

41. "Domestic Wastewater Treatment Works" means a system or facility for treating, neutralizing, stabilizing, or disposing of domestic wastewater which system or facility has a designed capacity to receive more than 2,000 gallons of domestic wastewater per day. The term "domestic wastewater treatment works" also includes appurtenances to such system or facility such as outfall sewers and pumping stations and to equipment related to such appurtenances. The term "domestic wastewater treatment works" does not include industrial wastewater treatment plants or complexes whose primary function is the treatment of industrial wastes, notwithstanding the fact that human wastes generated incidentally to the industrial process are treated therein. 25-8- 103 (5), C.R.S.

42. "Dosing" means a high-rate periodic discharge into a soil treatment area.

43. "Dosing, demand" means a configuration in which a specific volume of effluent is delivered to a component based upon patterns of wastewater generation from the source.

44. "Dosing, pressure" means a uniform application of wastewater throughout the intended portion of the soil treatment area through small diameter pipes and orifices, under pressure. For this definition, the term pressure indicates that the system is capable of creating upward movement of effluent out of the distribution system piping.

45. "Dosing, timed" means a configuration in which a specific volume of effluent is delivered to a component based upon a prescribed interval, regardless of facility water use.

46. "Dosing siphon" means a device used for demand dosing effluent, which stores a predetermined volume of water and discharges it at a rapid rate from a tank at a given elevation to a component at a lower elevation, accomplished by means of atmospheric pressure and the suction created by the weight of the liquid in the conveying pipe.

47. "Dosing tank" means a tank, compartment or basin that provides for storage of effluent from a septic tank or other treatment unit intended to be delivered to a soil treatment area at a high-rate periodic discharge.

~~48. "Drainfield" See Soil treatment area.~~

49. "Drop box" means a device used for ~~serial or~~ sequential distribution of effluent by gravity flow to a lateral of a soil treatment area.

50. "Dry gulch" See Gulch, dry.

51. "Drywell" means an unlined or partially lined underground pit (regardless of geometry) into which drainage from roofs, basement floors, water softeners or other non-wastewater sources is discharged and from which the liquid seeps into the surrounding soil.

52. "Effective Size" means the size of granular media such that 10 percent by weight of the media is finer than the size specified.

53. "Effluent" means the liquid flowing out of a component or device of an On-site Wastewater Treatment System.

54. "Effluent filter" means a removable, cleanable (or disposable) device installed on the outlet piping of a septic tank for the purpose of retaining solids larger than one-eighth inch and/or modulating effluent flow rate. An effluent filter may be a component of a pump installation. An effluent filter may also be installed following the septic tank but before higher level treatment components or a soil treatment area. ~~see effluent screen~~

55. "Effluent pipe" means non-perforated pipe that conveys effluent from one On-site Wastewater Treatment System component to the next.

56. ~~"Effluent Screen" means a removable, cleanable (or disposable) device installed on the outlet piping of a septic tank for the purpose of retaining solids larger than one-eighth inch and/or modulating effluent flow rate. An effluent filter may be a component of a pump installation. An effluent filter may also be installed following the septic tank but before higher level treatment components or a soil treatment area.~~

57. "Environmental health specialist" means a person trained in physical, biological, or sanitary science to carry out educational, enforcement, and inspectional duties in the field of environmental health.

58. "Evapotranspiration/absorption system" means an unlined On-site Wastewater Treatment component that uses evaporation, transpiration, and absorption for dispersal of effluent.

59. "Evapotranspiration system" means an On-site Wastewater Treatment component with a continuous, impermeable liner that uses evapotranspiration and transpiration for dispersal of effluent.

60. "Failure" means a condition existing within any component of an OWTS which prevents the system from functioning as intended, and which results in the discharge of untreated or partially treated wastewater onto the ground surface, into surface water or ground water, or which results in the back-up of sewage into the building sewer. Other conditions within an OWTS component that are deemed by EPCPH to be a threat to public health and/or safety may also be deemed a failure.

61. "Field performance testing" means data gathering on a system in actual use that is being proposed for EPCPH acceptance.

62. "Floodplain (100-year)" means an area adjacent to a stream which is subject to flooding as the result of the occurrence of a one hundred (100) year flood, and is so adverse to past, current or foreseeable construction or land use as to constitute a significant hazard to public or environmental health and safety or to property or is designated by the Federal Emergency Management Agency (FEMA) or National Flood Insurance Program (NFIP). In the absence of FEMA/NFIP maps, a professional engineer must certify the flood plain elevations.

63. "Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot or as designated by the Federal Emergency Management Agency or National Flood Insurance Program. In the absence of FEMA/NFIP maps, a professional engineer must certify the floodway elevation and location.

64. "Flow, daily" means the measured volume of wastewater generated from a facility in a 24-hour period expressed as gallons per day.

65. "Flow, design" means the estimated volume of wastewater per unit of time for which a component or system is designed. Design flow may be given in the estimated volume per unit such as person per unit time that must be multiplied by the maximum number of units that a facility can accommodate over that time.

66. "Flow equalization" means a system configuration that includes sufficient effluent storage capacity to allow for regulated flow on a daily or multi-day basis to a subsequent component despite variable flow from the source.

67. "Flow equalizer" means an adjustment device to evenly distribute flow between outlets in a distribution box or other device that may be out of level.

68. "Grease interceptor tank" means a watertight device located outside the building or structure it serves designed to intercept, congeal, and retain or remove fats, oils, and grease from sources, such as commercial food-service, that will generate high levels of fats, oils and greases.

69. "Ground water" means that part of the subsurface water that is at or below the saturated zone.

70. “Groundwater condition” means a condition in the soil profile where a seasonal or current ground water surface has been identified, thus creating a vertical separation requirement to the infiltrative surface of a soil treatment area.

71. "Ground water surface" means the uppermost limit of an unconfined aquifer at atmospheric pressure.

~~72. "Guidelines" means State Board of Health Guidelines on Individual Sewage Disposal Systems, 5 CCR 1003-6 – predecessor of Regulation 43, On-site Wastewater Treatment System Regulation, 5 CCR 1002-43.~~

73. "Gulch, dry" means a deep, narrow ravine marking the course of an intermittent or ephemeral stream that receives discontinuous storm influenced flows for a short duration in direct response to a rain event and is not interconnected to a groundwater source.

~~74. "Health officer" means the Public Health Director and the Medical Director for EPCPH.~~

75. "Higher level treatment" means designated treatment levels other than treatment level 1.

76. “Holding tank” See Vault.

77. "Individual Sewage Disposal System" means an On-site Wastewater Treatment System as the term is used in Colorado regulations from 1973 until 2013.

78. "Infiltrative surface" means designated interface where effluent moves from distribution media or a distribution product into treatment media or original soil. In standard trench or bed systems this will be the interface of the distribution media or product and in-situ soil. Two separate infiltrative surfaces will exist in a mound system and an unlined sand filter, one at the interface of the distribution media and fill sand, the other at the interface of the fill sand and in-situ soil.

79. "Inspection port" means an access point in a system component that enables inspection, operation and/or maintenance.

80. "Invert" means elevation of the bottom of the inside pipe wall or fitting.

81. "Lateral" means a pipe, chamber or other ~~conveyance~~ component used to ~~carry~~ transport and distribute effluent.

~~82. "Leach field" See Soil treatment area.~~

83. "Limiting layer" means a horizon or condition in the soil profile ~~or underlying strata that limits the treatment~~ that exhibits a limited capability for treatment but will readily accept the effluent. Generally, speaking, this includes fractured bedrock and type R-0 soils (see table 10-1A). ~~capability of the soil or severely restricts the movement of fluids. This may include soils with low or high permeability, impervious, or fractured,~~

~~or a seasonal or current ground water surface.~~

84. "Liner" means an impermeable synthetic or natural material used to prevent or restrict infiltration and/or exfiltration. For the purposes of this regulation, the minimum thickness of a liner must be 30 ml.

85. “Linear loading rate” means the amount of effluent applied per linear foot along the contour (gpd/linear ft.).

86. "Long-term acceptance rate" (LTAR) means a design parameter expressing the rate that effluent enters the infiltrative surface of the soil treatment area at equilibrium, measured in volume per area per time, e.g. gallons per square foot per day (gal/ ft ^{2}/day).

87. “Lot” means an area of land which is platted for development as part of a subdivision, the plat of which has been legally approved by the El Paso County Board of County Commissioners and recorded in the office of the El Paso County Clerk and Recorder, and, in exceptional circumstances as determined by EPCPH, an additional area of land or easement necessary for the construction or operation of an OWTS to serve the lot, and which area of land or easement is permanently servient to the lot for such purposes.

88. “Major Repair” means any repair that includes the repair, alteration or addition to the soil treatment area due to a malfunction or failure.

89. "Malfunction" means the condition in which a component is not performing as designed or installed and is in need of repair or ~~modification~~ adjustment in order to function as originally intended.

90. "Manufactured media" See Media, other manufactured.

91. "Media" means solid material that can be described by shape, dimensions, surface area, void space, and application.

92. “Media, enhanced manufactured” means an accepted proprietary manufactured distribution product, that includes synthetic media contained within one or more external permeable outer layers which promote the movement of the effluent, and is ~~wrapped in specific fabric, and~~ placed on a specified sand base or media that does not mask the infiltrative surface of the in-situ soil.

93. "Media, other manufactured" means an accepted proprietary manufactured distribution product made of synthetic media for distribution of effluent that is placed directly on the in-situ soil.

94. "Media, treatment" means non-or slowly-degradable media used for physical, chemical, and/or biological treatment in an On-site Wastewater Treatment System component.

95. “Minor Repair” means the repair or replacement of any portion of the system between the structure to the soil treatment area, ~~with the exception of a repair or replacement of the tank baffles and collapsed building sewer and effluent lines as depicted in the record drawing on record at EPCPH.~~

96. “Modification” means a change in character or composition of an OWTS ~~alter an onsite wastewater treatment system.~~ that is currently functioning as designed. This includes any change resulting in a small yet significant difference, including but not limited to, ~~or~~ any component thereof due to relocation of the system, or an increase in the size of the system due to an increase in design flow ~~in bedroom(s)~~. Not a “Repair”.

97. "Mound" means a soil treatment area whereby the infiltrative surface is at or above original grade at any point.

98. "Nitrogen reduction" means a minimum 50 percent reduction of influent nitrogen strength, which is the minimum objective of NSF/ANSI Standard 245 - Wastewater Treatment Systems - Nitrogen Reduction (2023 version).

99. "Onsite Wastewater Treatment System" or "OWTS" and, where the context so indicates, the term "system" means an absorption system of any size or flow or a system or facility for treating, neutralizing, stabilizing, or dispersing sewage generated in the vicinity, which system is not a part of or connected to a sewage treatment works.

100. “Owner” means the person who is the owner of record of the land on which an onsite wastewater treatment system is to be designed, constructed, installed, repaired, modified, extended, or used.

101. "OWTS Act" means the On-site Wastewater Treatment System Act, 25-10-101, et seq. C.R.S.

102. "Percolation test" means a subsurface soil test at the depth of a proposed absorption system or similar component of an OWTS to determine the water absorption capability of the soil, the results of which are normally expressed as the rate at which one inch of water is absorbed. The rate is expressed in minutes per inch.

~~103. "Performance standard" means minimum performance criteria for water quality and operation and maintenance established by the regulatory authority to ensure compliance with the public health and environmental goals of the State or EPCPH.~~

104. "Permeability" means the property of a material which permits movement of water through the material.

105. "Permit" means ~~a permit~~ EPCPH approval for the construction or alteration, installation, and use, or for the repair of an On-site Wastewater Treatment System.

106. "Person" means an individual, partnership, firm, corporation, association, or other legal entity and also the state, any political subdivision thereof, or other governmental entity.

~~107. "Pressure distribution" See Dosing, pressure.~~

108. "Privy" means an above grade structure allowing for the disposal of excreta not transported by a sewer and which provides privacy and shelter and prevents access to the excreta by flies, rodents, or other vectors.

a. Pit privy – privy over an unlined excavation.

b. Vault privy – privy over a vault.

109. "Professional engineer" means an engineer licensed in Colorado in accordance with ~~12-25~~ C.R.S. 12-120-201, *et.seq*. and practicing within their areas of expertise, consistent with 4 CCR 730-1.

110. "Professional geologist" means a person engaged in the practice of geology who is a graduate of an institution of higher education which is accredited by a regional or national accrediting agency, with a minimum of thirty semester (forty-five quarter) hours of undergraduate or graduate work in a field of geology and whose post-baccalaureate training has been in the field of geology with a specific record of

an additional five years of geological experience to include no more than two years of graduate work. 23-41-208, C.R.S. ~~and 34-1-201, CRS.~~

111. "Proprietary product" means a manufactured component or other product that is produced by a private person. It may be protected by patent, trademark or copyright.

112. "Public domain technology" means a system that is assembled on location from readily available components, is based on well-established design criteria, and is not protected by patent, trademark, or copyright.

113. “Record drawing” means construction drawings provided to illustrate the progress or completion of the installation of an OWTS or components of the OWTS; typically based on field inspections by the designer or EPCPH.

114. "Redoximorphic" means a soil property that results from the reduction and oxidation of iron and manganese compounds in the soil after saturation with water and subsequent desaturation.

115. "Remediation system" means a treatment system, chemical/biological additive, or physical process that is proposed to restore the soil treatment area of an OWTS to intended performance.

116. “Repair” means restoration of functionality and/or treatment by reconstruction, relocation, or replacement of an On-Site Wastewater Treatment System or any component thereof in order to allow the system to function as intended. See also “Minor Repair” and “Major Repair”.

~~117. “Replacement system” See Repair.~~

118. "Riser" means a watertight vertical cylinder and lid allowing access to an OWTS component for inspection, cleaning, maintenance, or sampling.

119. “Restrictive layer” means a condition in the soil profile that restricts the vertical movement of the effluent. This may include impervious bedrock, glacial till, platy soils, sodic soils, or soils with a cementation class of “strongly cemented” or greater.

120. "Rock-plant filter" means a designed system which utilizes treatment media and various wetland plants to provide treatment of wastewater through biological, physical, and chemical processes. Also called a constructed wetland.

121. "Sand filter" means an engineer designed OWTS that utilizes a layer of specified sand as filter and treatment media and incorporates pressure distribution.

122. "Sand filter, lined" means an engineer designed OWTS that has an impervious liner and under- drain below the specified sand media. Lined sand filters may be intermittent / single pass where the effluent is distributed over the sand bed a single time before distribution to a soil treatment area, or re-circulating where part of the effluent is returned to an earlier component for additional treatment before distribution to a soil treatment area.

123. "Sand filter, unlined" means an engineer designed OWTS that includes a layer of specified sand used as a treatment media without a liner between the sand and the existing soil on which it is placed.

124. ~~“Scaled Drawing” means a drawing with dimensions at a specific ratio relative to the actual size of object drawn. Only standard engineering scales will be accepted such as 1”=10’, 1”=20’ 1”=30’ 1”=40’ 1”=50’ 1”=60’ 1”=100’.~~

125. "Seepage pit" means an excavation deeper than it is wide that receives septic tank effluent and from which the effluent seeps from a structural internal void into the surrounding soil through the bottom and openings in the side of the pit.

126. "Septage" means a liquid or semisolid that includes normal household wastes, human excreta, and animal or vegetable matter in suspension or solution generated from a residential septic tank system. Septage may include such material issued from a commercial establishment if the commercial establishment can demonstrate to EPCPH that the material meets the definition for septage set forth in this subsection. Septage does not include chemical toilet residuals.

127. "Septic tank" means a watertight, accessible, covered receptacle designed and constructed to receive sewage from a building sewer, settle solids from the liquid, digest organic matter, store digested solids through a period of retention, and allow the clarified liquids to discharge to other treatment units for final disposal.

128. "Sequential distribution" means a distribution method in which effluent is loaded into one trench and fills it to a predetermined level before overflowing ~~passing through a relief pipe or device~~ to the succeeding trench through a drop box. ~~The e~~Effluent does not pass through the distribution media before it enters any succeeding trenches. The effluent is dispersed through a drop box at the proximal end of the system, allowing for portions of the absorption area to be isolated.

129. "Serial distribution" means a distribution method in which effluent is dispersed into one trench and fills it to a predetermined level before passing through a relief pipe or device to the succeeding trench. The effluent passes through the distribution media before entering succeeding trenches which may be connected to provide a single uninterrupted flow path.

130. "Sewage" means a combination of liquid wastes that may include chemicals, house wastes, human excreta, animal or vegetable matter in suspension or solution, and other solids in suspension or solution, and that is discharged from a dwelling, building, or other establishment. See also Wastewater.

131. "Sewage treatment works" has the same meaning as "domestic wastewater treatment works" under section 25-8-103, C.R.S.

132. "Site evaluation" means a comprehensive analysis of soil and site conditions for an OWTS.

~~133. "Site evaluator" means a practitioner who conducts preconstruction site evaluations, including visiting a site and performing soil analysis, a site survey, or other activities necessary to determine the suitability of a site for an OWTS.~~

134. "Slit trench latrine" means a temporary shallow trench for use as disposal of non-water-carried human waste.

135. "Soil" means 1. unconsolidated mineral and/or organic material on the immediate surface of the earth that serves as a medium for the growth of plants and can potentially treat wastewater effluent; 2. unconsolidated mineral or organic matter on the surface of the earth that has been subjected to and shows effects of: a) pedogenic and environmental factors of climate (including water and temperature effects) and b) macro and microorganisms, conditioned by relief, acting on parent material over a period of time.

136. "Soil evaluation" means a percolation test, soil profile, or other subsurface soil analysis at the depth of a proposed soil treatment area or similar component or system to determine the water absorption

capability of the soil, the results of which are normally expressed as the rate at which one inch of water is absorbed or as an application rate of gallons per square foot per day.

137. "Soil horizon" means layers in the soil column differentiated by changes in texture, color, redoximorphic features, bedrock, structure, consistence, and any other characteristic that affects water movement or treatment of effluent.

138. "Soil morphology" means 1. physical constitution of a soil profile as exhibited by the kinds, thickness, and arrangement of the horizons in the profile; and by the texture, structure, consistence, and porosity of each horizon; and 2. visible characteristics of the soil or any of its parts.

139. "Soil profile test pit excavation" means a trench or other excavation used for access to evaluate the soil horizons for properties influencing effluent movement, bedrock, evidence of seasonal high ground water, and other information to be used in locating and designing an On-site Wastewater Treatment System.

140. "Soil structure" means the naturally occurring combination or arrangement of primary soil particles into secondary units or peds; secondary units are characterized on the basis of type, size class, and grade (degree of distinctness).

141. "Soil texture" means proportion by weight of sand, silt, and clay in a soil.

142. "Soil treatment area" means the physical location where final treatment and dispersal of effluent occurs. Soil treatment area includes drain fields, mounds and drip fields.

143. "Soil treatment area, alternating" means final treatment and distribution component that is composed of two soil treatment areas that are independently dosed.

144. "Soil treatment area, sequencing" means a soil treatment area having more than two sections that are dosed on a frequent rotating basis.

145. "State Waters" has the meaning set forth under section 25-8-103. C.R.S.

146. "Strength, wastewater" means the concentration of constituents of wastewater or effluent; usually expressed in mg/L.

147. "Suitable soil" means a soil which will effectively treat and filter effluent by removal of organisms and suspended solids, which meets long-term acceptance rate requirements as defined in Table 10-1, and has the required vertical thickness below the infiltrative surface and above a limiting layer.

148. "Systems cleaner" means a person licensed ~~engaged in and who holds himself or herself out as a specialist~~ in the cleaning and pumping of On-site Wastewater Treatment Systems and removal of the residues deposited in the operation thereof.

149. "Systems contractor" means a person licensed ~~engaged in and who holds himself or herself out as a specialist~~ in the installation, renovation, and repair of On-site Wastewater Treatment Systems.

~~150. "Systems maintenance provider" means a person engaged in and who holds themselves out as a specialist in routine or periodic actions taken to assure that the On-site Wastewater Treatment System is functioning as intended, and/or that the On-site Wastewater Treatment System is meeting performance requirements. See Certified Operation and Maintenance (O&M) Specialist~~

151. "System Verification" means the process in which a system is assessed for capacity and sufficiency to

support existing, additional, or a change in design flow from a structure for a given purpose. System verification may require a profile pit evaluation consistent with Section 8.5.D., assessment by a Colorado professional engineer, and additional information as determined by EPCPH.

152. "Tiny home" means a structure (a non-recreational vehicle) that has only one bedroom and has 400 sq.ft. or less of livable space, including lofts. In this instance, the OWTS may be sized for only one bedroom.

153. "Total suspended solids" means measure of all suspended solids in a liquid; typically expressed in mg/L.

~~154. "Transfer of Title" means the sale, conveyance, or change of ownership of a property or a change of ownership of a property where the property has served by one or more OWTS system.~~

155. "~~Transfer of Title Inspector" means a person engaged in and who holds themselves out as a specialist in conducting evaluations and observations of an existing On-site Wastewater Treatment System serving a structure that is proposed for property transfer, to assess if the system is functioning as intended. See Certified Inspector~~

156. "Treatment level" means defined concentrations of pollutants to be achieved by a component or series of components of an OWTS.

157. "~~Treatment media" See Media, treatment.~~

149. "Treatment unit" means a component or series of components where solids or pollutants are removed from wastewater or effluent from a preceding component.

150. "Trench" means 1. below-grade soil treatment area consisting of a shallow excavation with a width of 3 feet or less containing distribution media and one lateral; or 2. excavation for placement of piping or installation of electrical wire or conduit.

151. "Uniformity coefficient" means a value which is the ratio of D60 to D10 where D60 is the soil diameter of which 60 percent of the soil weight is finer and D10 is the corresponding value at 10 percent finer. (A soil having a uniformity coefficient smaller than 4 would be considered "uniform" for purposes of this regulation.)

152. "Vault" means a watertight, covered receptacle, which is designed to receive and store excreta or wastes either from a building sewer or from a privy and is accessible for the periodic removal of its contents. If the vault is intended to serve a structure or structures that are projected to generate a domestic wastewater flow of greater than two thousand gallons per day ~~or more~~ at full occupancy, the vault would be considered ~~is~~ a domestic wastewater treatment works. Vaults are On-site Wastewater Treatment Systems.

153. "Visual and tactile evaluation of soil" means determining the properties of soil by standardized tests of appearance and manipulation in the hand.

154. "Volume, effective" means the amount of effluent contained in a tank under normal operating conditions. For a septic tank, effective volume is determined relative to the invert of the outlet. For a dosing tank, the effective volume under normal conditions is determined relative to the invert of the inlet and the control off level.

155. "Wastewater, domestic" means a combination of liquid wastes (sewage) which may include chemicals, household wastes, human excreta, animal or vegetable matter in suspension or solution, or other solids in suspension or solution which are discharged from a dwelling, building or other structure.

156. "Wastewater, high strength" means 1. wastewater from a structure having BOD_5 greater than 300 mg/L; and/or TSS greater than 200 mg/L; and/or fats, oils, and grease greater than 50 mg/L; or, 2. effluent from a septic tank or other pretreatment component (as defined by NSF/ANSI Standard 40 testing protocol) that is applied to an infiltrative surface and has BOD_5 greater than 180 mg/L; and/or TSS greater than 80 mg/L; and/or fats, oils, and grease greater than 25 mg/L. ~~and is applied to the infiltrative surface.~~

157. "Wastewater pond" means a designed pond which receives exclusively domestic wastewater from a septic tank and which provides an additional degree of treatment.

158. "Watercourse" means a natural or artificial channel through which water flows, either continuously or intermittently, and exhibits a connection to an actual or elevated groundwater table. A watercourse includes the bed of a channel that flows only seasonally (e.g., creek, stream, irrigation ditch). Hollows, ravines, or roadside ditches that are normally dry are not considered a watercourse.

159. "Water Quality Control Commission" See Commission.

160. "Water Quality Control Division" See Division.

161. "Wetland, constructed" See Rock-plant filter.

162. "Wetlands" means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Table 3-1 Abbreviations and Acronyms

AASHTO	American Association of State Highway and Transportation Officials
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
BOD	Biochemical Oxygen Demand
C.R.S.	Colorado Revised Statutes
CBOD	Carbonaceous Biochemical Oxygen Demand
CSA	Canadian Standards Association
gpd	gallons per day
IAPMO	International Association of Plumbing and Mechanical Officials
ISDS	Individual Sewage Disposal System
LTAR	Long-term Acceptance Rate
mg/L	milligrams per Liter

MPI	Minutes Per Inch
NAWT	National Association of Wastewater Technicians
NDDS	Non-pressurized Drip Dispersal System
NPCA	National Precast Concrete Association
NSF	NSF International (formerly National Sanitation Foundation)
OWTS	On-site Wastewater Treatment System(s)
STA	Soil Treatment Area
TL	Treatment Level
TN	Total Nitrogen
TSS	Total Suspended Solids
UL	Underwriters' Laboratories

8.4 Administration and Enforcement ~~Applicability~~

A. Applicability ~~Regulations Adopted by the EPCBoH~~

1. ~~Regulation Coverage~~

2. An OWTS in El Paso County with design capacity less than or equal to 2,000 gpd must comply with these regulations ~~adopted by EPCBoH pursuant to this regulation~~ and the OWTS Act.

3. ~~Within the jurisdiction of EPCBoH and EPCPH, the regulations promulgated by the EPCBoH govern all aspects of OWTS permits, performance, location, construction, alteration, installation and use.~~

4. An OWTS with design capacity greater than 2,000 gpd must comply with Regulation 43 (5 CCR 1002-43), site location and design approval in section 25-8-702, C.R.S., and the discharge permit requirements in the Water Quality Control Act, 25-8-501, et seq. C.R.S.

   a. In the interest of facilitating communication of EPCPH concerns regarding a design being reviewed by the Division, EPCPH can provide comments to the Division for consideration during the Division's review of the proposed design and discharge permit application. Under such a coordinated process, the Division retains final authority for approval or denial of each domestic wastewater treatment works that is regulated under the site location approval and Colorado Discharge Permit System regulations. Prior to approval or denial of each OWTS domestic wastewater treatment works, the Division must acknowledge and consider EPCBoH OWTS regulations when they are more stringent and restrictive than this regulation.

5. The issuance of any permit, license, or certification, or the specification of terms and conditions therein, does not constitute assumption of liability nor create a presumption that EPCPH or its employees are liable for the failure or malfunctioning of any system. Permit issuance does not constitute a certification by EPCPH that the system, the equipment used in the system, or any component used for system operation

will ensure continuous compliance with the provision of the OWTS Act, Regulation 43, or any permit terms and conditions.

6. ~~Procedures to Adopt or Revise Regulations by the EPCBoH:~~

   a. ~~The EPCBoH must submit its proposed regulations to the Division for preliminary review at least 30 days prior to a public hearing before the EPCBoH.~~

   b. ~~The EPCBoH will hold a public hearing on the proposed regulations before adopting final regulations.~~

   c. ~~The EPCBoH will give notice of the time and place of the public hearing at least once and at least 20 days in advance in a newspaper of general circulation within its area of jurisdiction.~~

   d. ~~The EPCBoH may make changes or revisions to the proposed regulations after the public hearing and prior to final adoption, and no further public hearing is required regarding the changes or revisions.~~

   e. ~~All EPCBoH OWTS regulations must be transmitted to the Division no later than five days after final adoption and become effective 45 days after final adoption unless the Division notifies the EPCBoH before the forty-fifth day that the regulations or any portions of the EPCBoH regulations determined by the Division are not as stringent as the OWTS Act or with this regulation. Any portions of the EPCBoH OWTS regulations determined by the Division not to be in compliance with the OWTS Act and Regulation 43 will not take effect or be published as regulations of the EPCBoH. For those portions of its regulations that do not comply, the EPCBoH may submit revisions to the Division. Only after the Division has determined that the EPCBoH's revised regulations comply with the OWTS Act and Regulation 43 may the EPCBoH's revised regulations take effect and be published. Until the Division makes this determination, Regulation 43 controls the unapproved portions of the EPCBoH OWTS regulations.~~

B. Permit ~~Application~~ Requirements (Installation, Alteration, Repair) ~~and Procedures~~

1. A permit is required for installation, alteration, modification, repair, or change of use ~~or continued operation~~ of a system prior to commencement of work or of the condition triggering the need for a permit. ~~Prior to installing, altering, or repairing a system, the applicant must obtain a permit from EPCPH.~~

   a. Any permit application for a system with higher level treatment or utilizes pressure distribution (as defined in 8.3.72) must include and going forward comply with provisions for operation and maintenance for the life of the system, as described in section 8.14.

2. A permit is not required for repair or replacement of the tank baffles, electrical components, and collapsed or damaged building sewer and effluent lines when depicted in an approved record drawing and when repaired in the same location and configuration as depicted in the record drawing.

3. ~~An applicant must submit a complete application that is consistent with section 8.4.B.3 to EPCPH prior to installing, modifying, altering or repairing a system.~~

4. All permit applications must contain the following, unless otherwise determined by EPCPH staff:

a. ~~Owner name and contact information;~~
b. ~~Property address;~~
c. ~~Tax schedule number;~~
d. ~~Property legal descriptions;~~
e. ~~Type of permit~~ Completed application form.

f. Report from Site and Soil Evaluation (section 8.5).

g. System design with a legible, accurate site plan which shows pertinent physical features on subject property, and on adjacent properties, as noted in Table 7-1.

h. Other information, data, plans, specifications and tests as required by EPCPH.

(1) When specific evidence suggests undesirable soil conditions exist, additional hydrological, geological, engineering or other information provided by a professional engineer or geologist may be required to be submitted by the applicant. This requirement will not prejudice the right of EPCPH to develop its own information from its own source at its own expense.

(2) For all the proposed new construction buildings or interior remodel, a floor plan must be submitted.

5. Permit Fees

a. ~~The EPCBoH may set fees for permits. The permit fees may be no greater than required to offset the actual indirect and direct cost of EPCPH. Section 25-10-107, C.R.S~~
b. ~~Permit application fees must not exceed the maximum fees established in section 25-10-107, CRS.~~ Permit application fees must be submitted by an applicant with the permit application and are due and payable upon receipt of the permit application.

c. ~~EPCPH may, for good cause, waive any local permit fee or a portion thereof normally required for an OWTS.~~

6. ~~Other Fees~~

a. ~~The EPCBoH may set fees for inspections, percolation tests, soil evaluations, and other services performed by the EPCPH. The fees must be no greater than required to offset the actual indirect and direct costs of the services, and must not exceed the maximum amount specified in section 25-10-107, C.R.S.~~

b. Surcharge

(1) A surcharge fee will be collected for each permit issued by EPCPH, with a portion of the fee retained to cover local administrative costs and the remainder transmitted ~~must collect a fee of twenty three dollars for each permit issued for a commercial, new, repaired, or upgraded OWTS. Of that fee, EPCPH agency must retain three dollars to cover EPCPHs administrative costs and twenty dollars must be and transmit funds~~ to the Colorado Department of Public Health and Environment for use in funding the state's OWTS program. The surcharge fee is identified in Regulation 5 CCR 1002-102, Section 102.5(3)(d) ~~as identified in the On-site Wastewater Treatment System Act 25-10-107(3) C.R.S. until replaced by a fee(s) becoming effective in Regulation 102 adopted under Section 25-8-210(1)(a)(X) C.R.S. state treasurer, who must deposit that sum in the water~~

~~quality control fund created in section 25-8-502(1)(c), CRs.~~

7. Permit Term

a. An OWTS permit expires one year after the date of issuance if construction has not commenced, or as otherwise specified by these regulations.

b. Any change in plans or specifications of the OWTS after the permit has been issued invalidates the permit unless the permittee receives written approval from EPCPH for such changes.

8. Repair Permit

a. The owner or occupant of a property on which an OWTS is not functioning as intended or otherwise in a state of failure must obtain a repair permit and complete the required repairs ~~from EPCPH~~. The applicant must apply for a repair permit within two business days after receiving notice from EPCPH that the system is not functioning in compliance with ~~the OWTS Act or~~ applicable law ~~regulations~~ or otherwise constitutes a nuisance or a hazard to public health or water quality.

(1) If the applicant is unable to obtain required supplementary reports and information required for the application process within the two-day period, EPCPH may accept the application provided the applicant submits ~~an application can be submitted and~~ the supplementary information and reports, including but not limited to meeting the requirements of section 8.4.b.4 ~~the requirements soils evaluations, design documents and information otherwise required by EPCPH, are to be provided to EPCPH~~ within 30 days of permit application submission.

b. The repairs must be completed within ~~permit must provided for a reasonable~~ the period of time set forth in the repair permit ~~within which the owner or occupant must make repairs~~. At the end of that period, EPCPH will ~~must~~ inspect the system to ensure it is functioning properly. Concurrently with the issuance of a repair permit, EPCPH may issue an emergency use permit authorizing continued use of a malfunctioning system on an emergency basis for a period not to exceed the period stated in the repair permit. Such an emergency use permit may be extended, for good cause shown, in the event repairs cannot ~~may not~~ be completed in the period stated in the repair permit through no fault of the owner or occupant and only if the owner or occupant has made and will continue to make ~~diligent efforts to~~ repair the system.

9. Change of Use Review

a. An owner proposing a change of use or the expanded use of an OWTS must apply for a system verification to determine whether existing OWTS can accommodate the expected additional hydraulic or organic load. If EPCPH determines that the existing OWTS is inadequate, it must be replaced or modified to handle such an increase.

b. The existing OWTS must be determined to be functioning as intended as determined by submission of an OWTS system review inspection.

c. For full soil treatment area repairs, a new soils evaluation consistent with section 8.5.D. of these regulations is required. Where system modification is proposed, an existing profile pit evaluation may be used.

d. Engineer designed systems require an evaluation and determination by a professional engineer

that the system is sufficient to accommodate the additional hydraulic or organic load needs.

C. Permit Application Review and Action

1. Permit Approval

a. EPCPH will determine whether the information provided in the completed permit application, site and soil evaluations, assumptions, calculations, and design of the proposed OWTS are in compliance with the requirements of the OWTS Act and these regulations. If the submittal is determined to be in compliance, EPCPH shall authorize the commencement of work or continued system operation.

b. ~~The issuance of a permit and specifications of terms and conditions therein does not constitute assumption of liability, nor create a presumption that EPCPH or its employees may be liable for the failure or malfunctioning of any system. Permit issuance will constitute a certification by EPCPH that the system, the equipment used in the system, or any component used for system operation will ensure continuous compliance with the provision of the OWTS Act, and Regulation 43, or any permit term and conditions of a permit.~~

c. Final permit approval shall not be effective until one or more of the following have been submitted and approved as required by EPCPH:

(1) A letter from the engineer certifying construction of the OWTS as per the approved design plan, if the OWTS was engineer designed. This letter must include any modifications to the permitted and approved design, general observations noted during the inspections, and the corresponding dates of all inspections.

(i) For designs that include a pressurized distribution system, a residual head test (squirt height) at the distal end of each lateral must be conducted to determine the adequacy of system design and construction. Results from this inspection must be included within the engineer's certification. ~~and the final permit acceptance documents.~~

(2) A record drawing which includes an as-installed ~~scale~~ drawing showing all components of the OWTS, including their location from known and findable points, dimensions, depths, sizes, manufacturers' names and models as available, and other information relative to locating and maintaining the OWTS components.

(i) When an engineered plan has been required and submitted, the engineer will provide the record drawing.

(ii) When an engineered plan is not required, EPCPH in its discretion may either complete the record drawing with additional information provided by the licensed system contractor as needed or require that the licensed system contractor complete the record drawing.

(3) Final inspection prior to backfilling the OWTS by EPCPH confirming that it was installed according to the permit requirements, regulations, and any approved variances.

(4) Identification of system contractor.

(5) An active maintenance contract for systems subject to the Operation and Maintenance requirements of section 8.14, as defined by section 8.3.72.

2. A permit to install ~~construct~~, alter, modify or repair an OWTS may be denied ~~if a municipal or sanitation district sewer main exists within 400 feet, as measured by way of public access, or legal easement to any part of the applicants property~~ when the subject property is located within or immediately adjacent to ~~if~~ a municipality or special district that provides public sewer service

a. Except where:

(1) Such sewer service to the property is not feasible in the determination of the municipality or special district. ~~Agrees to provide sewer service.~~

(2) If, as a condition of service, an annexation of the property to a different political entity is required, connection to the community sewer is not required by EPCPH

b. EPCPH shall only approve an OWTS permit for a property that is subject to connection to sanitary sewer if all OWTS installation criteria can be satisfied, and the municipality or district agrees to the OWTS installation.

3. Notice of Denial or Disapproval

a. If EPCPH denies a permit application or disapproves a system plan, an installed system, or a development plan, it shall do so in writing and identify the reasons for such denial or disapproval.

b. Denial of a permit application or disapproval of a system plan, an installed system, or a development plan may be appealed in accordance with Board of Health Regulations Chapter 4, Administrative Hearing Procedure. If the applicant wishes to request a variance from OWTS design or siting requirements as a result of a denial or disapproval, the variance process in section 8.4.__ below shall be used.

D. ~~Determination~~

1. ~~EPCPH must determine whether the information provided in the permit application, site and soil evaluations, assumptions, and calculation, and design of the proposed OWTS are in compliance with the requirements of the OWTS Act and regulations adopted pursuant thereto. If the submittal is determined to be in compliance, authorization to begin installation may be given.~~

E. OWTS Inspection Review

1. Applicability

a. An OWTS inspection review may be requested at any time to evaluate the condition and functionality of an existing OWTS.

(1) Request must be made by submission of an OWTS inspection review application and inspection report and payment of applicable fees.

b. An OWTS inspection review must be conducted and inspection report submitted by a Certified Inspector.

2. OWTS Inspection Review Requirements

a. The Certified Inspector must submit their completed inspection report to EPCPH through the electronic submission platform within 7 days of the inspection.

b. OWTS inspections are valid for a period of 12 months from the date of inspection.

c. The report must include:

(1) Property owner contact information

(2) Physical address and legal description of the property

(3) Certified Inspector's name and certification number

(4) Date and time of inspection

(5) Current record drawing as verified by the Certified Inspector

(6) A complete description of the condition and functionality of each OWTS component, including but not limited to:

(i) Tanks and risers

(ii) Effluent piping and tees/baffles

(iii) Filters alarms, pumps, and mechanical devices

(iv) All components of advanced treatment units

(v) The soil treatment area, including ponding, surfacing, vegetation condition, odors, drainage patterns

(7) Identification of any malfunctioning or failing components

(i) Including photo documentation of any failing component

(8) Identification of unapproved discharges or evidence of system failure

(9) Identification of OWTS component encroachment to setbacks both on and off the property.

(10) Water quality analysis results when requested by EPCPH due to concerns regarding setback, site condition, or potential impacts to water supplies.

d. OWTS Inspection Review Determination

(1) Following review of a complete OWTS inspection submitted pursuant to and meeting the requirements of this section, EPCPH will issue an OWTS Inspection Review Determination containing its assessment of whether the system meets regulatory criteria and minimum functional requirements

(i)

(ii) The Determination may contain and shall include, as appropriate, a summary of system components and capacities, including:

(a) A copy of the inspection report

(b) Documentation of any historical failures from EPCPH records

(c) Conditions or limitations that may have affected the inspector's ability to evaluate the system

(d) Determination as to whether the system meets EPCPH permitting requirements

(e) Additional information as deemed necessary by EPCPH

(2) EPCPH will issue and OWTS Notice of Condition instead of an OWTS System Review Determination when:

(i) The inspection report is incomplete or missing significant information, or

(ii) The OWTS does not meet the minimum functional criteria or contains malfunctioning components.

(3) Required Corrective Action:

(i) EPCPH may require corrective action to bring the OWTS into compliance if its Determination concludes that any component of the OWTS is malfunctioning or that the OWTS does not meet regulatory criteria.

(ii) When corrective action is required, it must be completed by the following deadlines:

(a) When an OWTS Repair permit is required, the permit must be obtained within 90 days and completed within the approved permit term.

(b) Repairs or conditions not requiring a permit must be completed within 90 days of issuance of the Determination.

(c) Missing records or inspection information or required documentation must be submitted within 30 days.

3. ~~Prior to transferring title to property served by an OWTS, the owner must have the system inspected and obtain an acceptance document from EPCPH. This requirement does not apply if:~~

a. ~~The entire OWTS, including all components, was installed and received final approval from EPCPH less than 12 months prior to the first scheduled sale closing date.~~

b. ~~Transfer of title is proposed solely to include or exclude a spouse.~~

c. ~~Transfer of Title is proposed between immediate family members.~~

d. ~~Transfer of title will create or terminate a joint ownership and at least one party to be added or removed is a current owner or spouse of a current owner.~~

e. ~~The OWTS has been or will be demolished, and the buildings it served will not be occupied following demolition.~~

f. ~~Transfer of title is to a trust in the current owner's name.~~

4. ~~Transfer of title inspectors must be certified by EPCPH, and EPCPH shall maintain a list of certified transfer of title inspectors for public use.~~

   a. ~~Applicants must submit proof of certification by the National Association of Wastewater Technicians (NAWT) or an equivalent program approved by CDPHE and EPCPH and the required fee to EPCPH. Applicants who wish to be certified for higher level treatment systems must also submit proof of training relevant to the specific system or certification by the equipment manufacturer.~~

   b. ~~Transfer of title inspector certification is valid for a period of two years from the date of issuance.~~

   c. ~~Certification renewal requests must be submitted prior to expiration of the certification then in effect.~~

   d. ~~Certification may be revoked for failure to comply with state law, these regulations, or for other good cause shown following a hearing conducted pursuant to Board of Health Regulations Chapter 4, Administrative Hearing Procedure.~~

5. ~~Transfer of Title Inspection Report Requirements~~

   a. ~~Reports must be submitted to EPCPH through the designated electronic reporting system within 3 working days of the inspection.~~

   b. ~~Reports must contain:~~

      (1) ~~Owner's name and contact information.~~

      (2) ~~Physical address and legal description of property.~~

      (3) ~~Certified inspector's name and NAWT or other applicable certification number.~~

      (4) ~~Date and time of inspection.~~

      (5) ~~A record drawing from EPCPH records (verified by the inspector), or from the site inspection.~~

      (6) ~~Statement of size, type, and capacity of septic tank, pump chamber (if applicable), and soil treatment area.~~

      (7) ~~Inspection report completed within 12 months; which includes the description of the condition of each component of the system including but not limited to effluent piping, tank and components, mechanical components such as pumps, alarms, or high-level treatment systems, and a detailed report noting the condition of the soil treatment area.~~

   c. ~~Reports must be accompanied by:~~

      (1) ~~Identification of any components that are found to be malfunctioning.~~

      (2) ~~A determination, if applicable, that the OWTS encroaches on the required setback from the water supply. If conditions such as buried wells, snow cover, or other circumstances prevent a determination, such conditions must be noted.~~

(3) ~~A water quality analysis of the water supply if required by EPCPH. Circumstances that may warrant such an analysis include, but are not limited to, encroachment on setbacks from water supplies or independent identification of local water quality concerns.~~

(4) ~~Photo documentation of all OWTS components. Malfunctions must be clearly documented in photos.~~

(5) ~~A record drawing in cases where EPCPH does not have a record drawing of the current OWTS or the record drawing on file does not align with the certified inspector's observations.~~

d. ~~A property sale inspection for transfer of title inspection report is valid until the date of title conveyance or real estate closing or 12 months after the inspection date, whichever is sooner.~~

6. ~~The OWTS must meet, at a minimum, the following criteria and conditions:~~

a. ~~All tanks must be structurally sound, watertight, in good working order, and with approved structurally sound access risers to grade with safe and secure lids;~~

b. ~~Septic tanks must have watertight risers over each access manhole. All risers must extend to a minimum of 20 inches inside diameter and extend to or above final grade, unless otherwise specified in these regulations. Or above final grade~~

c. ~~All internal devices and appurtenances such as tees, effluent filters, screens and baffles that were originally provided with the tank or added later must be intact and in good working order.~~

d. ~~Alarms, control devices, and components necessary for the proper operation of the system must be present and in good working order.~~

e. ~~A soil treatment area, or other means of subsurface wastewater treatment, must be present and not in a state of failure.~~

f. ~~Cesspools must be properly abandoned, and a conforming OWTS must be installed. Where site conditions preclude the installation of a conforming OWTS, the criteria for repairs established within section 43.10.I must be followed.~~

g. ~~There must be no unapproved wastewater discharges from the OWTS or structures.~~

h. ~~Any items meeting the conditions of a "Failure," as defined in these regulations, must be corrected.~~

7. ~~EPCPH will issue an acceptance document when the criteria set forth above have been met. The acceptance document may contain terms and conditions of approval and shall include, as appropriate:~~

~~a. A statement of the size, type, and capacity of the system and a record drawing, either from EPCPH records (verified by the Certified Inspector) or from the inspection reports.~~

~~b. A copy of any inspection report that was submitted to EPCPH.~~

~~c. Evidence of past OWTS failures as shown in EPCPH records.~~

~~d. Circumstances or factors that may have affected the ability of the certified inspector~~

~~to evaluate the system.~~

~~e. A determination of whether the system meets the permitting requirements of EPCPH.~~

~~f. Other information EPCPH may require.~~

8. ~~EPCPH will issue a Notice of Condition after receiving a property sale inspection report in the following circumstances:~~

   a. ~~Significant or necessary information has not been included in or with the report.~~

   b. ~~The OWTS does not meet the requirements for issuance of an acceptance document.~~

9. ~~If any component of the OWTS or the system as a whole is determined to be malfunctioning, repairs must be completed to bring the system into compliance.~~

   a. ~~For repairs where an OWTS permit is required one A repair permit must be obtained and repairs completed within 90 days of issuance of a Notice of Condition and repair completed within the permit term.~~

   b. ~~For repairs where no OWTS permit is required repairs must be completed within 90 days of issuance of Notice of Condition.~~

   c. ~~If EPCPH determines that the malfunction constitutes an imminent health hazard, a repair permit must be obtained and repairs completed within 30 days of issuance of a Notice of Condition.~~

   d. ~~For conditions to submit required records or documentation A requirement in a Notice of Condition to submit required items must records or documents must be met be submitted within 30 days of issuance of the Notice of Condition.~~

   e. ~~Requirements set forth in a Notice of Condition must be met, regardless of whether the property is sold.~~

10. ~~Acceptance documents are valid until the date of title conveyance or real estate closing or for 12 months after issuance, whichever is sooner. An acceptance document that has not expired may be renewed one time for up to 6 months upon completion of the appropriate form and payment of the required fee.~~

11. ~~An acceptance document may be revoked if EPCPH determines that the system is no longer functioning in accordance with these regulations or that false or misleading material statements were made in the application or inspection reports.~~

F. Submission of Plans for Proposed Subdivisions and Development Projects

1. ~~Development plans for proposed subdivisions and other development projects in El Paso County shall be submitted to EPCPH for review of the proposed wastewater treatment service by an environmental health specialist or a professional engineer in accordance with requirements of these regulations. EPCPH may require the owner or developer to submit additional engineering or geological reports or data and conduct a study of the economic feasibility of a sewage treatment works or other OWTS prior to making its recommendations. An appeal of an unfavorable recommendation may be submitted in accordance with .~~

2. The EPCBoH may prohibit issuance of OWTS permits in accordance with applicable land use laws and

procedures for defined areas in which the EPCBoH determines that construction and use of additional OWTS may constitute a hazard to public health or water quality.

G. Licensing and Certification

1. Licensing of System Contractors

a. No person shall install or repair, or be hired to aid in the installation or repair of, an onsite wastewater treatment system unless they hold a valid ~~EPCPH Tier 1 OR Tier 2~~ systems contractor license issued by EPCPH, with the exception of the property owner conducting his own installation in accordance with section 8.4.D.1.h. Employees of a valid licensed system contractor shall not be required to be licensed.

b. License Application Requirements

(1) Submittal of a completed application.

(2) Payment of the licensing fee.

(3) An applicant must demonstrate competency by either

(i) Passing the part A exam administered by EPCPH, or

(ii) Submitting proof of a passing score on the part A exam taken in another Colorado county within the current approved regulation dates. ~~Licensed Systems Contractor exam~~.

c. A License is valid for two years from the date of issuance.

d. Standards of Performance for Licensed Systems Contractors

(1) Following issuance of a new license, a Licensed Systems Contractor must complete preconstruction meetings for the first 3 permits issued, unless otherwise determined by EPCPH staff.

(2) Prior to installation of a treatment level 2 (TL2) or treatment level 3 (TL3) component, the licensed systems contractor must provide to EPCPH a valid manufacturer's proprietary certification for such component.

(3) System installation or repair must comply with these regulations and the approved permit.

(4) During excavation, if bedrock, groundwater, or other limiting conditions are encountered, all excavation must cease and EPCPH must be contacted for an evaluation to determine if additional tests are required.

(5) Inspection requests must be made in accordance with the EPCPH Inspection Request Policy.

(6) The licensed systems contractor must have the approved OWTS permit in his or her possession when construction begins and shall make the permit available at the time of final inspection.

e. License renewal requests must be submitted prior to expiration of the license then in effect and be accompanied by the following:

(1) Proof of completion of 8 hours of EPCPH-approved continuing educational units or a nationally recognized educational certification, and

(2) ~~Proof of~~ Attendance at a minimum of one EPCPH meeting or training session annually.

(3) In lieu of submitting the documentation set forth in (1) and (2) above, the licensee may submit proof of passing the current Part A exam.

(4) If a systems contractor license has expired the applicant must apply for a new license.

f. Licensed system contractors may become eligible for an automatic renewal of their licenses.

(1) Licensed system contractors must successfully renew their license once under section 8.4.G.e prior to becoming eligible for an automatic renewal.

(2) To be eligible for automatic license renewal including a waived renewal fee, the contractor must attend an annual EPCPH meeting or training session during each year of their license period for both license renewal cycles.

(3) To remain eligible for continued automatic renewal the licenses system contractor must attend an annual EPCPH meeting or training session during each year of their prior license renewal cycle.

g. Automatic license renewal process:

(1) Once a licensed contractor qualifies for automatic renewals under section 8.4.G.1.f, automatic renewal shall be granted and the renewal fee shall be waived based on documented attendance at an annual EPCPH meeting or training session during each year of their prior license renewal cycle.

(2) Failure to attend an EPCPH annual meeting or training during either year of the renewal cycle shall invalidate the automatic renewal eligibility for that renewal period

(3) A contractor who does not meet the annual meeting or informational session requirement must renew under section 8.4.G.1.e

h. A property owner wishing to install, modify, or repair their own OWTS:

(1) May not install, modify, or repair a system designed by a Professional Engineer.

(2) Must demonstrate to EPCPH's satisfaction a level of competency, which may include testing and/or a meeting with an Environmental Health Specialist.

(3) Must complete a pre-construction meeting with EPCPH.

(4) Must pay the applicable fee.

i. License renewal applications must be submitted prior to expiration of the license then in effect and shall meet the requirements of a new license application.

j. A systems contractor license may be revoked for failure to comply with state law, these regulations, or for other good cause shown following a hearing conducted pursuant to Board of Health Regulations Chapter 4, Administrative Hearing Procedure.

k. If a systems contractor license has expired or been revoked, the applicant must apply for a new license.

2. Licensing of Systems Cleaners

a. No person shall engage in the cleaning of an OWTS or the transportation of septage ~~sewage~~ to ~~an EPCPH approved~~ a disposal site unless they hold a valid systems cleaner license issued by EPCPH. Employees of a licensed systems cleaner company are not required to be individually licensed.

b. License Application Requirements

(1) Submittal of a completed application.

(2) Payment of the licensing fee.

(3) Submittal of a record of all current trucks operating within the fleet.

(4) Proof of current certification by the National Association of Wastewater Technicians (NAWT) or an equivalent program approved by EPCPH. ~~The annual inspection and approval of each pumper truck operated by the holder of thee system cleaner license.~~

c. A license is valid for two years from the date of issuance.

d. Standards of Performance for Licensed Systems Cleaners

(1) A licensed systems cleaner, when pumping a septic tank or wastewater component, shall remove the accumulated sludge and scum from each compartment of the septic tank or wastewater component unless otherwise directed by the owner.

(2) All vehicles used for the transport of septage ~~sewage~~ shall be ~~inspected and~~ on record with EPCPH prior to use.

(3) Outlet tees and baffles shall be inspected for proper installation and damage as part of the pumping process. Missing or damaged tees or baffles on the outlet side of tanks shall be reported in writing to the owner and EPCPH within 7 days of systems service being completed.

(4) A licensed system cleaner shall notify EPCPH in writing when an OWTS is observed in a state of malfunction or failure at time of servicing. Notification must occur within 7 days of service completion.

(5) All effluent screens shall be evaluated for proper installation and damage and shall be cleaned or repaired/replaced as needed.

(6) A licensed systems cleaner shall maintain and operate their equipment to ensure that no spillage of septage ~~sewage~~ occurs during transportation. Hauling shall be accomplished by the use of an enclosed tank. The tank shall be equipped with an approved method for determining the liquid level content; hoses used for pumping shall

be in good condition so as not to leak; tank manholes and all tank valves shall not leak. ~~EPCPH shall inspect each tank used in the transportation of sewage.~~ Operators of systems cleaner trucks shall be subject to inspections to assure compliance with these regulations at random or when EPCPH is notified of possible non-compliance.

(7) A licensed systems cleaner shall dispose of the septage ~~sewage~~ only at a municipal sewage treatment plant or other site lawfully accepting such disposal ~~approved by the EPCBoH~~ and shall comply with all other applicable codes and ordinances.

(8) Pumping and disposal records shall be kept for a minimum of 12 months and shall be made available to EPCPH for review upon request.

e. License renewal requests must be submitted prior to expiration of the license then in effect and be accompanied by the following:

(1) Submission of completed application

(2) Submittal of a record of all current trucks operating within the fleet.

(3) Payment of applicable fees

(4) System cleaners may become eligible for waiver of license renewal fees.

(i) System cleaners must successfully renew their license once under section 8.4.G.2.e prior to becoming eligible for a waived renewal fee.

f. Renewal fee waiver process:

(1) Once a licensed system cleaner qualifies for automatic renewals under section 8.4.G.2.e,(4) a waived license renewal fee shall be granted provided the license holder:

(i) Submits a completed renewal application within 45 days of current license expiration.

(ii) Submit an updated fleet list with renewal application

(iii) Submits proof of updated certification by NAWT or an equivalent program approved by EPCPH following notification by EPCPH that updated certification is required due to a change in regulations.

(2) Failure to submit license renewal applications ~~must be submitted~~ prior to expiration of the license then in effect will require payment of renewal fee ~~and shall meet the requirements of a new license application~~.

g. A systems cleaner license may be revoked for failure to comply with state law, these regulations, or for other good cause shown following a hearing conducted pursuant to Board of Health Regulations Chapter 4, Administrative Hearing Procedure.

h. If a systems cleaner license has expired or been revoked, the applicant must apply for a new license.

3. Certification of Systems Designers

a. Applicability:

(1) This section applies to:

(i) Professional Engineers conducting OWTS soils analysis, and

(ii) All persons submitting OWTS designs other than property owners submitting their own designs.

b. Soils analysis submission requirements:

(1) Corrective Education Requirement

(i) If, at the end of each calendar year, 20 % or more of soil report submissions require subsequent evaluations or revisions, the submitting professional engineer shall be required to take and pass the next available approved OWTS soils course.

(ii) If EPCPH staff are required to meet onsite with the engineer two or more times within a calendar year to resolve soils related deficiencies, the professional engineer shall be required to take and pass the next available approved OWTS soils course.

(2) Documentation Requirements

(i) Upon notification of requirement to take an approved OWTS soils course, the professional engineer shall submit to EPCPH:

(a) Proof of registration in the next available course; and

(b) Passing documentation within 30 days of completing the course.

(ii) Failure to submit required documentation shall result in EPCPH not accepting soils reports from the professional engineer until documentation is provided.

c. Design submission requirements:

(1) Corrective Education Requirement

(i) If, at the end of each calendar year, 20% or more of a person's design report submissions require subsequent revisions, such person shall be required to take and pass the next available approved OWTS design course.

(2) Documentation Requirements

(i) Upon notification of requirement to take an approved OWTS design course, the designer shall submit to EPCPH:

(a) Proof of registration in the next available course; and

(b) Passing documentation within 30 days of completing the course.

(ii) Failure to submit required documentation shall result in EPCPH not accepting

design submission from the designer until required documentation is provided.

(3) Design revision workflow

(i) Any design requiring revision shall re-enter the processing queue upon resubmission.

(ii) Subsequent revisions may lose prioritization at the discretion of EPCPH to maintain efficient review processes and ensure timely service delivery.

d. EPCPH will maintain a list of all Professional Engineers who have successfully submitted soil and design reports.

e. ~~Any person engaged in OWTS design must be approved by EPCPH as part of the permit application process.~~

f. ~~To submit a design for a conventional OWTS (one not requiring design by a professional engineer), a person must:~~

(1) ~~Pass a course approved by EPCPH related to OWTS design, or~~

(2) ~~Be a licensed systems contractor, or~~

(3) ~~Be an owner installing their own system and comply with G.1.g. above~~

g. ~~To submit an engineered OWTS design, a person must:~~

(1) ~~Be a professional engineer, and~~

(2) ~~Pass a course approved by EPCPH related to OWTS design, and~~

(3) ~~Pass a course approved by EPCPH related to OWTS soils.~~

h. ~~Certification Application Requirements~~

(1) ~~Submittal of a complete application.~~

(2) ~~Payment of the certification fee.~~

(3) ~~Proof of compliance with the certification requirements above.~~

i. ~~Certification is valid for two years from the date of issuance.~~

j. ~~Certification renewal requests must be submitted prior to expiration of the certification then in effect and be accompanied by the following:~~

(1) ~~Submittal of a completed application~~

(2) ~~Payment of approved fee~~

(3) ~~Proof of completion of 8 hours of EPCPH-approved continuing educational units.~~

(4) ~~Proof of attendance at an EPCPH meeting or training session.~~

(5) ~~If these regulations have been revised since the last certification, proof of completion of EPCPH-approved courses related to OWTS design and soils.~~

k. ~~EPCPH will maintain a list of Certified Systems Designers for public reference.~~

l. ~~License renewal applications must be submitted prior to expiration of the license then in effect and shall meet the requirements of a new license application.~~

m. ~~A systems cleaner license may be revoked for failure to comply with state law, these regulations, or for other good cause shown following a hearing conducted pursuant to Board of Health Regulations Chapter 4, Administrative Hearing Procedure.~~

n. ~~If a systems cleaner license has expired or been revoked, the applicant must apply for a new license.~~

4. Certification of Operations & Maintenance (O&M) Specialist

a. Any person who performs operation and maintenance of pressure distribution, treatment level 2 (TL2), or treatment level 3 (TL3) components in an OWTS must be certified by EPCPH.

b. Certification Application Requirements

(1) Submittal of a complete application.

(2) Payment of the certification fee.

(3) Proof of certification by the National Association of Wastewater Technicians or an equivalent program approved by EPCPH.

(4) Proof of certification by the proprietary product manufacturer to operate and maintain a higher-level treatment system component, as needed.

c. Certification is valid for two years from the date of issuance.

d. Certification renewal requests must be submitted prior to expiration of the license then in effect and be accompanied by the following:

(1) Submission of completed application

(2) Current certification by the National Association of Wastewater Technicians or an equivalent program approved by EPCPH.

(3) Payment of applicable fees

e. O&M Specialist may become eligible for a renewal fee waiver.

(1) O&M Specialist must successfully renew their license once under section 8.4.G.4.d prior to becoming eligible for a renewal fee waiver.

f. Eligibility for waiver of renewal fee:

(1) To be eligible for a renewal fee waiver, the specialist must attend an annual EPCPH

meeting or information session during each year of their license period for both license renewal cycles.

(2) To remain eligible for renewal fee waiver the O&M specialist must attend an annual EPCPH meeting or information session during each year of their prior license renewal cycle.

(3) O&M specialist must submit 90% of inspection reports submitted within 7 days of the inspection date

g. Failure to meet the requirements of section 8.4.G.4.f and submit license renewal application ~~must be submitted~~ prior to expiration of the license then in effect will require payment of renewal fee ~~and shall meet the requirements of a new license application~~.

h. An O&M Specialist certification may be revoked for failing to comply with state law or these regulations, submitting false or misleading information, or failing to maintain the required certifications.

i. EPCPH will maintain a list of Certified O&M Specialists for public reference.

5. Certification of System Inspectors ~~Transfer of title inspectors must be certified by EPCPH, and EPCPH shall maintain a list of certified transfer of title inspectors for public use.~~

a. ~~Applicants must submit proof of certification by the National Association of Wastewater Technicians (NAWT) or an equivalent program approved by CDPHE and EPCPH and the required fee to EPCPH. Applicants who wish to be certified for higher level treatment systems must also submit proof of training relevant to the specific system or certification by the equipment manufacturer.~~

b. Any person who performs system evaluations or inspections for purposes of OWTS inspection reviews and determining the system's operable status must be certified by EPCPH.

c. Certification Application Requirements

(1) Submittal of a complete application.

(2) Payment of the certification fee.

(3) Proof of certified inspector certification by the National Association of Wastewater Technicians or an equivalent program approved by EPCPH.

(4) Proof of certification by the proprietary product manufacturer to inspect higher-level treatment system component.

d. ~~Transfer of title~~ Certification is valid for a period of two years from the date of issuance.

e. Certification renewal requests must be submitted prior to expiration of the certification then in effect and be accompanied by the following:

(1) Submission of completed application

(2) Current certification by the National Association of Wastewater Technicians or an equivalent program approved by EPCPH.

(3) Payment of applicable fees

f. Certified Inspectors may become eligible for a renewal fee waiver.

(1) Certified Inspectors must successfully renew their license once under section 8.4.G.5.e prior to becoming eligible for a renewal fee waiver.

g. Eligibility for waiver of renewal fee:

(1) To be eligible for a renewal fee waiver, the specialist must attend an annual EPCPH meeting or information session during each year of their certification period for both license renewal cycles.

(2) To remain eligible for renewal fee waiver the Certified Inspector must attend an annual EPCPH meeting or information session during each year of their prior license renewal cycle.

(3) Certified Inspectors must submit 90% of inspection reports submitted within 7 days of the inspection date

h. Failure to meet the requirements of section 8.4.G.4.g and submit license renewal application ~~must be submitted~~ prior to expiration of the license then in effect will require payment of renewal fee ~~and shall meet the requirements of a new license application~~.

i. Certification may be revoked for failure to comply with state law, these regulations, or for other good cause shown following a hearing conducted pursuant to Board of Health Regulations Chapter 4, Administrative Hearing Procedure.

j. EPCPH will maintain a list of Certified Inspectors for public reference

H. Administration of Regulations

1. Access to Site

~~For the purpose of inspecting and enforcing applicable regulations and the terms and conditions of any permit issued and investigating and responding to complaints.~~ In administering and enforcing these regulations, EPCPH is authorized to enter upon private property at reasonable times and upon reasonable notice for the purpose of determining whether or not an operating OWTS is functioning in compliance with ~~the OWTS Act and Regulations 43~~ applicable law and the terms and conditions of any permit issued and to inspect and conduct tests in evaluating any permit application. The owner or occupant of every property ~~having~~ served by an OWTS must permit ~~EPCPH~~ property access ~~to the property~~ for EPCPH to make inspections, conduct required tests, take samples, and monitor compliance.

2. Inspection Stages

a. Upon receipt of an application for an installation ~~"new,"~~ modification, or major repair permit, EPCPH shall conduct a site evaluation for the purpose of confirming that the site conditions and the design submitted concur with the intent of these regulations.

(1) An open soil profile pit inspection will be required for any property within Highway 24

W, zip codes 80809 and 80819, when the proposed design does not account for high rock content design parameters.

b. When installation is completed and before a system is placed in use, the permit applicant ~~the owner, the owners agent or the systems contractor~~ must provide EPCPH and the professional engineer, if engineer-designed, with notice that ~~the progress of the~~ work has been sufficiently completed to allow inspections to determine if such work has been performed in accordance with the permit requirements and applicable law. ~~To determine compliance of the system with the OWTS Act and Regulations 43.3.~~ Placement of soil cover over any component may not occur until a final inspection of all permitted OWTS installations is conducted by EPCPH.

c. EPCPH may require additional inspections to determine compliance with permit conditions and applicable law. These additional inspections shall be included in the permit requirements.

d. In cases where inclement weather or other adverse conditions preclude an inspection completion, EPCPH may conduct a final inspection when it is determined safe to do so.

e. If a request for an inspection is made, and the installation has not been completed or the OWTS installation was found in non-compliance with these Regulations, a return inspection fee approved by the EPCBoH shall be charged to the owner or systems contractor that requested the inspection.

I. Variance Procedure

1. ~~Variance Request:~~ Any person whose OWTS permit is denied ~~receives notification of~~ or disapproved for noncompliance with ~~from EPCPH relating to~~ design or siting requirements, and for whom compliance with these regulations presents an undue hardship, may request a variance from such requirements from the EPCBoH. ~~By submitting a~~ A written request for a variance must be submitted to the Public Health Director, along with the current EPCBoH variance fee, within 10 days of notification of such denial or disapproval and include the following:

(1) ~~The written request must include:~~

(2) ~~A statement from the owner requesting that the EPCBoH consider the variance request.~~

(3) Identification of the property owner and property in question.

(4) The specific criteria from which a variance is being requested.

(5) ~~Technical justification by a professional engineer indicating that the specific conditions which exist and/or the measures which will be taken will result in no greater threat to public health or environmental degradation than that achieved by compliance with these applicable laws and regulations.~~ Technical justification by a professional engineer, supported as needed by testing or other evidence, demonstrating that the specific site conditions and proposed measures ensure no greater risk to public health or environmental degradation than compliance with applicable laws and regulations.

(6) A discussion of alternatives considered in lieu of the requested variance.

~~(7) Technical support for the selected alternative, which may include a testing program, which confirms that the variance does not increase the risk to public health and to the environment.~~

(8) A statement of the hardship which creates the necessity for the variance.

2. The EPCBoH shall hear such variance requests as soon as practicable. In addition to other requirements of the hearing procedure, EPCPH shall notify all adjacent property owners of the public hearing by sending notice via certified mail a minimum of 20 days prior to the hearing.

3. The applicant has the burden of proof to demonstrate that the variance is justified and will pose no greater risk to public health and the environment than would a system meeting these regulations.

4. The EPCBoH has the authority to deny the request or to impose appropriate site-specific requirements and conditions on any variance granted.

5. The applicant shall be notified, in writing, of the EPCBoH decision. A notice of denial of a variance shall include those reasons which form the basis for the denial. A notice of approval of a variance shall include any requirements or conditions of the approval. The variance, and any conditions thereof, shall be recorded with the El Paso County Clerk & Recorder and any expenses associated with that recording shall be the responsibility of the property owner.

6. Prohibitions on the Granting of Variance Requests

   a. No variance will be issued to mitigate an error in construction involving any element of property improvements.

   b. No variance will be issued where the property can accommodate a conforming onsite wastewater treatment system.

   c. No variance will be issued for a cesspool that is in failure or is not functioning as intended.

   d. No variance will be issued which will result in setbacks to offsite physical features which do not conform to the minimum setbacks defined in Table 7-1 of these regulations without notice to the property owner containing said feature and consideration of the concerns of such property owner. Property lines are considered offsite features.

   e. No variance will ~~shall~~ be issued if it reduces the separation to ground water or bedrock based on the level of treatment in Table 7-2.

   f. No variance will be issued which reduces the 4-foot separation from groundwater, bedrock, or other restrictive soil layer, unless the system is designed by a ~~licensed~~ professional engineer and adheres to the appropriate sections of these regulations relative to higher level treatment. ~~and is approved by EPCPH~~

   g. No variance from the horizontal setback from a well shall be issued which does not also meet the variance requirements of the Board of Examiners of Water Well Construction and Pump Installation Contractors.

   h. No variance shall be allowed solely for economic gain.

7. Variances for Repair of Failing or Obsolete Systems:

   a. When a proposed ~~variance for a~~ system repair or upgrade would result in encroachment on minimum distances to physical features on neighboring properties, ~~required by EPCPH~~ the ~~hearing procedures in 8.4.P~~ Variance Procedure must be followed.

b. For the repair of or upgrade to an approved existing system where the existing system does not meet the required separation distances and where the size of the lot precludes adherence to the required distances, a variance to the separation distances may be requested. The repairs or upgrade shall be no closer to features requiring setbacks than the existing facilities. Variances requesting setbacks no closer than existing setbacks do not have to provide technical justification from a professional engineer or professional geologist.

(1) When the distances are documented in an approved EPCPH record of the system the variance request does not have to be heard by the EPCBoH and can be administratively approved.

J. Enforcement

1. General Prohibitions; Section 25-10-112, C.R.S.

a. ~~No city, county, city and county shall issue to any person~~

(1) ~~A permit to construct or remodel a building or structure which includes plumbing that is not serviced by a sewage treatment works until EPCPH has issued a permit for an OWTS~~

(2) ~~An occupancy permit for the use of a building that is not serviced by a sewage treatment works until EPCPH makes a final inspection of the OWTS provided for in sections 25-10-106 (1)(h), CRS and EPCPH approves the installation.~~

b. No person shall:

(1) Construct or maintain any dwelling or other occupied structure which is not equipped with adequate facilities for the sanitary disposal of sewage. "Adequate facilities" do not include OWTS that are deemed to be failed, or any such condition that EPCPH determines to be a public health and/or safety concern.

(2) Construct a new occupied structure that includes plumbing without connecting to a domestic wastewater treatment works or obtaining an OWTS permit issued by EPCPH and installing a compliant OWTS.

c. The construction of new or the repair of existing cesspools is prohibited. Where an existing cesspool is failing, a conforming OWTS must be installed. Where space is not available for a conforming OWTS, the criteria for repairs established within section 8.10.I must be followed.

d. No person may ~~must not~~ connect more than one dwelling, commercial, business, institutional, or industrial unit to the same OWTS unless such multiple connection was specified in the application submitted and in the permit issued for the system.

e. An OWTS may receive only such biodegradable wastes for treatment and distribution as are compatible with those biological treatment processes that occur within the septic tank, any additional treatment unit, and the soil treatment area. This does not include industrial, animal, or processed waste.

f. ~~No person shall construct or maintain any dwelling or other occupied structure which is not equipped with adequate facilities for the sanitary disposal of sewage.~~

g. All persons shall dispose of septage removed from systems in the process of maintenance or cleaning at an approved site and in an approved manner.

K. Cease and Desist Orders

1. EPCPH may issue an order to cease and desist from the use of any OWTS or sewage treatment works which is found by the Public Health Director ~~health officer~~ not to be functioning in compliance with the OWTS Act or with applicable regulations, is found to constitute a hazard to public health, or has not otherwise received timely repairs under the provisions of section 25-10-106 (1) (j), C.R.S. Such an order may be issued only after a hearing which shall be conducted by the Public Health Director ~~health officer~~ not less than 48 hours after written notice thereof is given to the owner or occupant of the property on which the system is located. The order shall require that the owner or occupant bring the system into compliance or eliminate the health hazard within a reasonable period of time or thereafter cease and desist from the use of the system. A cease and desist ~~issued by the health officer~~ order shall be reviewable in El Paso County District Court ~~4th Judicial District Court fo Colorado~~ upon a petition filed not later than ten days after the order is issued.

L. Penalties; Section 25-10-113, C.R.S.

1. Any person who commits any of the following acts or violates any of the provisions of this section commits a ~~Class 1 Petty Offense~~ civil infraction as defined in section 18-1.3-503, C.R.S.:

a. Constructs, modifies, alters, installs, or permits the use of any OWTS without first ~~having applied~~ applying for and receiving a permit as required.

b. Constructs, modifies, alters, or installs an OWTS in a manner which involves a knowing and material variation from the terms or specifications contained in the application, permit, or variance.

c. Violates the terms of a cease and desist order that has become final under the terms of section 25-10-106 (1) (k), C.R.S.

~~d.~~ Conducts a business as a systems contractor without having obtained the required license. ~~provided for in section 25-10-109 (1), C.R.S., in areas which the EPCBoH has adopted licensing regulations pursuant to that section;~~

~~e.~~ Conducts a business as a systems cleaner without having obtained the required license. ~~provided for in section 25-10-109 (1), C.R.S., in areas which the EPCBoH has adopted licensing regulations pursuant to that section;~~

f. Falsifies or maintains improper records concerning system cleaning activities not performed or performed improperly, or

g. Willfully fails to submit proof of proper maintenance and cleaning of a system as required by these regulations.

2. Upon a finding by EPCPH that a person is in violation of this regulation, or of rules adopted and promulgated to section 25-10-104, C.R.S., EPCPH may assess a penalty of up to fifty dollars for each day of violation. In determining the amount of the penalty to be assessed, the EPCPH shall consider the seriousness of the danger to the health of the public caused by the violation, the duration of the violation, and whether the person has previously been determined to have committed a similar violation.

3. A person subject to a penalty assessed pursuant to section 8.4.L may appeal the penalty to the EPCBoH by requesting a hearing ~~before the appropriate body~~. The request must be filed within thirty days after the penalty assessment is issued. The EPCBoH shall conduct a hearing upon the request in accordance with section 24-4-105, C.R.S.

8.5 Site and Soil Evaluation

A. A site and soil evaluation must be conducted for each property on which an OWTS is proposed, to determine the suitability of a location to support an OWTS and to provide the designer a sound basis to select the most appropriate OWTS design for the location and application.

1. Each site evaluation must consist of:

    a. Preliminary investigation;

    b. Reconnaissance;

    c. Detailed soil investigation; and

    d. Report and site plan

B. Preliminary site investigation: Research of information relative to the site and anticipated conditions must be conducted. Information gathered as part of the preliminary investigation must include, but is not limited to:

1. Property Information:

    a. Address;

    b. Legal Description;

    c. Existing Structures, and

    d. Location of existing or proposed wells on the property

2. EPCPH Records

~~3. Published site information~~

~~a. Topography; and~~

~~b. Soil data~~

4. Location of physical features on and off the property that will require setbacks as identified in Table 7-1.

5. Preliminary soil treatment area size estimate based on the information on existing or planned facility and EPCPH Regulations.

6. Other information required by EPCPH.

7. Additional published information that may be useful to the site-specific evaluation, as available:

    a. Soil information

b. Topography;

c. Survey;

d. Easements;

e. Floodplain maps;

f. Delineated wetland maps;

g. Geology and basin maps and descriptions;

~~h. Aerial photographs;~~

i. Climate information; and

j. Aerial Photographs ~~and~~

~~k. Delineated wetland maps.~~

C. Reconnaissance: A visit to the property to evaluate the topography and other surface conditions that will impact the location and design of the OWTS must be conducted. Information gathered as part of the site reconnaissance may include, but is not limited to:

1. Landscape position;
2. Topography;
3. Vegetation;
4. Natural and cultural features; and
5. Current and historic land use

Note: The reconnaissance evaluation may be conducted concurrently with the detailed soil investigation.

D. Detailed Soil Investigation

1. Soil investigation to determine the long-term acceptance rate of a soil treatment area must be conducted per the following criteria:

   a. Visual and tactile evaluation of two or more soil profile test pit excavations must be conducted. ~~to determine soil type as well as to determine whether a limiting layer is encountered.~~

   b. In addition to the two soil profile test pit excavations, percolation testing may be conducted to obtain additional information regarding the long-term acceptance rate of the soil.

   c. If the site evaluation includes both a visual tactile evaluation of soil profile test pit excavations and percolation test, and the results from these two evaluations do not coincide with the same LTAR as noted in Table 10-1, the designer must use the more restrictive LTAR in determining the size of the soil treatment area.

2. Procedure for performing visual and tactile evaluations: Visual and tactile evaluations of soil must be performed by a professional engineer or by a trained person under the supervision of a professional engineer ~~or by a competent technician~~, in order to determine a long-term acceptance rate.

    a. Evaluation of two or more soil profile test pit excavations must be performed to determine soil types, limiting layers, restrictive layers, groundwater conditions, and the best depth for the infiltrative surface, ~~unless otherwise approved by EPCPH~~.

        (1) The total number of soil profile test pit excavations beyond the required two shall ~~is~~ be based on the judgment of the professional engineer, ~~competent technician~~ who may require an additional soil profile test pit excavation in the area of the proposed alternate soil treatment area if deemed necessary.

    b. At least one of the soil profile test pit excavations must be performed in the portion of the soil treatment area anticipated to have the most limiting or restrictive conditions.

    c. Soil profile test pits must be inclusive of the total relative installation area with a minimum of 50’ between pit locations, where able.

    d. The minimum depth of the soil profile test pit excavation must be to any limiting layer, groundwater condition, or four feet below the infiltrative surface of the in-situ soil, whichever is encountered first.

    e. Layers and interfaces that interfere with the treatment and dispersal of effluent must be noted. Thus, any ~~limiting~~ restrictive soil characteristic such as consistence, as defined by cementation class, also needs to be evaluated. ~~The evaluation of consistence may also include an evaluation of excavation difficulty, rupture resistance, and/or penetration resistance.~~

        (1) When cemented soils are encountered, the evaluation must identify the cementation class from rupture resistance as provided in Table 5-1, “Rupture Resistance.”

        (2) Per Table 5-1, when the cementation class is identified within the soil profile as “strongly cemented,” “very strongly cemented,” or “indurated,” that layer will be classified as a “restrictive layer.”

    Note: Cemented soils will typically have characteristics of Type 3A or 4A soils (Table 10-1). Long term acceptance rates should coincide with the appropriate soil type classification or be adjusted to address the level of cementation.

Table 5-1: Rupture Resistance: Blocks, Peds, Clods – Estimate the class by the force required to rupture (break) a soil unit.

Dry Cementation Class	**Specimen Falls Under**
Loose	Intact specimen not obtainable
Non-cemented	Very slight force between fingers
Extremely weakly cemented	Slight force between fingers
Very weakly cemented	Moderate force between fingers
Weakly cemented	Strong force between fingers
Moderately cemented	Moderate force between hands
Strongly cemented	Foot pressure by full body weight
Very strongly cemented	Blow of > 4.5lbs., but not body weight
Indurated	Blow of ≥ 4.5lbs., weight dropped at 6 inches

Source: NRCS Field Book for Describing and Sampling Soils. Version 3.0; 2021 Reprint; Consistence section. Pg. 2-63. Dry

Rupture Resistance applies to soils that are moderately dry or drier.

f. The soil profile test pit observations must be conducted at or immediately adjacent to the location of the proposed soil treatment area, but if possible, not under the final location of a trench or bed.

g. Each soil profile test pit excavation observed at the proposed soil treatment area must be evaluated under adequate light conditions with the soil in an unfrozen state.

h. The soil observation method must allow observation of the different soil horizons.

i. Soil profile test pit observations must be conducted prior to percolation tests to determine whether the soils are suitable to warrant percolation tests and, if suitable, at what depth percolation tests must be conducted.

j. The soil type at the proposed infiltrative surface of the soil treatment area or a more restrictive soil type within the treatment depth must be used to determine the long-term acceptance rate from Table 10-1 or Table 10-1A. The treatment depth is two to four feet depending on the required thickness for the treatment level below the infiltrative surface from Item 4, Table 7-2.

k. Soils data previously collected by others at the site can be used for the purposes of an OWTS design at the discretion of EPCPH. It is recommended that the data be verified, at a minimum, by performing an evaluation of a soil profile test pit excavation.

3. Soil descriptions for determination of a limiting layer must include:

a. The depth of each soil horizon measured from the ground surface and a description of the soil texture and structure of each soil horizon;

b. Depth to the bedrock;

c. Depth to the periodically saturated soil as determined by:

(1) Redoximorphic features and other indicators of water levels, or

(2) Depth of standing water in the soil observation excavation, measured from the ground surface, if observed, unless redoximorphic features indicate a higher level;

d. Any other soil characteristic that needs to be described to design a system, such as layers that will restrict permeability.

4. When a percolation test is ~~determined to be~~ deemed necessary to obtain additional information regarding soil permeability, the following ~~P~~procedures ~~for performing percolation tests~~ must be followed:

a. The percolation testing shall be performed by a professional engineer, a trained person under the supervision of a professional engineer, or a competent technician.

b. Number of test holes; Location

(1) Soil percolation tests shall be performed in at least three test holes in the area in which the soil treatment area is to be located, spaced evenly over the proposed area.

(2) If the likely depth of a proposed infiltrative surface is uncertain, or if a vertical system is proposed, the percolation tests ~~for this site~~ must be performed at more than one depth to determine the depth of the infiltrative surface.

c. Dimensions

(1) The percolation test hole must have a diameter of 8 to 12 inches and be terminated a minimum of 6 inches and a maximum of 18 inches below the proposed infiltrative surface.

d. Change in Soil

(1) If a change of soil type, color or structure is present within those soils comprising the depth of soil below the infiltrative surface as required in Table 7-2 for vertical separation, a minimum of two soil percolation holes must be terminated in the changed soil, and percolation tests must be conducted in both holes.

e. Percolation Tests

(1) The percolation tests must be conducted using the hole preparation, soil saturation, and rate measurement procedures described below.

(2) Preparation of Percolation Test Holes

i. Excavate the hole to the depth and diameter required.

ii. Carefully scrape the bottom and sides of the hole with a knife blade or sharp instrument to remove any smeared soil surfaces and provide a natural soil interface into which water may percolate.

iii. Remove all loose soil from the hole.

iv. Add two inches of very coarse sand or fine gravel to protect the bottom of the hole from scouring and sediment.

(3) Presoak

i. The hole must be presoaked adequately to accomplish both saturation, which is filling the void spaces between the soil particles, and swelling, which is the intrusion of water into the individual soil particles.

ii. To presoak the hole, carefully fill the hole with clean water to a minimum depth of 12 inches over the gravel placed in the bottom of the hole. In most soils, it is necessary to refill the hole by supplying a surplus reservoir of clean water, possibly by means of an automatic siphon, to maintain water in the hole for at least four hours and preferably overnight. Determine the percolation rate 24 hours after water is first added to the hole. This procedure is to ensure that the soil is given ample time to swell and to approach the condition it will be in during the wettest season of the year. In ~~sandy soils containing five percent or less particles passing the #200 sieve, by weight,~~ type 1 soils, (and loamy sand: Table 10-1), the swelling procedure is not essential and the test may be conducted after the water from one filling of the hole has completely seeped out of the hole.

(4) Percolation Rate Measurement

i. With the exception of ~~sandy soils containing five percent or less particle passing the #200 sieve, by weight,~~ type 1 soils, percolation rate measurements must be made on the day following the presoak procedure.

ii. If water remains in the percolation test hole after the swelling period, adjust the depth to approximately six inches above the gravel in the bottom of the hole. From a fixed reference point, measure the drop in water level over a 30-minute interval. The drops are used to calculate the percolation rate.

iii. If no water remains in the hole after the swelling period, carefully add clean water to bring the depth of water in the hole to approximately six inches above the top of the gravel in the bottom of the hole. From a fixed reference point, measure the drop in water level at 30-minute intervals for four hours, refilling to six inches over the top of the gravel as necessary. The drop in water level that occurs during the final 30-minute period is used to calculate the percolation rate. If the water level drops during prior periods provide sufficient information, the procedure may be modified to suit site circumstances. The requirement to conduct a four-hour test under this section is waived if three successive water-level drops do not vary by more than 1/16 inch; however, in no case shall a test under this section be less than two hours in duration.

(5) Sandy Soils

i. In sandy soils or other soils in which the first six inches of water seeps out of the hole in less than 30 minutes, after the 24-hour swelling period the time interval between measurements must be ten minutes and the test conducted for one hour. The drop that occurs during the final ten minutes must be used to calculate the percolation rate.

ii. If the soil is so sandy or coarse-textured that it will not retain any water, then the infiltration rate must be recorded as less than one minute per inch.

~~(6) Special Soil Types~~

~~i. EPCPH may identify soil types in El Paso County that require different or additional testing procedures than those defined in Regulation 43.~~

~~ii. Whenever decomposed granite is encountered, (within 48" from the bottom of the proposed infiltrative surface) the following soil tests are required:~~

~~(I) A percolation test shall be conducted per the standards defined in these regulations.~~

~~(II) A soil profile test pit excavation is required.~~

~~(III) Subsequent to the noted testing requirement in this subsection, the competent technician &/or professional engineer shall determine the soil type (0-5) as defined in table 10-1.~~

(7) Percolation Rate Determination and Reporting

i. The field percolation rate will be the average rate of the percolation rates determined for all percolation test holes observed in the proposed soil treatment area in minutes per inch. The average percolation rate determined by the tests must be used in determining the long-term acceptance rate for the proposed system from Table 10-1.

ii. The technician performing the percolation tests shall furnish an accurate scale drawing showing the location of the soil profile test pit excavations and/or percolation holes tied to lot corners or other permanent objects. The drawing must meet the criteria in section 8.5.G. All holes must be clearly labeled to relate to the information provided for the profile test pits and percolation tests.

(8) Alternate Percolation Testing

i. EPCPH may grant prior approval of alternate percolation test procedures ~~may be approved~~, provided the test results of alternate procedures are substantially equivalent to those determined using the test procedures described in this section.

~~ii. Prior approval from EPCPH of alternate percolation test procedures is required.~~

E. Evaluation and marking of Soil Profile Test Pit Excavations or Percolation Holes

1. The professional engineer ~~or competent technician~~ conducting the soil profile test pit excavations or percolation tests must, upon completion of the tests, ~~flag or otherwise mark~~ adequately mark and identify each excavation, hole, or pit ~~or hole/pits~~ to allow easy location by EPCPH.

a. Soil profile test pit excavations and percolation holes conducted on properties along the HWY 24 W corridor must remain open until inspection by EPCPH is conducted as specified in section 8.4.H.2.a.(1), if required by EPCPH. Excavations must be suitably barricaded to prevent unauthorized access and to address safety concerns. ~~Otherwise~~,In the alternative, appropriate notification of EPCPH staff ~~shall~~ must be made to allow inspection to be completed at time of initial excavation.

2. The objective of Section 8.5 of these regulations is to ensure a detailed and accurate identification of the soils on each site, while concurrently ensuring the safety of the practitioner, general public, and wildlife. In order to accomplish this, the following items are noted:

a. In order to address public safety concerns, the regulatory intent is to backfill all soil profile test pits promptly after the soil evaluation is complete.

b. EPCPH may impose additional requirements that would necessitate a joint evaluation of the soils along with the professional engineer or competent technician.

c. If EPCPH does not require a joint evaluation, and the excavator intends to backfill the excavation prior to an evaluation, EPCPH may require the excavator to communicate their intent with EPCPH prior to the date of the excavation.

d. EPCPH may impose ~~identify~~ additional requirements ~~that requires~~ for the installation of inspection ports ~~in order~~ to confirm that the elevation of an actual or seasonal water table (a groundwater condition) does not encroach on the vertical separation requirement to the proposed infiltrative surface of the soil treatment area.

F. Soils Report and Site Plan

1. A written report must describe the results of the preliminary investigation, reconnaissance, and detailed soil evaluations. The report may be in text and/or tabular form and must include a drawing locating features relative to the proposed OWTS location and test locations. The report may be included as part of the OWTS design document. The report must include, but is not limited to:

    a. Company name, address, telephone number, e-mail address, and name ~~of individual~~, credentials, and qualifications of the individual conducting the site evaluation;

        (1) All soils reports submitted to EPCPH for review must be stamped by a professional engineer ~~as defined in these regulations~~.

    b. Preliminary and detailed evaluations providing information from the surface site characteristics assessment and soils investigation;

    c. Dates of preliminary and detailed evaluations;

    d. A graphic soil log, to scale, indicating depth of the soil test pit excavation, soil description and classification, depth to any limiting layer encountered, type of equipment used to excavate the soil profile test pit, and date of soils investigation.

    e. Setback distances to features listed in Table 7-1;

    f. Setback distances to features listed in Table 7-2 existing on the site or within applicable setback limits, whichever is greater;

    g. A drawing ~~created to a scale~~ that provides the complete property boundary lines. ~~If the property is too large to adequately indicate and label the profile test pits and percolation test holes, a detail of the portion of the site containing the soil profile test pits and percolation test holes must be submitted.~~ The minimum drawing size is 8.5-inches by 11-inches. If the property is too large to adequately show site evaluation information, a detailed drawing that includes the information required from the site and soil evaluation that will impact the location of the OWTS must be submitted. Drawings must indicate dimensions, have a north arrow and graphic scale, and include:

        (1) Fixed, non-degradable temporary or permanent benchmark, horizontal, and vertical reference points of the proposed soil treatment area; soil observations; percolation testing results and pertinent distances from the proposed OWTS to all required setbacks, lot improvements, and easements; ordinary high water mark of a pond, creek, stream, lake, wetland or other surface waters, and detention or retention ponds; and property lines;

        (2) Contours or slope direction and percent slope. However, on difficult OWTS installation sites, EPCPH may require spot elevations in the area of the proposed OWTS as well as an area extending a minimum of 25’ beyond any proposed excavation.

        (3) The location of any visible or known unsuitable, disturbed, or compacted soils;

        (4) The estimated depth of periodically saturated soils and bedrock, or flood elevation, if applicable; and

(5) The proposed elevation of the infiltrative surface of the soil treatment area from an established datum (either ground surface or a benchmark);

h. Anticipated construction-related issues, if applicable;

i. An assessment of how known or reasonably foreseeable land use changes are expected to affect the system performance, including, but not limited to, changes in drainage patterns, increased impervious surfaces, and proximity of new water supply wells, if applicable; and

j. A narrative explaining difficulties encountered during the site evaluation, including but not limited to identifying and interpreting soil and landform features and how the difficulties were resolved, if applicable.

G. Design Document

1. The report and site plan may be attached to the design document or ~~the report and site plan may be~~ combined with the design information as a single document.

2. The design document must include a brief description of the facility and its proposed use, basis and calculations of design flow, and influent strength.

3. The design document must contain all plan details necessary for permitting, installation, and maintenance, including:

a. Assumptions and calculations for each component, including dose volume, total dynamic head (TDH), ~~and~~ gallons per minute (GPM) and associated pump curve for all dosing systems;

b. A fixed, non-degradable temporary or permanent benchmark, (North America Vertical Datum or assumed elevation is acceptable);

c. A scale drawing showing location of each OWTS component and distances to water supplies, surface water, easements, physical and health impact features on both the subject and adjacent properties requiring setbacks;

~~d. The proposed elevation of the infiltrative surface of the soil treatment area, the septic tank inlet invert, as well as other system components shall be provided from an established benchmark on sites that EPCPH determines such information is necessary for approval of the design and the permit.~~

e. Layout of soil treatment area, dimensions of trenches or beds, distribution method and equipment, distribution boxes, drop boxes, valves, or other components used;

f. Contours or slope direction and percent slope for the area of the OWTS;

g. Elevation or depth of infiltrative surface of the soil treatment area, the septic tank invert, and all other components of the OWTS. For sites with minimal elevation change, providing the depth of components from grade is acceptable. However, where the site has noticeable elevation changes, it is the expectation that the proposed elevations of all components relative to a site benchmark be provided.

(1) Cross-section of the installation depth from grade to the infiltrative surface is required for all submissions.

h. Special structural design considerations, as applicable, to ensure the long-term integrity of each component;

i. References to design manuals or other technical materials used;

j. Installation procedures, as applicable;

k. Operation and maintenance manuals or instructions; and

l. Other information that may be useful such as photos and cross-section drawings.

H. Site protection: Prior to and during construction, the proposed soil treatment area and replacement area, if any, must be protected from disturbance, compaction, or other damage by means of staking, fencing, posting, or other effective methods.

~~I. Qualifications for a Competent Technician~~

~~1. Percolation Tests~~

~~a. Competencies needed:~~

~~(1) Set up equipment;~~

~~(2) Perform and run percolation tests according to the procedures identified in section 8.5.D.4 of in this regulation; and~~

~~(3) Record results and calculate percolation rates.~~

~~b. EPCPH may approve require training for percolation testing.~~

~~2. Visual and Tactile Evaluation of Soil~~

~~a. Competencies needed:~~

~~(1) Identify soil types by hand texturing and observation;~~

~~(2) Identify presence or absence of soil structure;~~

~~(3) Identify type and grade of soil structure;~~

~~(4) Identify soil consistence/cementation;~~

~~(5) Recognize evidence of highest seasonal water surface;~~

~~(6) Identify limiting layers, restrictive layers, and groundwater conditions; and interfaces that will interfere with effluent movement.~~

~~(7) Determine the most promising appropriate depth for infiltrative surface of OWTS, soil profile test pits, and percolation tests, if used; and~~

~~(8) Understand basic principles of OWTS siting and design.~~

~~b. Possible demonstrations of competence in visual and tactile evaluation of soil as approved by EPCPH:~~

~~(1) Degree in soil science, agronomy, geology, other majors if a courses in soil morphology was included; or~~

~~(2) Attendance at training or workshop for soil evaluation for OWTS including both class and field work.~~

~~i. If the training or workshop includes an exam to verify acceptable completion of the course, a passing grade on the exam must be attained.~~

~~c. EPCPH must approve training for visual and tactile evaluation of soil.~~

8.6 Wastewater Flow and Strength

A. Wastewater Flows

1. EPCPH may require the installation of a meter to measure flow into the facility or the OWTS.

2. Single-Family Residential Homes:

a. Design flow per person must be at least 75 gallons per day (gpd).

b. EPCPH may only increase the wastewater design flow per person to 100 gpd on a case by case basis, where justified.

c. The minimum design flow for a new home must be for a two-bedroom house unless otherwise noted in this regulation. The minimum design flow for the repair or replacement of an OWTS of an existing one-bedroom home must, at a minimum, be for one bedroom unless bedrooms are added.

d. For homes up to and including three bedrooms, the assumed number of persons per bedroom is two for design purposes.

e. For homes with more than three bedrooms, the assumed number of persons is six persons (first three bedrooms x two persons per bedroom) plus one additional person for each bedroom more than three bedrooms.

f. EPCPH may increase the number of persons per bedroom to two for all bedrooms for design purposes.

g. Table 6-1 summarizes the design flows for single-family residential homes up to six bedrooms. EPCPH has authority to adjust these values as described in sections 8.6.A.2.b and 8.6.A.2.f.

h. If a new home has unfinished areas, EPCPH may increase the number of bedrooms used for the design of the OWTS by one or two bedrooms based on an assumption that 150 square feet of unfinished space can be converted into a bedroom.

i. EPCPH may increase the design flows per bedroom by 50 gpd. per additional bed where there are provisions for more than two occupants within a bedroom, such as bunk beds, etc. The intent of this section is to address short-term rental units and other similar uses.

j. Accessory Dwelling Units

(1) An “accessory dwelling unit” is considered a smaller, independent residential dwelling located on the same lot or parcel as a stand-alone single-family home.

(2) A new or expanded OWTS must be sized for the number of bedrooms proposed within the accessory dwelling unit.

Table 6-1: Single-Family Residential Design Flows

# Bedrooms	Occupancy (# of Persons)	Wastewater Flow Per Person (gallons/day)	Design Flow (gallons/day)
2	4	75	300
3	6	75	450
4	7	75	525
5	8	75	600
6	9	75	675

1. Auxiliary Buildings

a. If a single-family home has an auxiliary building, such as a non-commercial shop with plumbing fixtures, the flow may be conveyed to the OWTS of the home or to a separate OWTS constructed to handle the flow from the auxiliary facility.

b. If the flow from the auxiliary building is only generated by residents of the home, it will be assumed that the OWTS for the home will be adequately sized to include the auxiliary building if the flows are combined.

c. If the auxiliary building will have users in addition to residents, and the flow from the auxiliary building will flow to the OWTS of the home, the design flow of the home must include the increased use of each fixture proposed.

(1) If the auxiliary building includes a complete housekeeping unit – with a separate entrance, kitchen, sleeping area, and full bathroom facilities – and is an attached or detached extension of an existing single-family dwelling, the design flow of the structure must follow the design requirements for a multifamily dwelling system when proposed for connection to a single OWTS.

d. If the auxiliary building has a separate OWTS, the system ~~facility~~ must be sized on the basis of Table 6-2 and a septic tank detention time of 48 hours.

2. Multi-Family and Commercial On-site Wastewater Treatment Systems

a. Design flow values and strengths for multi-family and commercial systems must be determined from:

(1) Table 6-2; or

(2) An analysis of peak flows and strengths from at least three comparable facilities or from the facility itself, if it is an existing facility, must be submitted to EPCPH for approval. The analysis must include:

i. Metered water flows for inside use only for at least a year, or if use is seasonal, for a full season. If metered flows are less than full capacity, they must be paired with actual use in units of persons present or meals served or other units as appropriate so that an actual daily rate per unit can be determined. The daily rate per unit times the number of units at full occupancy will be the design flow.

ii. Total Suspended Solids and BOD_5 or $CBOD_5$ tests at times of full use. At least three samples taken at least one week apart are required. Sampling that provides equivalent and representative data through "composite sampling" may be allowed.

iii. Explanation and justification for the comparability of the tested facilities with the proposed facility.

(3) When a specific use is proposed which is not addressed within Table 6-2, and where flow data from similar facilities is not available, the design document must provide reference to an alternate regulatory or industry standard for OWTS from which ~~where~~ the proposed flow and water quality data was obtained. Estimates must include peak flows relative to full occupancy.

3. Flow Equalization

a. Flow equalization may be used if a facility has flows that vary from day to day by more than four times the average flow.

b. The highest peak assumed must be at least equal to the full capacity of the facility.

c. The stored flow must be distributed to the soil treatment area before the next greater-than-average peak.

d. Flow equalization may be used only if:

(1) The facility is non-residential;

(2) The facility is only used for one purpose;

(3) Flows will follow a predictable pattern; and

(4) There is a long-term expectation that size and pattern of the flows will remain the same.

e. Timed dosed pressure distribution or timed dosed NDDS must be used. The soil treatment area reduction for pressure distribution (Table 10-2) must not be used in addition to the flow equalization reduction.

f. Contingency plans must be ~~made~~ specified for expanding the capacity of the OWTS in the event of changed use at the facility.

TABLE 6-2: For Design Purposes, the Estimated Daily Wastewater Flow and BOD $_5$ Load is "Per Person" Unless Otherwise Noted[5]

Residential Wastewater	**GPD**	**BOD $_5$ IN POUNDS PER DAY**
Single-family dwellings, Accessory dwelling units	75	.20
~~OR~~ **Auxiliary buildings by fixture type**	**GPD**	**BOD $_5$ IN POUNDS PER DAY**
Bath/Shower	14.7	.014
Dishwasher	1.8	.002
Kitchen sink with garbage grinder	5.8	.052
Laundry washer	19.5	.037
Lavatory	8.4	.021
Water closet (toilet)	24.8	.029
Residential, Other	**GPD**	**BOD $_5$ IN POUNDS PER DAY**
Hotels and motels per room	75	.15
Multiple-family dwellings or apartments	75	.20
Boarding and rooming houses (users absent during working hours)	50	.15
Tiny Homes[3], per unit	150	.40
Mobile home	75	.20
Mobile home park per space	300	.80
Vacation home rental; per additional bed space provided; in addition to the 150 gal./bedroom[4]	50	.20
COMMERCIAL WASTEWATER	**GPD**	**BOD $_5$ IN POUNDS PER DAY**
Day use, or ~~Facilities with short term~~ or T~~t~~ransient Facilities Examples: Airports or bus stations per passenger; fairgrounds per person attending; ball parks, race tracks, stadiums, theaters or auditoriums per seat	5	.02
Airport per employee	10	.06
Banquet halls per seat with food preparation, per event	7.5	.06
Banquet halls per seat, no food preparation, per event	5	.02

Barber and beauty shops per chair	100	.70[1]
Bowling alleys per lane - toilet wastes only	5	.03[1]
Convenience Stores with self-serve beverages	See footnote 7	See footnote 7
Country club per member	30	.02
County club per employee	20	.06
Dentist offices per non-wet chair	50	.14[1]
Doctor offices per doctor	250	.80[1]
Farm workers, factories and plants, exclusive of industrial wastewater per employee per eight-hour shift – no showers	20	.05
Farm workers, factories and plants, exclusive of industrial wastewater per employee per eight-hour shift - showers provided	35	.08
~~Kennels per dog~~	~~30~~	~~.20~~
Laundries, self-service per commercial washer	400	.75
Office buildings per employee per eight-hour shift	15	.06
Service stations per toilet fixture	250	.50[1]
Stores and shopping centers per square foot of retail space	.1	.01[1]
Work or construction camps semi-permanent with flush toilets	50	.17
Work or construction camps semi-permanent without flush toilets	35	.02
FOOD SERVICE ESTABLISHMENT	**GPD**	**BOD $_5$ IN POUNDS PER DAY**
Coffee shop per customer	3.5	.50[1,8]
Restaurant open 1 or 2 meals per seat	50	.06/meal
24-hour restaurant per seat	75	.07/meal served
Restaurant with paper service only per seat	25	.01/meal served
Additional for bars and cocktail lounges per seat	30	.02
Drive-in restaurant per car space	50	.02
INSTITUTIONAL WASTEWATER WITHOUT KITCHENS UNLESS OTHERWISE NOTED	**GPD**	**BOD $_5$ IN POUNDS PER DAY**

Churches per seat; without any food service, or other uses	3.5	.01
Churches, per seat; warming kitchen only, no major food service	5	.01
Churches, per seat; with food service, per meal served[4]	7.5 4	.02
Hospitals per bed space	250	.20
Nursing homes; Group homes for developmentally disabled, per bed space	125	.20
Schools, Boarding per person	100	.17
Schools, Day without cafeteria, gym or showers	15	.04
Schools, Day with cafeterias, no gym or showers	20	.08
Schools, Day with cafeterias, gym and showers	25	.10
Schools, Day additional for school workers	15	.06
RECREATIONAL AND SEASONAL WASTEWATER USE	**GPD**	**BOD $_5$ IN POUNDS PER DAY**
Camps, day, no meals served	15	.12
Children's camp, overnight with meals and showers	50	.12
Luxury resort[6]	125	.17
Resort night and day	50	.12
Campground per campsite[2]	50	.12
Public park flush toilet per fixture per hour when park is open	36	.04 lbs./ fixture
Public park urinal per fixture per hour when park is open	10	.01 lbs./fixture
Public park shower per fixture per hour when park is open	100	.10 lbs./ fixture
Public park faucet per fixture per hour when park is open	15	.04 lbs./ fixture
Swimming pools and bathhouses	10	.06
Travel trailer parks with individual water and sewage hookup per unit [2]	100	.24
Travel trailer park without individual water and sewage hookup per unit [2]	50	.12

1. BOD levels ~~and~~ may require further verification depending on the specific use of the facility.

2. Laundry facilities are to be calculated on a per commercial washer basis in accordance with other elements of this table.

3. For ~~the purposes of this Table,~~ a "Tiny home," the OWTS may be sized as a one-bedroom home. ~~Is a structure (a non-recreational vehicle) that has only one bedroom and has <400 sq.ft. of livable space, including lofts. In this instance, the OWTS may be sized for only one bedroom.~~

4. As stated in section 43.6.A.2.i, EPCPH may increase the "per bedroom" design flows for vacation home rentals relative to the expected maximum occupancy of the home. These flows are in addition to the 150 gal./bedroom requirement. ~~For churches with food service, the 4 gal/meal must be added to the 3.5 gal/seat to determine projected design flows.~~

5. Note that discharges from non-domestic sources such as process waste, industrial waste, microbreweries, dog kennels, veterinary clinics, horse barns, etc. are not addressed in this regulation. Such discharges must obtain permitting as a Class V Injection Well through the EPA, as appropriate.

6. A "Luxury Resort" will typically include a spa, restaurant/bar, pool, etc.

7. Wastewater from convenience stores will likely meet the requirements of high strength waste. Studies indicate that BOD5 effluent levels will range between 500 – 1500 mg/l. The exact levels will depend on products available (i.e.: coffee, soda, etc.), number of patrons, and how often the excess from each product is disposed. Flows from each facility can also vary substantially depending on location and the size of the store. Locations adjacent to freeways could have significantly more flow than a site located in a residential area. Thus ~~Subsequently~~, the design engineer must provide data from similar facilities in order to afford an estimation of projected peak daily flows.

8. Wastewater from coffee shops will likely meet the requirements of high strength waste. Studies indicate that BOD5 effluent levels may exceed 500 mg/l. The exact levels will depend on the drink options (i.e.: latte, espresso, etc.), number of patrons, and how often the excess from each product is disposed. Flows from each facility can also vary substantially depending on location and the size of the store. Thus ~~Subsequently~~, the design engineer must provide data from similar facilities in order to afford an estimation of projected peak daily flows.

B. Wastewater Strength

1. Table 6-3 includes levels of treatment that can be achieved by various OWTS components, excluding the soil treatment area. Systems qualifying for these treatment levels except TL1 produced by a septic tank alone must be approved by CDPHE under section 8.13. of ~~this~~ Regulation 43. ~~If soil treatment area or vertical separation distance reductions are permitted, EPCPH must have a maintenance oversight program under section 8.14.D. in place.~~

2. High strength waste must be reduced to at least Treatment Level TL1 quality or lower before applying to a soil treatment area. Waste strength levels defined in Tables 6-3 and 6-4 must be used to determine compliance.

Table 6-3 Treatment Levels[6]

Treatment Level	BOD5 (mg/L)	CBOD5[1] (mg/L)	TSS (mg/L)	Total Nitrogen (mg/L)	Fecal Coliform[5]
TL1[2]	180	-	80	60-80	-
TL2	-	25	30	N/A[3]	-

TL2N	-	25	30	>50% reduction[4]	-
TL3	-	10	10	4N/A[3]	-
TL3N	-	10	10	20 ~~mg/L~~	-
TL3ND	-	10	10	20	≤200 per 100 mL.

Shading indicates higher treatment levels.

1. Requirements for $CBOD_5$ are only related to effluent samples from a higher-level treatment system.

2. Domestic septic tank effluent prior to soil treatment or higher-level treatment has a wide range of concentrations. These values are typical, but values used for design must account for site-specific information.

3. Total Nitrogen does not apply to Treatment Levels TL2 and TL3. Processes intended to reduce total nitrogen are addressed in Treatment Levels TL2N and TL3N. Any total nitrogen reductions that may be observed for TL2 and TL3 are as a result of the treatment process for BOD_5 and TSS reductions.

4. NSF/ANSI Standard 245 – Wastewater Treatment Systems – Nitrogen Reduction requires reduction of 50 percent rather than an absolute value. TL3ND requires effluent to be treated to TL3N standards prior to disinfection. The disinfection must meet the requirements of section 43.12.H.

5. With the exception of fecal coliform, treatment level requirements are based on values obtained from composite sampling.

Table 6-4 High Strength Wastewater*

	BOD_5 (mg/L)	**TSS (mg/L)**	**Fats, Oils, Grease (FOG) (mg/L)**
Septic Tank Influent	>300	>200	>50
Septic Tank Effluent	>180	>80	>25

* High strength wastewater ~~effluent~~ prior to a septic tank has a wide range of concentrations. These values are typical, but values used for design purposes must account for site-specific information.

8.7 Minimum Distances between Components of an On-site Wastewater Treatment System and Physical Features

A. Horizontal distances from the various components of a system to pertinent physical ~~terrain~~ features, including streams, lakes, water courses, springs, wetlands, wells, subsurface drains, cisterns, water lines, suction lines, dry gulches, cut banks, dwellings, other occupied buildings, and property lines, must be in accordance with Table 7-1. The setback requirements are applicable for minimum system performance and treatment levels with specific modifications allowed for higher treatment levels as provided in Table 7-2. All distance setback modifications must be analyzed and approved by EPCPH and be in complete compliance with the variance or administrative procedures identified within ~~of~~ these regulations ~~and those of the EPCBoH~~. Acceptable methods of analyzing horizontal separation distances with higher treatment levels include but are not limited to:

1. Analyzing the intended uses of impacted surface and/or ground waters;

2. Contacting adjacent property owners for potential conflicts with property line encroachments; and

3. Analyzing potential impacts that system locations may have on building foundations and other potentially affected features.

B. Reductions in separation distances with higher level treatment must include provisions for operation and maintenance for the life of the system, as described in section 8.14.

C. Dry Gulches, Cut Banks and Fill Areas

1. Separation distances to dry gulches, cut banks, and fill areas in Table 7-1 must apply unless the designer or design engineer determines by observation of the exposed slope of the dry gulch or cut bank or by soil profile test pit excavations that a limiting layer is present that will direct or allow the effluent from the soil treatment area to move laterally and surface. In this instance, a greater distance may be required.

2. A lesser distance may be used if it can be demonstrated by a professional engineer or professional geologist that the use of a barrier, such as a minimum 30 mil PVC liner placed between the soil treatment area and the slope of the dry gulch, cut bank, or fill area, will prevent effluent surfacing laterally.

3. The separation distance between a component and the crest of a dry gulch or cut bank will be evaluated for potential erosion or slope instability if the component and the slope are in ~~too~~ close proximity ~~together~~. If there is potential for erosion or instability, the separation distance must be increased until the risk is minimized.

D. Components of an OWTS listed in Table 7-1 ~~shall~~ must be installed or located in accordance with the minimum distance requirements provided in the table or such increased distances provided by these ~~EPCBoH~~ regulations, unless otherwise noted below:

1. ~~EPCBoH~~ EPCPH may ~~choose to~~ allow the installation of an OWTS at a reduced property line setback in accordance with the following criteria:

a. If a property can accommodate the installation of an OWTS no closer than the required minimum 10-foot property line setback, it must do so. If the proposal complies with the requirements of this section and is deemed acceptable by EPCPH, EPCPH may administratively allow a reduction to the setback.

b. The property line setback must not be reduced to any less than 3 ft., unless a variance by the EPCBoH ~~Board of Health~~ is granted ~~provided~~.

c. The property line setback encroachment must be proposed at the time of permit application and must include the following information:

(1) A statement from the applicant and/or designing engineer providing the reason for the reduced property line setback request.

(2) The applicant must demonstrate that the ~~allowance of~~ encroachment of the property line setback will not inhibit the development of surrounding properties (i.e. by allowing the encroachment ~~of the property line setback~~, a neighboring property would not be able to meet the minimum setback requirement between the subject OWTS and a proposed adjacent well).

(3) The applicant must demonstrate that all activities associated with the installation of the proposed OWTS will not encroach on a neighboring property or provide written permission from the adjacent owner or property manager of said property allowing the

encroachment of machinery or excavated materials in order to install the proposed OWTS.

(4) The proposed OWTS must comply with all other required setbacks noted in Table 7-1. EPCPH approval of the encroachment must only be for the referenced property line setback.

(5) The applicant must submit a survey of the property lines that the proposed setback encroachment will impact. The survey must include:

i. A survey completed by a ~~Colorado registered professional~~ land surveyor licensed in accordance with section 12-120-301 *et seq*., C.R.S.

ii. A legal description and drawing of the subject property. Said drawing must also include the location of the proposed OWTS and onsite and adjacent wells.

iii. The surveyor must clearly mark the surveyed property lines in a manner that is clearly defined and will not degrade over time due to exposure to the elements. The markings must remain in place until after system construction and final approval by EPCPH.

d. Prohibitions

(1) Approval for encroachment of a property line setback will not be provided after installation of the OWTS. Any postconstruction reduction requires a variance by the Board of Health.

(2) A reduction in the setback to a property line may only be granted where a minimum separation of six feet between soil treatment areas on all adjacent properties is provided.

(3) The size of the soil treatment area must comply with section 8.10. C.

E. Table 7-2 provides the required site evaluation, design, and treatment level considerations necessary to evaluate the site and to design and locate the soil treatment area component of an OWTS.

1. Items 1, 2 and 3 in Table 7-2 address the allowable horizontal setback distance between the soil treatment area and the following physical features:

a. Setback distance from soil treatment area to on-site well (Item 1);

b. Setback distance from soil treatment area to water features (Item 2); and

c. Setback distance from soil treatment area to a dry gulch or cut bank (Item 3).

2. Item 4 in Table 7-2 addresses the required vertical separation distance between the infiltrative surface of the soil treatment area and the limiting layer, or the required depth of soil comprising the soil treatment area.

3. The designer may select the level of treatment from Table 7-2 to be applied to the soil treatment area that is necessary in order to accommodate the site conditions, if higher level treatment for that purpose is permitted by the EPCPH.

Table 7-1 Minimum Horizontal Distances in Feet between Components of an Onsite Wastewater Treatment System ~~Installed After November 15, 1973~~and Water, Physical and Health Impact Features[7, 10]

	Spring, Well,[1, 9] Suction Line, Underground Potable Water Supply Cistern[4]	Potable Water Supply Line[2]	Structure w/basement, crawl space or footing drains	Structure without basement, crawl space or footing drains	Property Lines[11], ~~piped or lined irrigation ditch~~ upslope curtain drain	Subsurface Drain, Intermittent Agricultural Irrigation Lateral[7], Lined Pond or Irrigation Channel, Drywell, Storm Sewer, Stormwater Structure	Surface Water, Lake, Watercourse, Open Irrigation ~~Ditch~~ Channel[7], Stream, Wetland	Dry Gulch, Cut Bank, Fill Area (from Crest), In ground pools	Septic Tank, Higher level treatment Unit, Dosing Tank, Vault or Privy
Septic Tank, Higher Level Treatment Unit, Dosing Tank, Effluent pipe[2] Vault or Vault Privy	50 [2]	10 [2]	5	5	10	10	50	10	--
Building Sewer ~~or effluent lines~~	50 [2]	5 [6]	0	0	10 [2]	10 [2]	50 [2]	10 [2]	--
STA Trench, STA Bed, Unlined Sand Filter, Sub-surface Dispersal System, Seepage Pit	100 [3]	25 [2]	20	10	10	25	50 [3]	25	5
Lined Sand Filter	60	10 [2]	15	10	10	10	25	10	5
Lined Evapotranspiration Field or Outside of Berm of Lined Wastewater Pond	60	10 [2]	15	15	10	10	25	10	5

Open Unlined Sand Filter in Soil with a Percolation Rate Slower than 60 Minutes per Inch, Unlined ~~or partially lined~~Evapotranspiration System, Outside of Berm of Unlined Wastewater Pond, or System Not Relying on STA for Treatment Other than Aerosol	100	25 [2]	~~15~~20	10~~5~~	10	25	25	15	10
Slit Trench Latrine Pit Privy	100	50 [2]	25	25	25	25	100	25	N/A
System Not Relying on STA for Dispersal	100 [3]	10 [2]	125	25[5]	10	0	25 [3]	10	10

NOTE: The minimum distances shown above must be maintained between the OWTS components and the features described. Where soil, geological or other conditions warrant, greater distances may be required by the EPCBoH or by the Water Quality Control Commission pursuant to section 25-8-206, C.R.S. and applicable regulations. For repair or upgrading of existing OWTS where the size of lot precludes adherence to these distances, a repaired OWTS must not be closer to setback features than the existing OWTS, as reviewed and approved by EPCPH. ~~Components that are not watertight should extend into areas of the root system of nearby trees.~~

1. Includes potable wells, irrigation wells, and monitoring wells set within a potable aquifer and infiltration galleries permitted as wells by the Division of Water Resources. All horizontal setbacks to a potable water supply must be met unless a variance by the Board of Examiners of Water Well Construction and Pump Installation Contractors is granted per section 18.2 of the Water Well Construction Rules, 2 CCR 402-2, (Division of Water Resources). Setback requirements which may necessitate a variance are found within section.10.2 or 11.4 of the Water Well Construction Rules, as applicable. The minimum horizontal setback that may be granted for new construction through a variance is to 75 feet and must meet the requirements of Table 7-2 of this regulation. Setbacks for existing wells must comply with requirements of section 43.10.I.2.

2. Crossings or encroachments may be permitted at the points as noted above provided that the potable water or wastewater conveyance pipe is encased for the minimum setback distance on each side of the crossing. A length of pipe with a minimum Schedule 40 rating [ASTM Standard D3034-24 (2024 version)] of sufficient diameter to easily slide over and completely encase the conveyance must be used. Rigid end caps of at least Schedule 40 rating [ASTM Standard D3034-24 (2024 version)] must be glued or secured in a watertight fashion to the ends of the encasement pipe. A hole of sufficient size to accommodate the pipe must be drilled in the lowest section of the rigid cap so that the conveyance pipe rests on the bottom of the encasement pipe. The area in which the pipe passes through the end caps must be sealed with an approved underground sealant compatible with the piping used. Piping of equal or higher strength also be used. Other methods of ~~encasement~~ separation between the potable water pipe and a component of the OWTS that provide equal protection are allowed. These may include, but are not limited to, concrete or controlled flowable fill encasement extending no less than 10 feet each side of the crossing or an impermeable geo-membrane curtain extending at least two feet below the potable water pipe and no less than 10 feet each side of the crossing.~~that provide equal protection are allowed.~~ These methods must be reviewed and approved by EPCPH.

3. Add eight feet additional distance for each 100 gallons per day of design flows between 1,000 and 2,000 gallons per day, unless it can be demonstrated by a professional engineer or geologist by a hydrologic analysis or the use of a barrier, consisting of a minimum 30 mil PVC liner or equivalent, that contamination will be minimized. If effluent meets Treatment Level 3N ~~and EPCPH has a maintenance oversight program in accordance with section 14.D. of this regulation~~, the distance addition is not required. ~~Flows greater than 2,000 gallons per day must be hydrologically analyzed for flow, velocity, hydraulic head, and other pertinent characteristics as means of estimating distances required to minimize~~

4. All horizontal setbacks to an underground potable water supply cistern must be met unless a variance by the Board of Examiners of Water Well Construction and Pump Installation Contractors is granted per section 18.2. Setback requirements which may necessitate a variance are found within section.10.2 or 11.4 of the Water Well Construction Rules, as applicable. The minimum horizontal setback that may be granted through a variance is to 25 feet. Noted setbacks are not required to above ground cisterns.

5. If the structure is not used as a habitable unit, the isolation may be reduced by the EPCBoH to no less than 50 feet.

6. Building sewer installations shall meet the design requirements of the Colorado Plumbing Code.

7. Where ditch companies have a specific right of easement for "reasonable and necessary use to access, operate, and maintain ditches," all OWTS components must maintain a minimum of 25' setback from the crest of the ditch/channel.

8. Sites with multiple OWTS on a single property where the total flows are > 2,000 gpd must meet the increased required setbacks as provided in WQSA-6 (Policy 6).

9. Per 2 CCR 402-10 (6.4.2), Geothermal wells shall be located at least 100 feet to the nearest source or potential source of contamination, unless a variance has been obtained from the state engineer.

10. Setback from a utility easement: While a specific setback for components of an OWTS to a utility easement is not specifically identified, the intent of the regulation is provided herein. The setback from utility easements is dependent on whether the utility is above or below ground. For above ground utilities, components of an OWTS must not be installed in areas where construction or maintenance vehicles may be required to travel in order to gain access to the utility. For utilities installed below grade, the objective is to setback the utility far enough away from the soil treatment area so that sewage will not seep into a utility trench excavation. The setback is also necessary to prevent construction or maintenance vehicles from driving on any component of an OWTS. Where remote properties have a blanket utility easement, the owner/operator of the OWTS will be responsible for providing signage or physical barriers as needed to reduce the risk of vehicular traffic or other disturbance to the OWTS. In all instances, a five-foot setback will typically address most concerns.

11. In specific circumstances, EPCPH may allow for a reduced setback from a property line to the OWTS; per the requirements of section 43.7.D.1.

Table 7-2: Minimum Separation Distance Requirements in Feet from Soil Treatment Area, Relative to Treatment Level Provided[3] ~~On-sire Wastewaer Treatment System Design Consideration and Treatment Requirements – Separation Distances from Soil Treatment Area~~

			~~Pressure Dosing Required~~	~~Pressure Dosing Required~~	~~Pressure Dosing Required~~	
ITEM	**OWTS DESIGN CONSIDERATION**	**Treatment Levels 1 and 2**	**Treatment Level 2N[4]**	**Treatment Level 3[4]**	**Treatment Level 3N[4]**	**Treatment Level 3ND**
	Horizontal Separation Distances					
1	Distance from soil treatment area to on-site wells[5]	~~Greater than or equal to~~ 100	~~Greater than or equal to~~ 100	~~Greater than or equal to~~ 100	~~Greater than or equal to~~ 100[1]	100
2	Distance from effluent pipe & soil treatment area to pond, creek, lake, or other surface water feature	~~Greater than or equal to~~ 50	~~Greater than or equal to~~ 25	~~Greater than or equal to~~ 25	~~Greater than or equal to~~ 25	25
3	Distance from soil treatment area to dry gulch or cut bank	~~Greater than or equal to~~ 25	~~Greater than or equal to~~ 10	~~Greater than or equal to~~ 10	~~Greater than or equal to~~ 10	10

	Vertical Separation Distances					
4A	Treatment depth in feet from infiltrative surface to a limiting layer or groundwater condition	4 feet[2] (3 feet with pressure dosing)	~~Greater than or equal to~~ 2.5	~~Greater than or equal to~~ 2.5	~~Greater than or equal to~~ 2.5	1
4B	Treatment depth in feet from infiltrative surface to a limiting layer or groundwater condition with the inclusion of an unlined sand filter	3 (TL1) 2.5 (TL2)	2.5	2	2	1

NOTE: Treatment levels are defined in Table 6-3. ~~Reductions in separation distances with higher level treatment may be granted only if EPCPH regulations have included provisions for operation and maintenance.~~

1. All setback distance reductions to the 100-foot requirement for wells and soil treatment areas must be in full compliance with the minimum standards and variance requirements of the State of Colorado Division of Water Resources: Rules and Regulations for Water Well Construction, Pump Installation, Cistern Installation, and Monitoring and Observation Hole/Well Construction. For TL3N and TL3ND effluent, a reduction to 75 feet is allowed if a variance from the Water Well Construction Regulations is obtained. Note that the Division of Water Resources does not address inquiries for existing wells. ~~Local agencies must~~ EPCPH will follow the same review principles as provided within the Division's guidance document, "Variances for water wells," March 2019.

2. Reductions in the vertical separation requirements for the use of higher-level treatment systems with seepage pits are not allowed. The bottom of the excavation of a seepage pit must be a minimum of four feet above a limiting layer.

3. Refers to the quality of effluent applied to the distribution media.

4. Pressure dosing is required for all TL2N, TL3, TL3N, and TL3ND systems.

5. Includes potable wells, irrigation wells, and monitoring wells set within a potable aquifer and infiltration galleries permitted as wells by the Division of Water Resources.

8.8 Design Criteria – General

A. The OWTS for single-family homes shall be designed to accommodate the proposed flows from the structure as defined in 8.6.A.2. Flow estimates for multi-family or commercial OWTS must comply with 8.6.A.4. Expected waste strength as noted in Table 6-3 and Table 6-4 must also be addressed where applicable. Installation of low flow fixtures or the separation of toilet waste or other sources of wastewater does not allow for the reduction in the size of an OWTS, except as provided in section 43.12.E.

B. OWTS shall be designed and constructed to achieve the treatment level specified by the design.

C. OWTS must be designed and constructed such that each component shall function, when installed and operated, in a manner not adversely affected by normal operating conditions including erosion, corrosion, vibration, shock, climatic conditions, and usual household chemicals. Each component must be free of non-functional protrusions, sharp edges, or other hazards which could cause injury to persons, animals, or properties. Design must be such as to exclude flies and rodents and other vectors and to prevent the creation of nuisances and public health hazards and must provide for efficient operation and maintenance.

1. Spray-type foams that harden are not acceptable as a sealant for OWTS components.

D. Accessibility for Inspection, Maintenance, and Servicing

1. Septic tanks must have watertight risers over each access manhole. ~~and a~~All risers must be a minimum of 20 inches inside diameter and extend to or above final grade, unless otherwise specified in these regulations. ~~Or above final grade~~

2. For new construction, the top of any septic tank, dosing tank, or vault must be no deeper than four feet below finished grade unless otherwise approved by EPCPH.

3. Each treatment component of an OWTS other than the septic tank and soil treatment area must be equipped with access manholes with risers that extend to or above final grade, located to permit periodic physical inspection, collection and testing of samples, and maintenance of all components and compartments.

4. Riser Lids

    a. Each riser lid must be watertight, brought to or above the surface, and must have a secure closing mechanism such as a lock, special headed bolts or screws, or sufficient weight (defined as 59 pounds) to prevent unauthorized access.

    b. ~~EPCPH may require a secondary plug, cap, cover, or screen be provided below the riser cover to prevent tank entry if the cover is unknowingly damaged or removed.~~ Access risers for all new septic tanks, seepage pits, or vaults must include a structurally sound interior grate or other similar secondary safety feature, securely installed below the tank or riser lid to prevent persons, pets, or wildlife from falling into the tank.

    c. Secondary safety features must be installed within 12” of the tank or riser lid.

5. Components that require access for maintenance must be accessible from the ground surface. This includes but is be limited to ~~submerged bearings, moving parts,~~ pumps, siphons, valves, ~~tubes, intakes, slots~~ distribution boxes, drop boxes, cleanouts, effluent ~~screens~~ filters, inlet and outlet baffles, aerators, treatment equipment and other devices.

6. Components must be designed and constructed so that, when installed, they can ~~must~~ be easily maintained, sampled, and serviced according to the manufacturer’s recommendations. Easy physical access to treatment components by maintenance personnel and equipment must be provided.

E. Plumbing Codes: Plumbing fixtures, building sewers, vents, sewer lines, and other appurtenances must be designed, operated, and maintained so as to comply with the minimum requirements of the most recently revised locally enforceable plumbing code. In the absence of a local plumbing code, designs must adhere to the Colorado Plumbing Code (3 CCR 720-1). A local plumbing permit may be required.

F. Electrical Equipment, If Used

1. All electrical work, equipment, and material must comply with the requirements of the currently applicable National Electrical Code as designated by the State Electrical Board Rules and Regulations (3 CCR 710-1). An electrical permit may be required.

2. Electrical components must be protected from moisture and corrosive gases.

G. Indicators of Failure or Malfunctioning for Systems Utilizing Mechanical Apparatus: A signal device must be installed which will provide a recognizable indication or warning to the user that the system or component is not operating as intended. This indication or warning must be both a visual signal and an audible signal and be located in a centralized area within visual and audible range of the system user. A signal or message may also be sent remotely to a maintenance provider.

H. Sampling Access

1. If sampling for testing or as a requirement for a permit will be required of effluent from a component other than the soil treatment area, an accessible sampling point must be provided.

2. If sampling of the treated wastewater from the soil treatment area will be required for testing or as a requirement for a permit, a monitoring well or wells must be constructed. Monitoring wells must be located down gradient from the soil treatment area, accessible, and provided with a properly securable cover at or above the ground surface. Monitoring wells up gradient of the system may also be required. Lysimeters or other collection devices under the soil treatment area may be used instead of a monitoring well if approved by EPCPH.

I. Component Operating Instructions

~~1. The manufacturer of proprietary treatment units utilizing mechanical components must provide clear, concise written instructions covering the components which, when followed, must assure proper installation and safe and satisfactory operation and maintenance.~~

2. If the OWTS uses public domain technology, the design engineer must provide clear, concise written instructions covering the components which, when followed, ~~must~~ assure proper installation and safe and satisfactory operation and maintenance.

J. Surface Activity: Activity or use on the surface of the ground over any part of the OWTS must be restricted. The soil treatment area must not be subject to damage or soil compaction from livestock, vehicular traffic, recreational use, or other site development activity. Construction equipment not necessary to install the OWTS must be kept off the soil treatment area to prevent undesirable compaction of the soils. If compaction occurs, the disturbed or compacted soil must be re-evaluated and/or new soil evaluations performed. The system must be redesigned if the soil permeability has~~ve~~ changed.

K. Floodplains and Floodways

1. A new, expanded, modification or repair/replacement of an OWTS installed in a 100-year floodplain must meet or exceed the requirements of the Federal Emergency Management Agency and the El Paso County emergency agency. Additional requirements are provided below:

a. Must follow EPCPH Installation in Floodplain/Floodway Guidelines.

b. ~~OWTS installations in~~ Floodplain zones beginning with the letters “A” or “V” are considered high-risk areas. Systems installed in these areas must be designed by a professional engineer.

c. Repairs of an existing system must meet the requirements as feasible.

d. The system as approved by EPCPH must be designed to minimize or eliminate infiltration of floodwaters into the system and discharge from the system into the floodwaters. The OWTS must be located to avoid impairment to floodwaters or contamination from them during flooding.

2. A new or expanded or modification of an OWTS must not be installed in a floodway designated in a 100-year floodplain where a conforming OWTS outside the floodway can be installed. For any new OWTS or system repair that may affect the floodway delineation, appropriate procedures must be followed, including revision of the floodway designation if necessary.

a. Must follow EPCPH Installation in Floodplain/Floodway Guidelines.

b. Installations within a floodway require a professional engineer to certify that an OWTS cannot be installed outside of the floodway.

c. OWTS installations in a floodway must be designed by a professional engineer.

L. Business, Commercial, Industrial, Institutional, or Multi-Family Dwelling Wastewater Systems

1. An OWTS that will serve a business, commercial, industrial or institutional property, or a multifamily dwelling must:

a. Be designed by a professional engineer;

b. Receive only such biodegradable wastes for treatment and distribution as are compatible with those biological treatment processes ~~as~~that occur within the septic tank, any additional treatment unit and the soil treatment area. This does not include industrial, animal, or process waste; and

c. Receive authorization by rule or a class V underground injection permit from the United States Environmental Protection Agency (EPA) before an application for an OWTS permit is approved if the system may receive non-residential wastewater or is otherwise covered by the EPA underground injection control program. ~~Subsequent to~~ After acceptance by the EPA, EPCPH may choose to also issue a permit for this type of use.

8.9 Design Criteria - Components

A. Tanks and Vaults

1. Watertightness

a. Septic tanks, vaults, dosing tanks, other treatment components, risers, and lids must not allow infiltration of ground water or surface water and must not allow the release of wastewater or liquids through other than designed openings.

b. When the final compartment of a tank is being proposed for use as a pump or siphon chamber, the wall between this chamber and the previous chamber must be watertight except for the intended hydraulic opening.

c. Acceptable watertightness testing methods performed at a manufacturer's site or in the field include water filling the tank or vacuum testing.

2. Tank Installations

a. All tanks are to be installed level and placed on a uniform surface or bedding which does not contain rocks, roots, or other items that could create point loading on the tank.

(1) If imported bedding is needed, common options include a 5" depth of compacted pea gravel or similar material.

b. All tanks are required to be a minimum of ¾ bedded prior to installation inspection.

3. Tank Anchoring: In locations where ground water or floodwaters may cause instability problems to the septic tank, vault, or other treatment unit in the OWTS due to flotation, the tank, vault or unit must be anchored in a manner sufficient to provide stability when the tank is empty. Risers must be included in the buoyancy calculations.

a. If a manufacturer provides recommendations for anchoring designs, they may be used if they meet the conditions present at the site.

b. If a manufacturer does not provide recommendations ~~for provisions~~ to compensate for buoyancy, or if the professional engineer chooses to provide his/her own designs, the anchoring system design must be prepared by the professional engineer.

4. Identification and Data Marking: All tanks and treatment units must be permanently and legibly marked ~~in a location~~ for the purpose of inspection in a location that is readily visible when inspected before backfilling. The marking inscription must include the following:

a. Name of manufacturer;

b. Model or serial number, if available;

c. Effective volume and unit of measure;

d. Maximum depth of earth cover and external loads the tanks is designed to resist; and

e. Inlet and outlet identifications, if relevant.

B. Septic Tanks

~~1. The manufacturer must provide sufficient information to demonstrate that the tank will meet the design specifications.~~

2. Sizing Requirements:

a. Sizing residential capacity for new installations must be based upon the number of bedrooms according to Table 9-1:

Number of Bedrooms	Tank Capacity (gallons)
2 or 3	1,000
4	1,250
Each Additional	250

b. For multi-family and non-residential applications, a septic tank must be sized to permit detention of incoming wastewater design flows for a minimum of 48 hours.

c. For systems that remove toilet waste for separate treatment, tank capacity may be less than 1,000 gallons if it provides a minimum of 48 hours' detention time.

d. Minimum tank size for new installations other than for a single-family residence is 400 gallons.

e. Where a grinder pump is installed prior to the septic tank, the required tank volume must be increased by at least 500 gallons above the required volumes provided in Table 9-1.

f. If a proprietary aerobic treatment component is installed, the minimum septic tank (or trash tank) volume may be reduced to the volume as determined by the manufacturer. This volume will typically be provided on the CDPHE product acceptance document, which can be found on the CDPHE OWTS webpage.

3. Inspection and Testing of Septic Tank Watertightness

a. ~~Testing of septic tanks must be performed and evaluated as specified in section 9 of ASTM C1227-1322 (2022 version or earlier) (Standard Specification for Precast Septic Tanks) for concrete tanks or in Standard IAPMO/ANSI Z1000-2013 (2019 version) (American Standards for Prefabricated Septic Tanks) for other prefabricated septic tanks.~~

b. Each unit must be inspected in the field for conditions that may compromise its watertightness.

c. The inspection in the field must be conducted by EPCPH and be performed after the tank installation but before backfilling.

d. If the inspection in the field indicates that the tank may be damaged or is not watertight, the inspector may require that the tank be tested for watertightness by the tank manufacturer or the system contractor.

4. Septic Tank Design and Dimension Criteria

a. A septic tank must have two or more compartments, or more than one tank may be used in series, unless otherwise noted in these regulations. The first compartment of a two-compartment tank or the first tank in a series must hold no less than one-half of the required effective volume.

b. Inlet invert must be at least two inches higher than the outlet invert.

c. Inlet tee or baffle must extend above the surface of the liquid at least five inches and must extend a minimum of eight inches below the liquid surface. However, the inlet tee or baffle must not extend to a depth of more than 40 percent of the liquid depth measured from the liquid surface.

d. ~~All new septic tank installation must incorporate an effluent screen on the outlet of the tank.~~ Outlet tee or baffle must extend at least 5 inches above and 14 inches below the outlet invert; however, it must not extend to more than 40 percent of the liquid depth measured from the liquid surface. The outlet tee or baffle that accommodates

an effluent filter~~screen~~ must be located so that the effluent filter~~screen~~ has sufficient clearance to be removed through the access opening with an approved riser in place.

e. The distance from the outlet invert to the underside of the tank top must be at least 10 inches.

f. Liquid depth must be a minimum of 30 inches and the maximum depth must not exceed the tank length.

g. The transfer of liquid from the first compartment to the second or successive compartment must be made at a liquid depth of between 35 and 40 percent of the liquid depth measured from the liquid surface.

h. At least one access opening no less than 20 inches across must be provided in each compartment of a septic tank.

i. A septic tank must have a minimum of 25 square feet of liquid surface area and have at least a six-foot separation between inlets and outlets. Septic tanks in series, combined, must have a minimum of 25 square feet of liquid surface area and the sum of the distances between inlets and outlets of all tanks must be at least 6 feet. The requirements for liquid surface area and separation between inlet and outlet may be waived for tanks with less than 750-gallon effective volume.

j. Tanks proposed to be located below vehicular traffic areas must have the appropriate AASHTO rating H-20 or HS-20 ratings for such use.

5. Concrete Septic Tank Structural Design

a. Concrete septic tanks must comply with the structural design criteria of ASTM C1227-22 (2022 Version) (Standard Specification for Precast Septic Tanks).

b. The design for each tank model and size by each manufacturer must be certified by a professional engineer as complying with these design and structural requirements and the watertightness standard of this regulation.

c. Certification by a professional engineer must be submitted to the Divsion for acceptance.

d. Tank slab lids, mid-seam tanks, and the connections between the tank and risers must be designed to provide for a watertight seal.

6. Fiberglass, Fiberglass-Reinforced Polyester, and Plastic Tanks

a. All fiberglass, fiberglass-reinforced polyester, and plastic tanks must meet the minimum design and structural criteria of IAPMO/ANSI Z1000 (2019 Version) (American Standards for Prefabricated Septic Tanks) and be certified by a professional engineer as meeting these standards. The professional engineer certifying the criteria must be registered or licensed in the United States, but need not be registered in Colorado.

b. All tanks must be sold and delivered by the manufacturer or manufacturer's designated representative, preferably completely assembled. On-site tank assembly will be allowed on an as-needed basis.

c. Tanks must be structurally sound and support external forces as specified in the standard referenced above when empty and internal forces when full. Tanks must not

deform or creep resulting in deflection of more than five percent in shape as a result of loads imposed.

d. All tanks must be constructed of sound, durable materials and not be subject to excessive corrosion, decay, frost damage, or cracking.

e. All seams or connections including to risers must be sealed to be watertight.

7. Metal tanks are prohibited.

C. Abandonment of Tank

1. A tank may be completely removed and the parts disposed of safely.

2. If the tank will remain in place after abandonment:

a. The tank must be pumped to remove as much waste as possible;

b. The bottom of the tank must be broken so the tank neither floats nor fills with water;

c. The top must be collapsed and the sides may be broken into the void;

d. The remaining void must be filled with gravel, sand or compacted soil; and

e. The filled excavation must ~~will~~ be graded to surroundings, allowing for settling.

3. EPCPH may require abandonment of a tank that is deemed to be a hazard.

D. Pipe Standards and Bedding Requirements:

1. Pipe Standards:

a. All wastewater pipes used in portions of an OWTS that are pressurized must be constructed of compatible pipe, primer, bonding agent, and fittings. Flexible couplings to connect pipes may only be used in portions of an OWTS that are intended for gravity flow of the wastewater.

b. Where unperforated plastic pipe and fittings are used for gravity flow, the minimum wall thickness of the pipe must conform to ASTM Standard D 3034-21 (2021 Version) or equivalent or greater strength. Schedule 40 pipe is preferred.

c. Perforated distribution pipe surrounded by rock within a soil treatment area must have a minimum wall thickness and perforations conforming to ASTM Standard D 2729-21 (2021 Version) or equivalent or greater strength. Corrugated polyethylene pipe with a smooth interior that meets ASTM ~~F405~~667/F667M (2021 Version) or AASHTO M252-24 (2024 Version) specifications or equivalent may be used.

d. Schedule 40 [ASTM Standard D3034-24 (2024 Version)] or pipe of equivalent or greater strength must be used ~~for the placement of piping under driveways or roadways and in~~ instances where pipe is installed in the following locations: ~~sewer line set back distances are granted a variance for any reason~~

1) Under driveways, roadways, or other areas where vehicular traffic is expected. Properly compacted select bedding material must be

installed in such cases. Additional frost protection, such as installing 2" foam board or double encasement of the pipe, is recommended.

2) 5' prior to and beyond all tanks, and

3) In instances where sewer line setback distances are granted a variance for any reason.

e. Tile pipe, open-joint pipe, and cast iron pipe must not be used in an OWTS.

f. Pressure pipe must be rated for the intended use to accommodate pump discharge pressure. Cellular (foam) core piping must not be used in pressurized systems.

2. Bedding: All system piping, except for distribution laterals within the soil treatment area, must be bedded with select material before final inspection by EPCPH. Select bedding material must consist of loose, granular material, free from stones, clods, frozen soil, or other deleterious material. Select material may consist of on-site job-excavated or imported material. Bedding material must be mechanically compacted to support piping.

E. Cleanouts required between the building and the septic tank:

1. Cleanouts must have a secure cap and a riser extending to or easily accessible from grade. The installation of a straight tee or sanitary tee is acceptable.

2. ~~Cleanouts must be provided within five (5) feet of the outside of the building.~~ If a cleanout is not already provided outside of the building, a two-way cleanout no smaller than the building sewer must be installed between the building and septic tank, as close to the home as practical but a distance no further than 50 feet from the outside wall. Local building codes may also apply.

a. For long runs of piping, building sewer must have a cleanout installed at intervals of not more than 100 feet.

3. Where a sewer has a change of horizontal direction greater than 45 degrees, a cleanout must be installed at the change of direction unless a cleanout already exists within 40 feet upstream of this fitting. Where more than one change of direction greater than 45 degrees occurs within 40 feet of a developed length of piping, the cleanout for the first change of direction may serve as the cleanout for all changes within that 40 feet of developed ~~length of~~ pipe.

~~4. Cleanouts must be provided at intervals within the building sewer from the structure to the tank of not more than 100 feet. The effluent pipe between the septic tank and soil treatment area is exempt from this requirement.~~

F. Distribution Box: A distribution box, if used, must be of sufficient size to distribute effluent equally to the laterals of a trench or absorption bed system. The box must be constructed with the inlet invert at least one inch above the level of the outlet inverts. Flow equalizers or similar devices must be used to adjust the flow between laterals. Access to the box must be provided with a manhole riser with access lid at or above grade if the top of the box does not reach final grade.

G. Drop Box: In sequential ~~or serial~~ distribution, a watertight box may be used to transfer the effluent to the following trench when the effluent in a trench has received the designed level for overflow to the next trench. A drop box shall have a riser at or above final grade, if the top of the drop box does not reach final grade. Outlet pipes in sequential distribution must be designed and installed so that they may be capped off for resting periods.

H. Stepdown/Relief Pipe: In sequential ~~or serial~~ distribution, an unperforated pipe may be used to transfer the effluent to the following trench when the effluent in a trench has received the designed level for overflow from that trench.

I. Wastewater Pumping and Dosing Siphon Systems

1. Pumps

a. When a pump is proposed for use within an OWTS design, a pump curve for the selected pump must be submitted as part of the system design.

b. Pumps must be designed by a professional engineer if the design utilizes pressure distribution.

c. Non-clog pump opening must have at least two-inch diameter solids handling capacity where raw wastewater is pumped. A pump opening must not have more than 3/4-inch diameter solids handling capacity if previously settled effluent is pumped.

d. Pumps must be certified to the applicable UL778 (Edition 6 or earlier version) ~~or CSA~~ electrical safety standard, bear the seal of approval of CSA, UL, or an equivalent testing program, and be constructed of corrosion resistant materials.

e. Grinder pumps must also be certified to NSF/ANSI Standard 46 (2022 or earlier version) and bear the seal of approval of the NSF or equivalent testing and certification program.

1) Where a grinder pump is used prior to the septic tank, an effluent filter is required to be installed on the outlet of the septic tank. Additional tank requirements are provided in section 43.9.B.2.e

2) Where a grinder pump is used prior to the septic tank, the effluent pipe from the grinder pump must be connected to the sewer line prior to the inlet of the tank.

2. Floats and Switches

a. Automatic liquid level controls must be provided to start and shut off pumps at a frequency or level specified in the design.

b. Floats must be mounted on a stem separate from the pump discharge piping to allow for removal, adjustment, and replacement of the float from grade without removing the pump. Components used to hold the floats must be securely attached and of a material that is resistant to corrosion and will not absorb water.

c. Float switches must be certified to the applicable UL60947-4-1 (Edition 4 or earlier version) or CSA C22.2 No. 205-17 (2017 or earlier version) electrical safety standard, bear the seal of approval of CSA, UL, or an equivalent certification program, and be constructed of corrosion resistant materials.

d. Dosing siphons for pressure dosing and higher-level treatment systems must provide for a means of determining the number of dosing events.

3. Location of Pump or Siphon

a. A pump or a siphon may be installed in a separate tank following the septic tank. The tank must be of sufficient volume to allow pump or siphon cycling commensurate with the design capacity.

b. The second compartment of a two-compartment septic tank may only be used as the pump tank when the tank is specifically designed for this purpose and it can be demonstrated to the satisfaction of EPCPH that the minimum 48-hour detention time will not be decreased. The pump must be screened ~~or provided with an approved filtering device~~ to remove solids greater than 1/8", assuring that only liquid effluent will be discharged. The transfer of liquid from the first to the second compartment must be at an elevation that is between the inlet and outlet invert elevations, and through a standard tee designed and located as per the requirements of section 8.9.B.4.d.

    1) Siphons must not be installed in the second compartment of a two-compartment tank.

c. All pumping or siphon chambers shall be watertight and be of sufficient volume so as to keep the pump submerged at all times

    1) The minimum volume of a stand-alone pumping or siphon chamber shall be 500 gallons.

    ~~2) The minimum volume of a pre-fabricated pumping or siphon chamber shall be 250 gallons~~

d. The use of a three-compartment septic tank, sized to provide the required effective volume in the first two compartments with the pump or siphon in the third compartment, is acceptable for tanks specifically designed for this purpose. The transfer of liquid from the second to the third compartment must be at an elevation that is between the inlet and outlet invert elevation, and through a standard tee designed and located as per the requirements of section 8.9.B.4.d.

4. Pump or Siphon Discharge Piping

a. The discharge pipe from the pumping or siphon chamber must be protected from freezing by burying the pipe below frost level or sloping the pipe to allow it to be self-draining. Drainage must be provided through the bottom of the pump or through a weep hole located in the discharge pipe prior to exiting the tank.

b. The pump discharge piping must have a quick disconnect that is accessible from grade to allow for easy pump access and removal.

c. The pipe must be sized to maintain a velocity of two or more feet per second.

d. Pressure pipes must be designed to prevent air or vacuum locking and allow self-draining of the pipes.

5. Access

a. The pump or dosing system tank, chamber, or compartment must have a minimum 24-inch nominal diameter access riser, made of corrosion-resistant material, extending to or above ground level. ~~A smaller diameter riser may only be installed if it is accepted by EPCPH as an integral component of a specific product during the product review process.~~

b. The access riser must have a watertight connection to the pump or dosing chamber/compartment to prevent infiltration or exfiltration. All other intrusions to the riser for electrical or other component access must also be watertight.

6. Splice Box (Junction Box)
   a. Splice boxes must be located outside the pump system access riser and be accessible from the ground surface.

   b. Wire splices are prohibited inside the tank, dosing chamber, or riser. Wire splicing must be completed with corrosion-resistant, watertight connectors.

7. Controls

   a. Control panels or other electrical boxes used to control the functions of an OWTS must comply with the following, as appropriate:

      1) The pump system must have an audible and visual alarm notification in the event an excessively high-water condition occurs.

      2) The pump must be connected to a control breaker separate from the alarm breaker and from any other control system circuits.

      3) An electrical disconnect must be provided within the line of sight of the pump chamber

      4) The pump system must be provided with a means that will allow the pump to be manually operated, such as an H.O.A. switch (Hando/Off/Auto)

      5) The pump system for pressure dosing and higher-level treatment systems must have a mechanism for tracking both the amount of time the pump runs and the number of cycles the pump operates

      6) Must bear the seal indicating acceptable product testing from a U.S. Department of Labor, Occupational Safety and Health Administration Nationally Recognized Testing Laboratory (NRLT) (https://www.osha.gov/dts/otpca/nrtl/nrtllist.html) such as UL or ETL.

      7) The bottom of the control panel must be at least 36 inches above grade.

J. Effluent Filters ~~Screens~~

1. EPCPH may require that effluent ~~screens~~ filters be installed in all septic tanks in new installations and repairs where the septic tank is replaced.

2. When effluent filters are required, the septic tank outlet, or the outlet of the last septic tank in series, must include an effluent filter that retains solids greater than one-eighth inch in size. Effluent filters must be sized to meet the estimated daily design flow and waste strength.

3. If a pump ~~or dosing siphon~~ is used to remove septic tank effluent from the final compartment of the septic tank, the effluent must be filtered prior to dispersal into the soil treatment area. An effluent ~~screens~~ filter, pump vault equipped with a filter cartridge, or a filter on the discharge pipe would all be considered acceptable.

4. The effluent ~~screens~~ filters must be cleaned at manufacturer-recommended intervals or more often if use patterns indicate.

5. An alarm may be installed on an effluent ~~screens~~ filter indicating a need for maintenance. EPCPH may require all effluent screens to be equipped with alarms.

6. Where an ejector pump, grinder pump, or non-clog pump is proposed for use prior to the septic tank, an effluent ~~screens~~ filter must be installed on the outlet of the septic tank.

7. The handle of the effluent ~~screens~~ filters must extend to within 12 inches of the riser lid so as to allow for ease of maintenance.

K. Grease Interceptor Tanks

1. All commercial food service facilities and other facilities generating fats, oils, and greases in their waste must install a grease interceptor tank.

2. Grease interceptor tanks shall treat only those portions of the total wastewater flow in which grease and oils are generated.

3. All grease interceptor tanks shall have an appropriately sized, watertight, secure access riser made of corrosion resistant material extending to, or above, grade.

4. The grease interceptor must have a minimum of two compartments and must be sized proportionate to the amount of fats, oils and grease it receives, the peak flow rate through the tank, and the expected cleaning frequency.

5. The inlet and outlet tees or baffles must extend into the bottom 1/3 of the liquid volume but must be at least 12 inches off the inside floor of the interceptor.

6. The inlet and outlet tees or baffles must extend at least 5 inches above the liquid level and must provide for a free vent area across the liquid surface.

8.10 Design Criteria – Soil Treatment Area

A. The size and design of the soil treatment area must be based on the results of the site and soil evaluation, design criteria, and construction standards for the proposed site and OWTS selected.

B. At proposed soil treatment area locations receiving domestic wastewater, where any of the following conditions are present, the OWTS~~system~~ must be designed by ~~an approved~~ a professional engineer ~~meeting EPCPH Systems Designer requirements~~ and approved by EPCPH:

1. For OWTS installed in soil types 3A, 4, 4A, 5, FBR, DBR, R-0, R-1, ~~and~~ R-2, and R-3 ~~Treatment Levels TL2, TL2N, TL3, TL3N~~ as specified in Tables 10-1 and 10-1A of these regulations;

2. For OWTS that include components which provide Treatment Levels TL2, TL2N, TL, TL3N, and TL3ND effluent or an NDDS;

3. The maximum seasonal level of the ground water surface is less than four feet below the bottom of the proposed infiltrative surface;

4. Where a~~A~~ limiting layer, restrictive layer, or groundwater condition exists less than four feet below the bottom of the proposed infiltrative surface;

5. In floodplains or floodways, as required in section 43.8.K;

6. The ground slope is in excess of thirty percent; ~~or~~

7. Pressure distribution is used; or

8. OWTS for business, commercial, industrial, institutional use, or multifamily dwellings.

C. Calculation of Infiltrative Surface of Soil Treatment Area

1. The infiltrative surface of a trench or bed receiving any treatment level of effluent is only the bottom area. No sidewall credit is allowed except in deep gravel trenches and seepage pits that are permissible in repairs (See 43.10.I.5 and 6)

2. Long term acceptance rates (LTARs) are shown in Tables 10-1 and 10-1A.

3. Factors for adjusting the size of soil treatment area are in Tables 10-2 and 10-3.

4. The required area for a soil treatment area is determined by the following formula:

$$\text{Soil Treatment Area (in square feet required)} = \frac{\text{Design Flow (in gallons per day)}}{\text{LTAR (in gallons per day per square foot)}}$$

   a. Adjusted Soil Treatment Area = Required Soil Treatment Area x Size Adjustment Factors.

   b. Size adjustment factors for methods of application are in Table 10-2.

   c. Size adjustment factors for types of distribution media are in Table 10-3.

   d. A r~~equired~~ soil treatment area receiving TL1 effluent may be multiplied by one ~~the~~ size adjustment factors ~~from~~ within Table 10-2 and Table 10-3. ~~or both~~

   e. The distribution media options within Table 10-3 may be used for distribution of higher-level treatment system effluent (TL2-TL3ND); however, the size reduction factors within Table 10-3 must not be used. Sizing reductions for higher-level treatment systems are achieved through increased LTAR's provided in Table 10-1 ~~and may only be used in locations where EPCPH implements a maintenance oversight program as defined in section 43.14.D~~.

5. A soil treatment area receiving TL2, TL2N, TL3, or TL3N, or TL3ND effluent must be pressure dosed.

   a. For products that combine distribution and higher-level treatment within the same component, pressure distribution of the effluent over the soil treatment area must be used.

   b. TL2-TL3ND effluent may be applied by gravity flow in soil types 3, 3A, or 4~~4A, or 5~~ for designs where reductions in the soil treatment area size or vertical/horizontal separation reductions are not being requested.

~~6. The distribution media in Table 10-3 may be used for distribution of higher-level treatment system effluent, but an additional reduction factor form Table 10-3 must not be used. Sizing reductions for higher-level treatment systems are achieved through increased LTAR's provided in Table 10-1.~~

Table 10-1: Soil Treatment Area Long-Term Acceptance Rates by Soil Texture, Soil Structure, Percolation Rate and Treatment Level.

Soil Type, Texture, Structure, and Percolation Rate Range					Long-term Acceptance Rate (LTAR): Gallons per day per square foot				
Soil Type	USDA Soil Texture	USDA Soil Structure-Type	USDA Soil Structure-Grade	Percolation Rate (MPI)	Treatment Level 1	Treatment Level 2 and 2N	~~Treatment Level 2N~~	Treatment Level 3, 3N, and 3ND	~~Treatment Level 3N~~
R	> 35% Rock (>2mm), or Fractured or Deteriorated Bedrock: See Table 10-1a					> 35% Rock (>2mm), or Fractured or Deteriorated Bedrock: See Table 10-1a			
1	Sand, Loamy Sand	Single Grain	0 (Structureless)	5-15	0.8	1.40	~~1.40~~	1.55	~~1.55~~
2	Sandy Loam, Loam, Silt, Loam	PR (Prismatic) BK (Blocky) GR (Granular)	2 (Moderate) 3 (Strong)	16-25	0.60	1.0	~~1.0~~	1.1	~~1.1~~
2A	Sandy Loam, Loam, Silt, Loam	PR, BK. GR, 0 Massive	1 (Weak) (Structureless)	26-40	0.5	0.8	~~0.8~~	0.9	~~0.9~~
3	Sandy Clay Loam, Clay Loam, Silty Clay Loam	PR, BK, GR	2, 3	41-60	0.35	0.55	~~0.55~~	0.65	~~0.65~~
3A	Sandy Clay Loam, Clay Loam, Silty Clay Loam	PR, BK, GR, 0 Massive	1 (Structureless)	61-75	0.3	0.45	~~0.45~~	0.55	~~0.55~~
4	Sandy Clay, Clay, Silty Clay	PR, BK, GR	2, 3	76-90	0.2	0.3	~~0.3~~	0.3	~~0.3~~
4A	Sandy Clay, Clay, Silty Clay	PR, BK, GR, 0 Massive	1 (Structureless)	91-120	0.15	0.2	~~0.2~~	0.2	~~0.2~~
5	Soil Types 2-4A	Platy	1, 2, 3	121+	0.10	0.15	~~0.15~~	0.15	~~0.15~~

Note: Shaded areas require systems designed by professional engineer

1. Treatment Levels are defined in Table 6-3.

2. The determination of long-term acceptance rates must also include an evaluation of soil consistence (identification of "cementation class"). Refer to rupture Resistance chart, Table 5-1, in section 43.5.D. Moderately to Very strongly cemented soils will typically have characteristics of Type 3A or 4A soils. Long-term acceptance rates should be reduced to coincide with the expected permeabilities.

3. Soil Type 4A and 5 will require the effluent to be dispersed via pressure distribution, with a minimum of two alternatively dosed zones.

4. Higher long-term acceptance rates for Treatment Level 3N may be allowed for OWTS required to have a discharge permit, if the capability of the design to achieve higher long-term acceptance rate can be substantiated.

~~Table 10-1A[1]: Design Criteria for Soils with High Rock Content (Type "R" Soils)~~ [2, 5, 6]

~~Soil Matrix Type, Percent of Rock, LTAR, Distribution~~				~~Required sand depth relative to the quality of effluent applied to the distribution cell~~				
~~Soil Type~~	~~Percentage and Size of Rock~~	~~Maximum LTAR (gal./sq ft/day)~~	~~Type of Distribution Required~~	~~Treatment Level 1[6]~~	~~Treatment Level 2[6]~~	~~Treatment Level 2N[7]~~	~~Treatment Level 3~~	~~Treatment Level 3N~~

R-0	Soil Type[7] 1 with more than 35% rock (>2mm)	Unlined Sand Filter: 1.0 for Preferred Sand Media:; 0.8 for "Secondary Sand Media"	Pressure Distribution	Minimum 3-foot deep Unlined Sand Filter	Minimum 3-foot deep Unlined Sand Filter	Minimum 2.5-foot deep Unlined Sand Filter	Minimum 2.foot deep Unlined Sand Filter	Minimum 1-foot deep Unlined Sand Filter
R-1; Option 1	Soil Type[7] 2 – 5, > 35-65% Rock (>2mm); with ≥50% of the rock < 20 mm (3/4 inch)	Use TL 1 LTAR from Table 10-1 for the soil type corresponding to the soil matrix, with a maximum LTAR of 0.8	Pressure Distribution	Minimum 2-foot deep Unlined Sand Filter	Minimum 1-foot deep Unlined Sand Filter	Minimum 1-foot deep Unlined Sand Filter	Sand media not required	Sand media not required
R-1 Option 2	Soil Type[7] 2 and 2A, > 35-65% Rock (>2mm); with ≥50% of the rock < 20 mm (3/4 inch)	The allowable LTAR's are defined in each individual treatment level columns in this Table	Pressure Distribution	Remove, mix, replace 4 feet of existing material; with a maximum LTAR of 0.6	Remove, mix, replace 4 feet of existing material; with a maximum LTAR of 0.7	Remove, mix, replace 2 feet of existing material; with a maximum LTAR of 0.7	Remove, mix, replace 2 feet of existing material; with a maximum LTAR of 0.8	Remove, mix, replace 2 feet of existing material; with a maximum LTAR of 0.8
R-2	Soil Type[7] 2 -5, > 65% Rock (>2mm); OR ≥50% of the rock > 20 mm (3/4 inch)	Use TL1 LTAR from Table 10-1 for the soil type corresponding to the soil matrix, with a maximum LTAR of 0.8	Timed Pressure Distribution	Minimum 3-foot deep Unlined sand filter	Minimum 3-foot deep Unlined sand filter	Minimum 2.5-foot deep Unlined Sand Filter	Minimum 2.5 foot deep Unlined Sand Filter	Minimum 2-foot deep Unlined Sand Filter

Soil Matrix Type, Percent of Rock, Size of Rock, Excavation Difficulty, and Soil Permeability				Required sand depth relative to the quality of effluent applied to the distribution cell			
Soil Type	**Soil Matrix Type, Percent of Rock and Size of Rock[3, 4]**	**Excavation Difficulty[1]**	**Soil Permeability; Minutes per Inch (MPI)[1, 2]**	**Treatment Level 1[6]**	**Treatment Level 2 and 2N[7]**	**Treatment Level 3 and 3N[7]**	**Treatment Level 3ND[7]**
FBR	In-situ Fractured Bedrock (FBR)	Low Moderate High Very High Extremely High	0 - >90 Usually rapid in highly fractured bedrock	Minimum 3-foot deep Unlined Sand Filter	Minimum 2.5-foot deep Unlined Sand Filter	Minimum 2-foot deep Unlined Sand Filter	Minimum 1-foot deep Unlined Sand Filter
DBR	In-situ Deteriorated Bedrock (DBR)	Low Moderate High	41 - >90 Typically slower than the	Minimum 2-foot deep Unlined Sand Filter	Minimum 1-foot deep Unlined Sand Filter	Sand media not required	Sand media not required

			material textures				
R-0	Soil Type[3] 1 (Sand and Loamy Sand) where more than 35% rock is greater than 2 mm in size	Low – Tile spade with arm pressure	0 to 15	Minimum 3-foot deep Unlined Sand Filter	Minimum 2.5-foot deep Unlined Sand Filter	Minimum 2-foot deep Unlined Sand Filter	Minimum 1-foot deep Unlined Sand Filter
R-1;	Soil Type[3] 2 – 4 with 35 - 65% rock (>2mm); where 50% or more of the rock is less than 20mm (3/4 inch) in size	Low - Tile spade with arm pressure To Moderate – Tile spade with foot pressure	16 to 90 Varies relative to soil type and cementation class	Minimum 2-foot deep Unlined Sand Filter	Minimum 1-foot deep Unlined Sand Filter	Sand media not required	Sand media not required
R-2	Soil Type[3] 2 – 4, with more than 65% rock (>2mm); OR contains 35-65% rock (>2mm), where 50% or more of rock is more than 20 mm (3/4 inch)	Low - Tile spade with arm pressure To Moderate – Tile spade with foot pressure	16 to 90 Varies relative to soil type and cementation class	Minimum 3-foot deep Unlined sand filter	Minimum 2.5-foot deep Unlined Sand Filter	Minimum 2 foot deep Unlined Sand Filter	Minimum 1-foot deep Unlined Sand Filter
R-3	Soil Type[3] 2-4 (Loam, Clay Loam, Clay) with 65% or more of the rock is greater than 2mm OR Soil Type[3] 4A and 5 (Structureless Clay, or other Platy Structure Soil) with more than 35% rock	High – Tile spade is difficult, pick using over-the-head swing is easy Very High – Pick with over-the-head swing is moderate to markedly difficult Extremely High – Pick with over-the-head swing is nearly impossible	Greater than 90 Soil Type[3] 2 – 4 (Loam, Clay Loam, Clay). More than 65% of the rock is greater than 2mm in size OR, 50% or more of rock is greater than 20 mm (3/4 inch) in size	Minimum 3-foot deep Unlined sand filter	Minimum 2.5-foot deep Unlined Sand Filter	Minimum 2 foot deep Unlined Sand Filter	Minimum 1-foot deep Unlined Sand Filter

1. General guidance for Table 10-1A
   a. FBR: Fractured Bedrock – As this category encompasses a variety of site conditions where the percentage of rock, excavation difficulty, and permeability may vary substantially, all information must be used by the design engineer to determine the proper long-term acceptance rate. Table 10-1B provides guidance for this determination.
   b. DBR: Deteriorated Bedrock – As this category encompasses a variety of site conditions where the percentage of rock, excavation difficulty, and permeability may vary substantially, all information must be used by the design engineer to determine the proper long-term acceptance rate. Table 10-1C provides criteria for this determination.
   c. Soil type R-0 is a limiting layer due to rapid permeability and a high rock content that provides limited surface area for adequate treatment.
   d. Soil Type R-2 and R-3 are restrictive layers due to reduced permeability and/or a high rock content, each providing a limited surface area for adequate treatment. In many cases, the only difference between an R-2 and R-3 soil type will be the "excavation difficulty" and/or soil permeability.
   e. An OWTS installed in "Type R Soils" must disperse effluent through an unlined sand filter unless one of the following conditions are met:
      i. Treatment Level 3ND is attained and the requirements of 43.12.F are met.
      ii. Site conditions are determined to be a soil type DBR, or R-1, and Treatment Level 3 or 3N effluent is attained prior to dispersal to the soil treatment area.
   f. "Excavation Difficulty" is provided in Table 10-1C.
2. Provisions for determining the long-term acceptance rates for soils referenced in this chart are provided in section 43.11.C.3. The design of systems in type "R" soils must conform to the requirements of sections 43.11.c.2 and 3.
3. The "Soil Matrix, Type, Percentage, and Size of Rock" column references the soil types described in Table 10-1.
4. The percentage of rock may be determined by a gradation conducted per ASTM standard D6913-17 (2017 Version), or a visual determination as per pgs. 7-1 through 7-9 of the NRCS Field Book Version 3, 2021 reprint.

5. All systems installed in type "R" soil must be designed by a professional engineer.
6. Pressure distribution is required for all "R" soil types and shall comply with the requirements of section 43.10.E.3.
7. Minimum imported sand depths are provided in this table. NOTE, however, that an additional vertical separation above a limiting layer or groundwater condition may be necessary to meet the requirements of Table 7-2.
8. Type "R" soil treatment area systems that are designed per the criteria noted in the Treatment Level 1 column of this table do require operation and maintenance oversight by EPCPH.

Table 10-1B: Fractured Bedrock (FBR), LTAR Guidance

FBR: Distance between fractures*	Code	LTAR
< 4 inches	1	Soil Type 1
4 to < 18 inches	2	Soil Type 1
18 to < 40 inches	3	Soil Type 2
40 to < 80 inches	4	Soil Type 3
≥ 80 inches	5	Soil Type 4

1. Table 10-1B is intended to provide guidance to the design engineer in determining the appropriate LTAR for the soil treatment area. Fractured bedrock formations typically consist of many variables, resulting in a wide range of permeabilities. The design engineer should take all factors into consideration before identifying a specific LTAR for each site. In certain instances, percolation tests may be necessary to more accurately identify the appropriate LTAR.
2. *Describes the dominant (average) horizontal spacing between vertical joints and (geogenic cracks or seams) in the bedrock layer.
3. Reference: NRCS Field Book for Describing and Sampling Soils, Version 3.0, 2021 Reprint. Geology section pg. 1-24. Note: The LTAR identified in this table is not included in the NCRS Field Book.

Table 10-1C: LTAR Determination for Deteriorated Bedrock (DBR)

Excavation Difficulty: The relative force or energy required to excavate the soil/rock

Class	Criteria
Low	Excavation by tile spade requires arm pressure only; impact energy or foot pressure is not needed.
Moderate	Excavation by tile spade requires impact energy or foot pressure; arm pressure is insufficient.
High	Excavation by tile spade is difficult but easily done by pick using over-the-head swing.
Very High	Excavation by pick with overhead swing is moderately to markedly difficult. Backhoe excavation by 50-80 hp tractor CAN be made in moderate time.
Extremely High	Excavation by pick is nearly impossible. Backhoe excavation by 50-80hp tractor CANNOT be made in reasonable time.

Note: Depending on the "Excavation Difficulty" in a DBR soil, the proposed LTAR must increase by the following: one soil type for "moderate"' two soil types for "high", and three soil types for "very high" or "extremely high" excavation difficult from the soil type of the observed soil texture, with a maximum soil type 5 LTAR. Soil Types provided in Table 10-1.
Source: NRCS Field Book for Describing and Samling Soils, Version 3.0; 2021 Reprint; Consistence section, pg. 2-69

D. Allowable Soil Treatment Area Sizing Adjustments:

1. The soil treatment area size determined by dividing the design flow rate by the long-term acceptance rate may be adjusted by factors for method of treatment, soil treatment area design, and type of distribution media.

2. For the purpose of ~~the t~~Table 10-1, a "baseline system," i.e. adjustment factor of 1.00, is considered to be Treatment Level 1 (TL1) applied by gravity to a gravel-filled trench.

3. Sizing adjustments are not allowed for systems placed in the type "R" soils. The maximum LTAR's are provided in section 43.11.C.3.b.

4. ~~Sizing adjustments~~ Long-term acceptance rates for use of the higher-level treatment categories listed in Table 10-1 will only apply provided the system is inspected and maintained as specified in the requirements of section 8.14, Permitting and Oversight of Maintenance for Soil Treatment

Area Reductions and Vertical and Horizontal Separation Distance Reductions Based on Use of Higher-Level Treatment.

Table 10-2 Size Adjustments Factors for Methods of Application in Soil Treatment Areas ~~Accepting~~ Receiving Treatment Levels 1, 2, 2N, 3, ~~and~~ 3N, and 3ND Effluent

Type of Soil Treatment Area	Method of Effluent Application from Treatment Unit Preceding Soil Treatment Area		
	Gravity	Dosed (Siphon or Pump)	Pressure Dosed
Trench	1.0	0.9	0.8
Bed	1.2	1.1	1.0

Table 10-3 Size Adjustment Factors for Types of Distribution Media in Soil Treatment Areas for Receiving Treatment Level 1 ~~Systems~~ Effluent

Type of Soil Treatment Area	Type of Distribution Media Used in Soil Treatment Area[1]		
	Category 1	Category 2	Category 3
	Rock or Tire Chips	Other Manufactured Media	Chambers or Enhanced Manufactured Media
Trench or Bed Soil Type: 1-4	1.0	0.9	0.7
Trench of Bed; Soil Types 4A - 5	1.2	1.1	1.0

1. All proprietary distribution products must receive acceptance and the applicable size adjustments ~~reductions~~ through Division review per the application requirements of ~~section 8.13~~ Regulation 43.

E. Design of Distribution Systems

1. General

a. The infiltrative surface and distribution laterals must be level.

b. The infiltrative surface must be no deeper than 4 feet below grade unless TL2 or higher effluent is applied to the distribution media and the system is inspected and maintained as specified in the requirements of section 8.14. The depth of the infiltrative surface will be measured on the up-slope side of the trench or bed.

c. Where a conforming soil treatment area is reasonably accessible, the soil treatment area must not be placed below a paved surface or an area where vehicular traffic occurs or is expected. If a compliant site for the soil treatment area cannot be identified, it may be placed below a paved surface when all of the following conditions are met:

(1) The effluent must be treated to TL2 or higher prior to being applied to the distribution media.

(2) The distribution system must be designed to accommodate the vehicular loading.

(3) Size adjustment factors identified in Table 10-3 must not be applied.

d. Trenches must follow the ground surface contours so variations in infiltrative surface depth are minimized. Beds must be oriented along contours to the degree possible.

e. Pipe for gravity distribution must be no less than 3 inches in diameter.

f. Pipe slope:

(1) Schedule 40 or pipe of equivalent or greater strength that has a pipe diameter of 4" must have a minimum downward slope of 2.08%, or ¼" per foot.

(2) SDR 35 or pipe of equivalent or greater strength that has a pipe diameter of 4" must have a minimum downward slope of 2.08%, or ¼" per foot.

g. A final cover of soil suitable for vegetation at least 10 inches deep must be placed from the top of the geotextile or similar pervious material in a rock and pipe system, chamber, or manufactured media up to the final surface grade of the soil treatment area. The backfill material must be void of cobbles, boulders, building debris, or other non-permeable material. The preferred soil cover is a sandy loam textured material, topped with 2-3 inches of topsoil.

h. Following construction, the ground surface must be graded to divert stormwater runoff or other outside water from the soil treatment area. The area must be protected against erosion. Subsurface drains upslope of the soil treatment area may be installed to divert subsurface flow around the area.

i. Backfilling and compaction of soil treatment areas must be accomplished in a manner that does not impair the intended function and performance of the storage/distribution media and soil and distribution laterals, allows for the establishment of vegetative cover, minimizes settlement, and maintains proper drainage.

j. Dosing may be used for soil treatment area distribution. The dose must be sized to account for the daily flow and the dosing frequency.

2. Distribution Laterals; Must meet the requirements of section 8.9.D as applicable.

a. Distribution between laterals in a soil treatment area must be as level as possible. Uneven settling of portions of the distribution system following construction must be addressed by provisions in the design to adjust flows between laterals.

b. The maximum length of distribution laterals must not exceed 150 feet.

c. Distribution laterals longer than 100 feet must be pressure dosed or the application of the effluent must be at the center of the lateral through a distribution box.

d. EPCPH may limit the length of distribution laterals to a maximum of 100 feet.

e. For absorption beds, the separating distance between parallel gravity distribution laterals must not exceed 6 feet (center-to-center), and a distribution lateral must be located within 3 feet of each sidewall and end-wall.

f. The end of a distribution pipe must be capped, unless it is in a bed or trench in a level soil treatment area, where the ends of the pipes may be looped.

g. To promote equal distribution to the soil treatment area, the effluent pipe~~forcemain~~ on a gravity flow system must be connected to as near to the middle of the distribution header as possible. However, it must be offset from any distribution lateral ~~to prevent preferential flow~~ so as to not provide a direct pathway into a single lateral. Note that the installation of a distribution box with flow levelers is preferred, as this will further assist in better distribution of the effluent.

h. Orifices must be oriented downward unless pressure distribution is used and provision for pipe drainage is included.

3. Pressure Distribution

a. Design ~~of~~ plans for pressure distribution systems must identify the exact specifications for the following items~~include~~:

~~(1) Dose size and frequency for either proposed flows and soil type, or media long term acceptance rate;~~

~~(2) Pipe Diameter and strength requirements~~

~~(3) Orifice sizing and spacing~~

~~(4) A 30-72 inch operating head at the distal end orifice~~

(5) General Design Parameters: Not all combinations of the variables noted below will result in proper distribution system design. The design engineer must justify through calculations and/or design software that the selected values will concur with the requirements noted below.

a) Distribution pipe size: ¾ inch -1.5 inches (PVC Class 200, min.). 2-inch distribution pipe may only be used where other design modifications cannot overcome a greater than 10% variation in the pressure head between the initial and distal orifices.

b) Distribution pipe spacing: 18 inches – 48 inches.

c) Orifice size: 1/8 inches – 3/8 inches.

d) Orifice Spacing: 18 inches – 48 inches.

e) Proposed dose volume: Will vary with design (0.25 -1.0) gallons/orifice/dose, or 3-5 times distribution pipe volume.

f) To promote equal distribution within the soil treatment area, the forcemain within a pressure distribution system must be connected to as near to the middle of the distribution header as possible. This connection must be offset from any distribution lateral to prevent preferential flow to a single lateral. An allowable alternative to this configuration is provided below:

1) Connections to the end of the distribution header are only allowed for soil treatment areas having a width of 12’ or less, and no more than 4 laterals. For such configurations, a minimum 2” diameter manifold is required.

g) Operating head at the distal end of the distribution pipes ~~30 inches-72 inches (60 inces typ.). Larger orifices allow for an operating head at the lower end of this range, while smaller orifices will necessitate an operating head at the higher end of this range.~~:

1) For systems with orifices 5/32 inch or less, the minimum squirt height is five feet.

2) For systems with orifices 3/16 inch or greater, the minimum squirt height must be at least 12 inches above final grade, but never less than 30 inches above the lateral invert.

3) As part of the final inspection of an OWTS installation with pressure distribution, a residual head test (squirt height) at the distal end of each lateral must be conducted to determine the adequacy of system design and construction. Results from this inspection must be included within both the engineers' certification and the final permit acceptance documents.

(6) Pump/siphon information; Total Dynamic Head, gallons/minute; and

(7) Drain-back volume from forcemain, when applicable.

~~(8) Calculations, or design software reference, that indicates the selected component sizing will provide equal flow within each active zone of the distribution system, and provide no more that a 10% flow differential from the initial orifice to the most distal end orifice within each zone.~~

b. The separating distance between parallel distribution pipes in a pressure distribution absorption bed must not exceed 4 feet, and the outer distribution pipe must be located within 2 feet of each sidewall and endwall. Additional ~~Specific~~ requirements for the design of sand filters are noted in sections 8.11.C.2 and 3.

c. Flushing assemblies must be installed at the distal end of each lateral and be accessible from finished grade. A sweeping 90-degree or bends limited to 45 degrees ~~must be provided~~ are suggested.

d. ~~EPCPH will require that all effluent be screened prior to discharging to a pressure distribution system. This may be accomplished by an effluent screen in the septic tank or pump chamber, or a filter placed on the discharge pipe from the pump or siphon.~~ Effluent must be screened to retain solids 1/8" or greater prior to dosing a pressure distribution system. An effluent filter may be installed at the tank outlet or within a screened pump vault. The filter may also be installed within the discharge line inside the pump chamber.

F. Soil Treatment Area Requirements

1. Trenches

a. Trenches must be 3 feet wide or less.

b. The separating distance between trenches must be a minimum of 4 feet sidewall-to-sidewall.

c. Distribution laterals used in a trench must be as close to the center of the trench as possible.

2. Beds

a. Maximum width for a bed must be 12 feet, unless the bed receives effluent meeting Treatment Level 2 quality or better.

b. The separating distance between beds must be a minimum of 6 feet sidewall- to-sidewall.

3. Serial and Sequential Distribution:

a. New serial distribution systems, where the effluent must pass through the first trench in order to access subsequent trenches, are prohibited.

b. A ~~serial or~~sequential distribution system may be used where the ground slope does not allow for suitable installation of a single level soil treatment area unless a distribution box or dosing chamber is used.

c. The horizontal distance from the side of the absorption system to the surface of the ground on a slope must be adequate to prevent lateral flow and surfacing.

d. Adjacent trenches or beds must be connected with a stepdown/relief pipe or a drop box arrangement such that each trench fills with effluent to near the top of the gravel or chamber outlet before flowing to succeeding treatment areas. Note that in a sequential distribution configuration, effluent does not pass through the first trench before it enters subsequent trenches.

4. Alternating Systems

a. An alternating system must have two or more zones that must be alternated on an annual or more frequent basis.

b. For repairs, each section must be a minimum of 50 percent of the total required soil treatment area. For new installations, each separate soil treatment area must meet the minimum sizing requirements of these regulations.

c. A diversion valve or other approved diversion mechanism that requires the owner or operator to manually alternate zones of the OWTS may be installed on the septic tank effluent line allowing soil treatment area sections to be alternated.

d. The diversion mechanism must be readily accessible from the finished grade.

5. Sequencing Zone Systems

a. Sequencing zone systems have two or more soil treatment area sections that are dosed on a frequent rotating basis.

b. Where soil conditions are similar between the sections, each section area must be the same size. If soil conditions are such that long-term acceptance rates are different, each section may be sized for the same dose, but different long-term acceptance rates.

c. An automatic distribution valve must be used.

d. Dosing of each system must be evaluated by the design engineer based on projected daily flow rates, number of zones, and soil types.

6. Inspection Ports

a. A 4-inch inspection port accessible from ground surface must be installed at the beginning and terminal end of each lateral in a trench system and at each corner of a bed system. The bottom of the inspection port~~tube~~ must extend to the infiltrative surface and not be connected to the end of a distribution pipe.

b. Inspection ports in chambers may be installed according to manufacturer's instructions if the infiltrative surface ~~is visible~~and effluent levels can be observed from the inspection port. Perforations/slots are required from near the base of the pipe and extending to the top of the chamber.

c. Additional inspection ports connected to distribution pipes may be installed.

d. ~~EPCPH may requires~~ An inspection port must be installed at the initial end of each lateral in a trench system.

e. The top of inspection ports may be terminated below the final grade if each is housed in a component such as a valve box for a lawn irrigation system and has a removable cover at the ground surface.

f. Perforations/slots in the inspection ports of a rock and pipe installation shall be provided from near the base of the pipe and extending to at least 8 inches above the infiltrative surface. Multiple slots or orifices must be provided.

G. Storage/Distribution Media

1. Rock and Pipe

a. The perforated pipe must be surrounded by clean, graded gravel, rock, or other material of equal efficiency which ~~may~~must range in size from 1/2 inch to 2 1/2 inches. AASHTO M43-05 (2005 Version) size No. 3 coarse aggregate meets this specification.

b. At least six inches of gravel, rock or other material must be placed below the pipe. The gravel, rock or other material must fill around the pipe and be at least 2 inches above the top of the distribution pipe.

c. The top of the placed gravel or such material used must be covered with non-woven permeable geotextile meeting a maximum thickness rating of 2.0 ounces per square yard or equivalent pervious material. An impervious covering must not be used.

2. Chambers

a. Chambers must be installed with the base of the unit on in-situ soil or, if placed on acceptable media, the manufacturer's installation instructions must be followed so as to prevent chambers from settling into the media.

b. Effluent pipes from the distribution box or manifold must enter the chamber at least 6 inches above the base of the chamber on standard height chambers, and at least 3 inches above the base of the chamber on the low-profile models.

c. Installation must be according to manufacturer's instructions.

d. Effluent may be distributed by gravity, pump or siphon.

e. As per section 43.13.E.1.d, if the total area covered by chambers is at least 90 percent of the excavated area, it may be approved as being the equivalent square footage of the total excavation. ~~For width and square footage requirements refer to section 8.13.E.1.d~~

(1) The area below the chamber endcaps must not be included in the calculations of the soil treatment area.

3. Media, Enhanced, or Other Manufactured

    a. Manufactured media must be installed with the base on the in-situ soil or placed on acceptable media meeting the manufacturer's specifications for proprietary distribution products or combined treatment/distribution products.

    b. Installation must be according to manufacturer's instructions.

    c. Pressure distribution is required for TL2-TL3ND effluent, unless otherwise noted in this regulation.

4. Drip~~lines~~ Dispersal Systems

    a. The infiltrative surface area must be calculated using the long-term acceptance rate for the site or a more conservative value if recommended by the manufacturer. Adjustment factors in Tables 10-2 and 10-3 may not be used.

    b. Driplines must be installed on manufacturer's spacing recommendations.

    c. Drainback must be provided for all driplines, pipes and pumps.

    d. Provisions must be made to minimize freezing in the distribution pipes, driplines, relief valves, and control systems.

    e. Provisions must be made for filtering, back-flushing, or other ~~cleaning~~ required maintenance.

5. Tire Chips

    a. The pipe may be surrounded with clean, uniformly-sized tire chips.

    b. Tire chips must be nominally 2 inches in size and may range from 1/2 inch to a maximum of 4 inches in any one direction.

    c. Wire strands must not protrude from the tire chips more than 0.75 inches.

    d. Tire chips must be free from balls of wire and fine particles less than 2 mm across.

    e. The top of the tire chips used must be covered with non-woven permeable geotextile meeting a maximum thickness rating of 2.0 ounces per square yard or equivalent pervious material. An impervious covering must not be used.

H. Soil replacement systems

The construction of a soil replacement system is permitted to bring the soil treatment area into compliance with the requirements of these regulations.

1. When a soil type "R" is removed, the following requirements must be met:

    a. All added soil must comply with the following specifications:

        (1) Added soil must meet the specifications of ~~either "preffere" or "secondary" sand filter~~ imported treatment sand media, as specified in section 8.11.C.2.d.~~3~~

        (2) The long-term ~~applicable~~ acceptance rates as specified in section 43.11.C.3.b ~~Table 10-1A~~ must be used. No additional sizing adjustments are allowed.

(3) The depth of the added media must comply with the requirements of Table 10-1A.

~~a) In order to utilize the reduced vertical separation requirements for TL2 or higher quality effluent, EPCPH must have a program for inspection and oversight as specified in section 8.14.~~

(4) ~~A gradation of the sand media used must be provided. The graduation must be dated no more than one month prior to the installation date. However, a gradation of the actual material placed in the excavation is recommended.~~

(5) All added soil must be completely settled prior to installation of components as specified and approved by the design engineer.

(6) Pressure distribution must be used.

2. ~~The removal and reinstallation of in situ soil may only be allowed where the soils are determined to be a soil type "R-1" (Option 2). The design must comply with the requirements for the soil type noted in Table 10-1A (Soil Type R-1, Option 2).~~

3. When a sand media is added to a soil treatment area or to an excavation where a soil type 1-5 (Table 10-1) is the underlying soil, the following requirements must be met:

   a. Added soil must meet the specifications of ~~either "preferred" or "secondary" sand filter~~ imported treatment sand media, as specified in section 8.11.C.3.d.

   b. Unless the design follows the criteria for a sand filter or mound system design where ≥ 24 inches of sand is installed as required in section 8.11, or a higher-level treatment system has been installed ~~and EPCPH implements a maintenance oversight program as provided in section 43.14.D~~, the TL1 long-term acceptance rate ~~for~~ of the most restrictive soil within 12" below the sand base ~~the receiving soil~~ must be used.

   c. For sites where the proposed soil treatment area had been previously filled, the existing fill material must be removed and replaced with imported treatment sand meeting the specification of section 43.11.C.2.d. The excavation must also extend at least 12" below the original grade (grade prior to fill). Only existing fill material meeting the requirements of a soil type 1 will be allowed to remain. ~~A gradation of the sand media used must be provided. The graduation must be dated no more than one month prior to the installation date. However, a gradation of the actual material placed in the excavation is recommended.~~

   d. All added soil must be completely settled prior to installation of components.

I. Repairs

1. When space is not available or if there are other site limitations that preclude other soil treatment area options for OWTS repairs, wide beds, deep gravel trenches, and seepage pits may be considered for repairs only. Other options are vaults or higher-level treatment systems, ~~if EPCPH permits them~~. For the specific repair or modification of an existing cesspool where site conditions preclude installing a conforming OWTS, one of the preceding repair options, or installing a septic tank, EPCBoH may consider a variance per the requirements of section 43.4.N. For a cesspool variance, the applicant has the burden of proof to demonstrate that

   a. The variance is justified due to specific site constraints, and

   b. Installing a septic tank is not feasible under section 43.4.N.2.e.

c. Submission of an OWTS System Review inspection to verify the cesspool is operating and intended and not in malfunction or a state of failure at time of request.

2. Repairs to failing systems must conform to setbacks identified in Table 7-1 when possible. When this is not possible using all available methods described above, ~~the jurisdiction with authority~~ EPCPH may permit reductions to setbacks. At no point will a setback reduction be approved ~~by the jurisdiction~~ less than what the existing separation is to the existing OWTS. In maximizing this setback distance, all methods available in section 8.10.I.1 must be utilized, including but not limited to the use of higher-level Treatment, wide beds, seepage pits, etc., where allowed. Any setback reduction beyond what the existing failing system presents must be approved by the EPCBoH through the variance process ~~as outlined~~ in section 8.4.P., ~~if EPCBoH has opted to allow variances~~

3. Soils information obtained for the previous OWTS installation may be used if the information meets the requirements of section 43.5.D.2.j. Otherwise, an additional soils investigation will be required.

4. Wide Beds: For repairs, beds may be wider than 12 feet without being required to receive effluent meeting Treatment Level 2 quality or better.

5. Deep Gravel Trenches

   a. Deep gravel trenches may only be installed in soil type 1, 2, 2A, and 3. Installations in soil types 3A, 4, 4A, 5, and R are prohibited.

   b. The length of an absorption trench may be calculated by allowance for the sidewall area of additional depth of gravel in excess of 6 inches below the bottom of the distribution pipe according to the following formula:

$$\text{Adjusted Length} = L \times \frac{(W+2)}{(W+1+2D)}$$

   Where:

   L = length of trench prior to adjustment for deep gravel

   W = width of trench in feet

   D = additional depth in feet of gravel in excess of the minimum required six inches of gravel below the distribution pipe

   c. Vertical separation requirements provided in Table 7-2 must be met.

   d. For repairs, potential for risk to public health and water quality may be evaluated by EPCPH. If risk is low in the determination of EPCPH, a Deep Gravel Trench system without higher-level treatment may be used. However, if in the opinion of EPCPH, the risks to public health are high, then TL2 or higher must be attained prior to final dispersal.

   e. Maximum allowable ~~additional~~ depth from existing grade to trench bottom is 5 feet.

   f. Evaluation of ~~Percolation tests or~~ soil profile test pit excavations or percolation tests must be performed at the proposed infiltrative surface depth.

g. Size adjustments as provided for in Tables 10-2 and 10-3 must not be applied to deep gravel trenches.

6. Seepage Pits

a. For repairs, the potential ~~for~~ risk to public health and water quality may be evaluated by EPCPH. If risk is low in the determination of EPCPH, a seepage pit without higher-level treatment may be used.

b. If in the opinion of EPCPH the risks are not low, higher-level treatment of at least TL2N must be attained prior to discharge to these systems for final dispersal.

c. Reductions in the vertical or horizontal separation or system sizing requirement for the use of higher-level treatment systems with seepage pits are not allowed.

d. A seepage pit must consist of a buried structure of precast perforated concrete or cinder or concrete block laid dry with open joints.

(1) Pits must be provided with both vertical sidewall and top supporting structural concrete or other material of equal structural integrity.

(2) The excavation must be larger than the structure by at least 12 inches on each side and may not exceed 5 feet beyond the structure wall.

(3) The over-excavated volume must be filled with clean, graded gravel or rock, which may range in size from ½ inch to 2 ½ inches. AASHTO M 43 size No 3 coarse aggregate meets this specification.

(4) The capacity of the pit must be computed on the basis of long-term acceptance rates determined for each stratum penetrated. The weighted average of the results must be used to obtain a design figure.

(5) Soil strata in which the percolation is slower than 30 minutes per inch must not be used for absorption or seepage. These strata must not be included in the weighted average to determine the long-term acceptance rate.

(6) The infiltrative surface of the pit is the vertical wall area (based on dug perimeter) of the pervious strata below the inlet invert plus the bottom of the excavated area.

(7) The bottom of the pit excavation must be greater than 4 feet above a limiting layer, restrictive layer, or groundwater condition.

e. Pits must be separated by a distance equal to 3 times the greatest lateral dimension of the largest pit. For pits over 20 feet in depth, the minimum space between pits must be 20 feet.

f. The requirements for the design and construction of seepage pits for the treatment and dispersal of on-site wastewater on new sites are defined in section 8.12.B.

7. Wastewater Ponds

a. Construction of new wastewater ponds is prohibited.

b. For repairs of an existing wastewater pond, the potential for risk to public health and water quality may be evaluated by EPCPH. If risk is low in the determination of EPCPH, the repair of a wastewater pond may be permitted; however, the following criteria must be followed:

(1) A septic tank must precede the wastewater pond.

(2) The depth of the design volume of the wastewater pond must be at least 5 feet.

(3) A wastewater pond must have 2 feet of freeboard above the design volume of the pond.

(4) A wastewater pond must be fenced to keep out livestock, pets, vermin, and unauthorized people.

(5) Wastewater ponds must be designed on the basis of monthly water balance including design flow, precipitation, evaporation, and seepage.

(6) Wastewater ponds must be constructed so the seepage out of the bottom or sides does not exceed 1/32 of an inch per day. If this limit cannot be achieved using compacted natural soil materials including soil additives, an impermeable synthetic membrane liner must be used.

(7) If the evapotranspiration does not exceed the rate of inflow of effluent from the structure, a soil treatment area meeting the requirements of this regulation must be installed to accept the excess flow.

(8) Maintenance must include preventing aquatic and wetland plants from growing in or on the edge of the pond, protecting sides from erosion, and mowing grasses on the berm and around the pond.

(9) Wastewater ponds must be designed by a professional engineer.

8. Vaults

a. The allowable use of vaults for repairs is determined case by case by EPCPH.

b. Criteria for vaults are in section 8.12.C. of these regulations.

9. Higher Level Treatment Options

a. Reduction in required soil treatment area for repairs is acceptable with higher-level treatment.

b. Design criteria for higher-level treatment systems are in section 8.11.

10. Remediation Systems

a. The intent of a remediation technology or process is to sufficiently increase the infiltration rate through the infiltrative surface at the bottom of an existing trench or bed and restore permeability to the soil below. Treatment levels as defined in Table 6-3 are not granted to remediation technologies.

b. EPCPH may permit the use of remediation technologies or processes to address an existing failure or malfunction within a soil treatment area.

c. The use of a remediation technology or process constitutes an alteration to the OWTS, and therefore the owner must obtain a permit for this work from EPCPH.

d. Upon approval by EPCPH, a system owner may choose to try a remediation technology or process to see if an existing problem with the soil treatment area will be resolved. The system owner bears the risk and cost of this attempt and is aware that an additional repair may be required.

e. Remediation technologies and processes must not adversely affect groundwater, surface water, any existing components, the long-term effectiveness of the soil treatment area, or the environment.

f. If the remediation technology or process does not correct the problem with the system, a conforming OWTS must be installed per the requirements in these regulations within a time frame determined by EPCPH.

g. ~~EPCPH may requires~~ Monitoring and/or maintenance of the remediation technology or process will be required as a stipulation of permit issuance.

(1) A certified inspection must be conducted at 3 month intervals for 1 year, unless otherwise specified by EPCPH, after remediation technology is applied.

8.11 Design Criteria – Higher-Level Treatment Systems

A. General

1. Higher-level treatment systems must be designed by a professional engineer.

2. Higher-level treatment systems may be public domain technology systems or proprietary systems.

a. Public domain technology systems must be designed, installed and maintained according to established criteria and additional criteria established by EPCPH. When design criteria are not specifically provided in these regulations, the criteria used in the design must be from a reference commonly used as an industry standard and the criteria must be cited in the design.

b. Proprietary systems must be designed, installed, and maintained according to manufacturer's instructions and additional criteria identified in the Division's Technology Review and Acceptance process under Regulation 43.

~~3. Reductions to soil treatment area or separation distances based on higher level treatment systems must not be permitted unless EPCPH has adopted a program for permitting and oversight of inspections and maintenance in section 8.14.C.~~

~~a. Exception: Application rates for unlined sand filters and mound systems provided within sections 43.11.C.3.b and c, and sections 43.D.2 and 3, may be applied without the implementation of EPCPH maintenance oversight program as described in section 43.14.D. However, maintenance of these systems is always recommended.~~

4. Soil treatment areas for higher-level treatment systems must be pressure dosed.

5. Systems must be capable of accommodating all anticipated flows and organic loads.

6. Ventilation and air systems: Mechanical components must be installed in a properly vented location, and all vents, air intakes, and air hoses must be protected from snow, ice, and water vapor accumulations.

7. Covers, barriers, or other protection: All systems must be installed to include protection of openings against entry of insects, rodents, other vectors, and unauthorized people.

B. The treatment levels identified in Table 6-3 are specified in this section for public domain technology. ~~and p~~Proprietary treatment systems will be assigned a treatment level by the Division's Technology Review and Acceptance process under Regulation 43. Adequate maintenance for each system must be required and documented as in section 8.14.C.

C. Sand Filters

1. A lined ~~or unlined~~ intermittent sand filter or a recirculating sand filter may be used as a higher-level treatment system prior to dispersing the effluent into a soil treatment area.

2. Filter media used for all systems noted in section 8.11.C.3. shall comply with the definition of "~~sand filter~~ Imported Treatment Sand ~~media~~" as noted in these regulations.

3. Intermittent (Single Pass) Sand Filters; General Requirements

a. The treatment level for intermittent sand filters is considered TL3.

b. Size adjustment factors provided in Tables 10-2 and 10-3 are not applicable for sand filters. ~~General Design Parameters: Not all combinations of the variables noted below will result in a proper distribution system design. The design engineer must justify through calculations or design software that the selected values will concur with industry standards.~~

~~(1) Distribution pipe size: ¾ inch – 1.5 inches (PVC Class 200, min)~~

~~i. 2 inch distribution pipe may only be used where other design modifications cannot overcome a greater than 10% variation in the pressure head between the initial and distal orifices.~~

~~(2) Distribution pipe spacing: 18 inches – 48 inches~~

~~(3) Orifice size: 1/8 inches – 3/8 inches (Also, see section 8.11.C.b.5 below)~~

~~(4) Orifice spacing: 18 inches – 48 inches~~

~~(5) Operating head at the distal end of distribution pipes: 30 inches – 72 inches (60 inches typ). Larger orifices allow for an operating head at the lower end of this range, while smaller orifices will necessitate an operating head at the higher end of this range.~~

~~c. Dosing~~

d. Pressure distribution is required. The design of the distribution system must comply with the requirements of section 8.10.E.3.

~~(1) Number of cycle/day: Will vary with design (Short, frequent doses are preferred)~~

~~(2) Proposed dose volume: Will vary with design (0.25-1.0) gallons/orifice/dose, or 3-5 times distribution pipe volume.~~

(3) ~~Timed dosing is recommended where design considerations allow.~~

e. Sand Filter Treatment Media

(1) The depth of the sand media below the distribution system must be at least 24 inches unless otherwise noted in Table 10-1A for type "R" soils.

~~(2) "Preferred" sand media requirements.~~

~~i. Effective size: 0.25-0.6mm~~

~~ii. Uniformity coefficient: ≤ 4.0~~

~~iii. Percent fines passing #200 sieve ≤ 3.0~~

(3) ~~"Secondary"~~ Imported Treatment Ssand media requirements:

i. Effective size: 0.15-0.60 mm

ii. Uniformity coefficient: ≤7.0

iii. Percent fines passing #200 sieve must be ≤ 3.0

iv. 100% must pass 3/8" sieve; ≥95% must pass the # 4 sieve; >65% must pass the #10 sieve (2mm)

(4) A gradation of the sand media used must be provided.

i. The gradation must be dated no more than ~~one~~ 4 months prior to the installation date. However, a gradation of the actual material placed in the excavation is recommended.

ii. The gradation must be provided to EPCPH on letterhead from either the source gravel pit or independent materials testing laboratory.

f. Gravel Requirements

(1) Clean, graded gravel, or rock, must range in size from 1/2 inch to 2 1/2 inches. AASHTO M 43 size No.3 coarse aggregate meets this specification.

(2) The gravel must surround the distribution pipes used to disperse the effluent and must be at least 6 inches below and 2 inches above the pipes.

(3) Division ~~accepted manufactured~~ media may be used as an alternative to specified gravel.

g. Filter Fabric Requirements

(1) The top layer of gravel must be covered with a non-woven permeable geotextile fabric meeting a maximum thickness rating of 2.0 ounces per square yard or equivalent pervious material.

h. Final Cover Material

(1) 8 inches – 10 inches of Type 1 or 2 soil with an additional 2 inches topsoil.

i. ~~Size adjustment factors provided in Tables 10-2 and 10-3 are not applicable for sand filters.~~

j. Sand filters must not be used to treat wastewater that does not conform to TL1 treatment level or better.

4. Unlined (Open Bottom) Sand Filters

a. All requirements of 8.11.C.3.a-~~hi~~ will apply to unlined sand filters.

b. Application rates for the distribution media where a minimum of 24 inches of imported treatment sand is installed:

(1) ~~Maximum hydraulic loading rate for TL1 effluent applied to "Preferred Sand Media" in an unlined sand filter is 1.0 gal/sq. ft./day or the long term acceptance rate of the receiving soil for TL3 (Table 10-1) whichever results in the larger area.~~

(2) Maximum hydraulic loading rate for TL1 effluent applied to ~~"Secondary Sand Media" "~~Imported treatment sand" in an unlined sand filter is 0.8 gal./sq. ft./day. ~~Or the long term acceptance rate of the receiving soil for TL3(Table 10-1) whichever results in the larger area.~~

(3) Maximum hydraulic loading rate for TL2, TL2N, TL3, TL3N or TL3ND effluent applied to ~~"Preferred" or "Secondary" Sand Media~~ "Imported treatment sand" ~~in an unlined sand filter must be the long term acceptance rate of the receiving soil for TL3 (Table 10-1)~~ is the soil type 1 LTAR for the treatment level of the effluent received, TL2 or TL3 (Table 10-1).

c. Application rates for the in-situ soil where a minimum of 24" of imported treatment sand is installed:

(1) Maximum hydraulic loading rate for the in-situ soil when TL1-TL3ND effluent is applied to the imported treatment sand is TL3 LTAR, (Table 10-1) of the most restrictive soil within 12 inches below the sand base.

d. The upper infiltrative surface of an unlined sand filter receiving TL1 ~~– TL2~~ effluent must be at least 3 feet above a limiting layer or groundwater condition.

e. The upper infiltrative surface of an unlined sand filter receiving TL2~~N~~-TL2N~~3~~ effluent must be at least 2 1/2 feet above a limiting layer or groundwater condition.

f. The upper infiltrative surface of an unlined sand filter receiving TL3 or TL3N effluent must be at least 2 feet above a limiting layer or groundwater condition.

g. The upper infiltrative surface of an unlined sand filter receiving TL3ND effluent must be at least one foot above a limiting layer, or groundwater condition.

h. Where adjacent sand filters are installed the base of each excavation for each sand filter must be no closer than six feet, sidewall to sidewall.

5. Lined, Single-Pass Sand Filters

a. All requirements for application rates provided within section ~~of~~ 8.11.C.2b ~~3a-l~~will apply to unlined sand filters.

b. ~~Application rates:~~

(1) ~~Hydraulic loading rate for TL1 effluent applied to "Preferred Sand Media" in a lined sand filter is 1.0 gal/sq.ft./day~~

(2) ~~Hydraulic loading rate for TL1 effluent applied to "Secondary Sand Media" in a lined sand filter is 0.8 gal/sq.ft./day~~

c. The minimum depth of the sand media in a lined sand filter must be 2 feet.

d. An intermediate layer of pea gravel, 2 inches in thickness, must be placed between the sand filter media and the coarse under-drain media to prevent the migration of sand into the lower layer of under-drain gravel. ASTM C 33-23 (2023 version) No. 8, coarse aggregate meets this specification.

e. A minimum 4-inch diameter slotted SCH40 PVC [ASTM Standard D2729-21 (2012 version)] under-drain pipe must be used to collect the treated effluent. The under-drain pipe must be installed in the center of a 5 inches thick bed of washed, graded gravel, or rock ranging in size from 1/2 inch to 2 1/2 inches. AASHTO M 43, No.3 coarse aggregate meets this specification.

f. Lined sand filters must have an impervious liner on the sides and bottom of the filter. The liner must consist of a minimum 30 mil thick PVC material or equivalent.

g. Effluent collected by the under-drain must be dispersed to a soil treatment area. The soil treatment area may be sized with a maximum long-term acceptance rate of the receiving soil for TL3 effluent.

h. The base of the liner must be at least 2 feet above an actual or seasonal high groundwater elevation.

6. Lined, Recirculating Sand Filter ~~Minimum Requirements~~:

a. Treatment level:

(1) Treatment level provided within recirculating sand filters is TL3.

b. General Design Parameters: Not all combinations of the variables noted below will result in a proper distribution system design. The design engineer must justify through calculations or design software that the selected values will concur with industry standards.

(1) Distribution pipe size: 3/4 inch – 2 inches (PVC Class 200, min.)

(2) Distribution pipe spacing: 18 inches – 36 inches (24 inches typ.)

(3) Orifice size: 1/8 inch – ¼ inch

(4) Orifice spacing: 18 inches – 36 inches (24 inches typ.)

(5) Pressure head at end of distribution pipe: 24 inches – 72 inches (60 inches typ.)

c. Dosing:

(1) Timed dosed pressure distribution is required. The design of the distribution system must comply with the requirements of section 8.10.E.3.a.

(2) Recirculation ratio: 3:1 – 5:1

(3) Gallons/orifice/dose: 1 – 3 (2.0 typ.)

(4) Hydraulic loading: 3 - 5 gal./sq.ft./day (4 – 5 typ.)

(5) Dosing time "ON"; <2.5 min. (<2.0 typ.)

(6) Number of cycles/day: 48 – 120

d. Top gravel requirements:

(1) Washed, graded gravel, or rock, must range in size from 1/2 inch to 2 1/2 inches. AASHTO M 43, No.3 coarse aggregate meets this specification.

(2) The gravel must surround the distribution pipes used to disperse the effluent and must be at least 6 inches below and 2 inches above the pipes.

(3) State-accepted manufactured media may be used as an alternative to specified gravel.

(4) Soil cover is prohibited. The upper gravel layer must be open to the atmosphere.

e. Filter media requirements:

(1) Effective size: 1.5 – 2.5 mm

(2) Uniformity coefficient: ≤ 3

(3) Fines passing #200 sieve: ≤ 1.0

(4) Media depth (min.): ≥24 inches

f. Intermediate gravel layer:

(1) An intermediate layer of pea gravel, 2 inches in thickness, must be placed between the coarse underdrain media and the sand filter media to prevent the migration of sand into the lower layer of under-drain gravel (ASTM C 33, No. 8, coarse aggregate).

g. Under-drain requirements:

(1) A minimum 4-inch diameter slotted SCH40 PVC underdrain pipe must be used to collect the treated effluent. The underdrain pipe must be installed in the center of a 5-inch thick bed of washed, graded gravel, or rock ranging in size from 1/2 inch to 2 1/2 inches. AASHTO M 43, No.3 coarse aggregate meets this specification.

h. PVC liner requirements:

(1) Lined sand filters must have an impervious liner on the sides and bottom of the filter. The liner must consist of a 30-mil thickness PVC material or equivalent.

(2) The base of the liner must be at least 2 feet above an actual or seasonal high groundwater elevation.

i. Effluent collected from the recirculating sand filter must be discharged to a soil treatment area. The soil treatment area may be sized with a maximum long-term acceptance rate of the receiving soil for TL3N effluent.

D. Mound Systems

1. When the infiltrative surface area of the imported sand media receiving wastewater effluent is at or above the natural ground surface at any point, it shall be considered a mound system. Mound designs can include a variety of parameters:

a. A mound installation where all of the imported sand is installed above existing grade.

b. A mound installation where the top of the imported sand is installed entirely above existing grade but the base of the imported sand is installed below existing grade.

c. A mound installation where the top of the imported sand is installed both above and below the existing grade.

2. Sand Fill Loading Rate (Top of imported treatment sand)

a. For a mound system that receives TL1 effluent and provides A MINIMUM OF 24 INCHES of imported treatment sand media, the LTAR for the imported treatment sand is 0.8 gal./sq.ft./day.

b. For a mound system that receive TL2 – TL3ND effluent and provides A MINIMUM OF 24 INCHES of imported treatment sand media, the upper infiltrative surface of the imported treatment sand is to be sized on the soil type 1 LTAR for the treatment level of the effluent received, as provided in Table 10-1; TL2 or TL3.

c. Where TL 1 effluent is dispersed to the distribution media in mound systems where LESS THAN 24 INCHES of sand is installed, the LTAR of the imported treatment sand is the TL LTAR of the most restrictive soil layer within 36 inches of the upper infiltrative surface (top of imported sand).

d. Where TL2 – TL3ND effluent is dispersed to the distribution media in mound systems where LESS THAN 24 INCHES of sand is installed, the systems is to be sized on the LTAR of most restrictive soil layer within 36 inches of the upper infiltrative surface (top of imported sand), relative to the treatment level of the effluent received; TL2 or TL3.

~~(1) Note that in order to utilize the loading rates provided by the treated effluent, EPCPH must have adopted a program for oversight of inspection and maintenance as provided in section 43.14.D. Otherwise the TL1 application rates noted in section 2.c above apply.~~

3. Soil Loading Rate (Base of imported treatment sand)

a. Mound systems that provide a minimum of 24 inches of imported ~~sand~~ treatment sand media may use the TL3 application rates ~~for the in situ receiving soil for TL3 Effluent~~ (Table 10-1) of the most restrictive in-situ soil layer within 12" of the imported sand base. Size adjustment factors within Table 10-3 must not be applied to mound designs where TL3 application rates are used. However, the adjustment factors may be applied if TL1 application rates are used.

b. A mound system may include less than 24 inches of imported treatment sand media on a site where a lesser depth of sand media is sufficient to meet vertical separation requirements above a "limiting layer" or "groundwater condition," as specified in Table 7-2. When less than 24 inches of treatment sand is imported, the following criteria apply:

(1) Where TL1 effluent is applied, TL1 application rates for the most restrictive in-situ soil layer within 36 inches of the top of the imported sand must be used. Size adjustment factors within Table 10-3 may be used. Size adjustment factors within Table 10-3 may be used.

(2) Where ~~EPCPH provides an oversight program as references in 43.14.D~~. and the effluent is treated to TL2 – TL3ND quality prior to dispersal into the distribution media, the LTAR is the soil loading rate of the most restrictive in-situ soil layer within 12 inches of the imported sand base for the treatment level of the effluent received, as provided in Table 10-1; TL2 or TL3.

i. Vertical separation requirements of Table 7-2 must be met, relative to the treatment level of the effluent received. Size adjustment factors within Table 10-3 may not be used.

~~(3) Where EPCPH DOES NOT PROVIDE an oversight program as referenced in 43.14.D. and the effluent is treated to TL2 – TL3ND quality prior to dispersal into the distribution media, TL1 applications rates noted in section 43.11.D.2.c above must be used. Size adjustment factors within Table 10-3 may be used.~~

4. Linear loading rates

~~5. Mound systems must conform to the design requirements of sections 8.11.C.4.a-e for unlined (open bottom) sand filters, with the following exceptions.~~

~~a. A mound system may include less than 24 inches of imported sand media on a site where a lesser depth of sand media is sufficient to meet vertical separation requirements above a limiting layer. Application rates for the in situ receiving soil for TL1 effluent must be used when less that 24 inches of sand media is used, unless higher level treatment is provided prior to dispersal into the mound system.~~

~~b. For the design of a mound system where less than 24 inches of sand media is proposed, and application rates for TL1 are used the size adjustment factors within Table 10-3 may be used.~~

~~6. The basal area must be determined using the LTAR from Table 10-1 for the in situ receiving soil under the mound.~~

a. ~~Linera loading rate must be determined~~. The design engineer must evaluate~~ion~~ many factors ~~is required~~ to achieve an accurate determination of the linear loading rate. While application rates for the in-situ receiving soil under the mound is a main component, placement on the slope and percent of slope must also be addressed when defining the linear loading rate. If the movement of the effluent is primarily vertical, then the linear loading rate is not as critical. However, if the movement of the effluent will be primarily horizontal, as would be expected in soil types 3A through 5 (Table 10-1), then the linear loading rate is extremely important and long narrow mounds are necessary.~~strongly recommended~~

b. When TL1 effluent is applied to the distribution media of a mound system installed above in-situ soil types with permeability less than 60 min/inch ~~1 through 3~~ (Table 10-1, ~~) and R-0 through R-2(~~and Table 10-1A), the suggested linear loading rate is between 6 gpd/lin.ft. and 12 gpd/lin.ft. The maximum width of the distribution media in a mound system installed above these soil types is 12 feet when TL1 effluent is applied to the distribution media of a mound system.

c. When TL2 through TL3ND effluent is applied to the distribution media of a mound system installed above in-situ soil types with permeabilities less than 60 min/inch ~~1 through 3~~ (Table 10-1, ~~) and R-0 through R-2(~~and Table 10-1A), the linear loading rate may exceed 12 gpd/lin.ft.; subsequently the mound may be wider than 12 feet.

d. When TL1 through TL3ND effluent is applied to mound systems installed above in- situ soil types with permeabilities exceeding 60 min./inch 3A through 5 (Table 10-1, and Table 10-1A), the suggested linear loading rate is between 3 gpd/lin.ft. and 5 gpd/lin.ft. The maximum width of the distribution media in a mound system placed above these soil types is 12 feet; however, once calculated a lesser width may be required.

7. Mound systems must conform to the design requirements of sections 43.11.c.2 and 3, unless otherwise specified within this section; 43.11.D.

8. The basal area must be determined using the requirement for the soil loading rate and linear loading rate provided above.

    a. The total basal area of the mound must be comprised of imported sand media.

9. The final cover over a mound system must extend at least 12 inches horizontally beyond the perimeter of the distribution media prior to sloping down to existing grade. The final slope of the mound must be no greater than 3 feet horizontal to one foot vertical.

10. The surface of the mounded area must be planted with a suitable vegetative cover, preventing erosion and promoting run-off.

11. ~~A s~~Suggested references for the design and installation of mound systems ~~is~~are, "The CDPHE Mounded Wastewater Treatment Systems Technical Guidance" and "*The Wisconsin Mound Soil Absorption System: Siting, Design, and Construction Manual, January 2000*". Note that these~~is~~ are ~~is~~suggested guidance, and where the requirements of these regulations differ from those in the referenced mound documents, the requirements of theseis regulations will govern.

E. Rock Plant Filter (Constructed Wetland) Treatment Before a Soil Treatment Area

1. A rock plant filter system must be designed by a professional engineer.

2. The design must be site specific and include specifications for: loading, capacity, dimensions, liner material, filter media, effluent depth and depth control mechanism, density and species of plant material, and other site-specific information.

3. The treated effluent from a rock plant filter must be distributed to a soil treatment area.

4. Although producing higher-level treatment, rock plant filters must not be assigned a treatment level higher than TL1 because of system and seasonal variability.

8.12 Design Criteria – Other Systems ~~Facilities~~

A. Evapotranspiration and Evapotranspiration/Absorption Systems:

1. Non-Pressurized Drip Dispersal System (NDDS):

    a. An NDDS is considered a type of evapotranspiration/absorption system. However, since specific design criteria ~~is~~are provided for an NDDS (see section 43.12.A.1.c and d), they are exempt from the additional requirements of pressure distribution and items within sections 8.12.A.2, 3 and 4.

    ~~b. NDDS installations are prohibited unless EPCPH has a maintenance oversight program in place as described in section 43.14.D.4~~

    c. The design of an NDDS must follow the procedures stated in the document titled: *The Colorado Professionals in Onsite Wastewater Guidelines for the Design and Installation of Non-Pressurized Drip Dispersal Systems (NDDS), ~~September~~*October, *2024.* The document is available FROM Colorado Professionals in Onsite Wastewater (www.cpow.net) ~~is the procedural guideline in the design of a NDDS and must be followed when an NDDS is proposed~~.

    d. The width of an NDDS system may be wider than 12 feet.

2. The following section provides general criteria which must be followed when an evapotranspiration or evapotranspiration/absorption bed is proposed.

    a. The design may only be permitted in arid climates where the annual evaporation rate exceeds the annual precipitation rate by more than 20 percent, and where site characteristics dictate that conventional methods of effluent dispersal are not appropriate.

    b. The design may only be permitted in soil types 4, 4A and 5.

    c. The system must be designed by a professional engineer.

    d. If data for the Pan Evaporation Rate is provided, it must be multiplied by 0.70, or less, to obtain the equivalent Lake Evaporation Rate.

    e. The width of the bed may be wider than 12 feet.

    f. The required capillary or wicking sand must meet the gradation requirements in Table 12-1 and be approved by the design engineer. ~~This sand is to be covered by a crowned, thin layer of loamy-sand mix and appropriate vegetation that will assist in drawing the water to the surface.~~

        1. The gradation of the wicking sand must be submitted to EPCPH on letterhead from either the source gravel pit or independent materials testing laboratory. The gradation must be dated not more than 1 month prior to the installation date.

    g. This sand is to be covered by a crowned, thin layer of loamy-sand mix and appropriate vegetation that will assist in drawing the water to the surface.

    h. Adjustment factors as provided in Tables 10-2 and 10-3 must not be used.

Table 12-1 Gradation of Wicking Sand for Evapotranspiration Beds (Fine Sand)

Sieve Size	Percent Passing
4	100

40	50-70
200	<15

3. For systems designed strictly as an evapotranspiration bed, the following criteria must be met:

    a. Design data to be furnished must include, but shall not be limited to: system dimensions, distribution system design, specifications of distribution media and wicking sand, liner material if used, bedding, properties of the soil under the system, vegetation cover, and a water balance calculation including annual precipitation and storage requirements for periods of the year when evapotranspiration does not occur.

    b. The following formula must be used for determining the minimum area necessary for total evapotranspiration of septic tank effluent:

$$\text{Area (in square feet)}^* = \frac{\text{Design Flow (in gallons per day)} \times 586}{\text{Lake Evaporation Rate at the Site (in inches per year)}}$$

    * Additional area may be required based on the annual water balance calculations.

    c. Designs will include a rock and pipe, or other Division-approved proprietary distribution product, with the centerline of the distribution system lateral no more than 6 feet ~~to 8 feet~~ on center and within 3 feet of the sidewall or endwall. A thin non-woven fabric may be placed above the distribution system. Capillary wicking of the effluent is accomplished by a uniform depth layer of the specified sand media (capillary wicks), no more than 24 inches deep, placed between and above the distribution media. The base of the evapotranspiration bed may be no more than 30 inches below finished grade.

    d. Capillary wicks which penetrate between the distribution system to the bottom of the bed must be at least 15 percent of the bed surface area. The wicks must be uniformly spaced throughout the system.

    e. Except for dwellings, if the system is designed for summer use only, as determined by EPCPH, the surface area may be multiplied by 0.6 to obtain the required area.

4. For systems designed as an evapotranspiration/absorption bed, the following criteria must be met.

    a. Data to be furnished must include, but is not limited to: system dimensions, distribution system design, specifications of wicking sand, properties of the soil under the evapotranspiration/absorption bed, provision for vegetation cover, and a water balance calculation including annual precipitation and storage requirements for periods of the year when evapotranspiration does not occur.

    b. Design will include a rock and pipe, or other Division-approved proprietary distribution product, with the centerline of the distribution system lateral no more than 6 feet ~~to 8 feet~~ on center. A thin non-woven fabric as defined within section 43.10.G.1.c may be placed above the distribution media. Capillary wicking of the effluent is accomplished by a uniform depth layer of the specified sand media (capillary wicks) no more than 24 inches deep placed between and above the distribution media. The infiltrative surface may be no more than 30 inches below finished grade.

c. Capillary wicks which penetrate between the distribution system to the bottom of the bed must be at least 15 percent of the bed surface area. The wicks must be uniformly spaced throughout the bed.

d. The amount of storage and evapotranspiration capacities may be reduced by the volume of effluent absorbed by the underlying soil based on the long-term acceptance rate for that soil type and the formulas provided in section 8.12.A.4.e below.

e. The following formula must be used for determining the minimum area necessary for evapotranspiration/absorption of septic tank effluent:

$$\text{Area (sq. ft.)}^* = \frac{\text{Flow (gpd)}}{\text{(LTAR + ETR)}}$$

1. LTAR refers to the long-term acceptance rate of the underlying soil as provided in Table 10-1 for TL1 effluent.

2. ETR refers to the evapotranspiration rate derived from the following formula:

$$\text{ETR (gal/day sq. ft.)} = \frac{\text{Lake Evaporation Rate at the Site (in inches per year)}}{586}$$

* Additional area may be required based on the annual water balance calculations.

B. Seepage Pits

1. The construction of new seepage pits for the treatment and dispersal of on-site wastewater on new sites is prohibited unless:

   a. A trench or bed system will not meet the design, sizing or setback requirements of this regulation on the proposed site;

   b. The seepage pit is designed by a professional engineer; and

   c. The design includes higher-level treatment of at least TL2N.

2. The design requirements for new seepage pits must also comply with requirements as defined in 8.10.I.5.c and d.

3. Pressure distribution is not required for dispersal into a seepage pit.

C. Vaults Other Than Vault Privies

~~1. Vaults for full time use in new construction are prohibited where a property can accommodate an OWTS with a soil treatment area.~~

~~2. A EPCPH may allow or prohibit vaults for use at a permanently occupied facility, except where section 8.12.C.1 applies.~~

~~3. Vaults for full time use may be permitted when a failing OWTS cannot be replaced.~~

~~4. Vaults may be permitted for limited use occupancy on a property which cannot accommodate an OWTS with a soil treatment area.~~

~~5. A vault may be permitted if the facility is on land where the installation of an OWTS with soil treatment area is not permitted.~~

~~6. Vaults may be permitted for system where some of the wastewater flows are separates, such as toilet wastes only, into a vault. The portion not retained in the vault must be treated in an OWTS sized per the requirements of this regulation.~~

~~7. Variances may be granted for specialized commercial uses.~~

~~8. A vault, if permitted by EPCPH, must have a minimum 500-gallon effective volume or be capable of holding a minimum of the 48 hour design wastewater flow, whichever is larger.~~

~~9. A visual or an audible signal device or both, indicating filing to a maximum of 75 percent capacity, must be installed to indicate when pumping is necessary.~~

~~10. Concrete vaults must meet the strength and water tightness requirements for septic tanks. Prefabricated fiberglass, fiberglass-reinforced polyester, and plastic tanks may be used as vaults, if the tank manufacture provides testing criteria certifying them for this use.~~

~~11. EPCBoH may allow or prohibit vaults for use at a permanently occupied facility, except where section 43.12.C.2 applies~~

12. Vaults are prohibited where any of the following conditions exists:

    a. Sites that cannot provide access for pumping and general system maintenance.

    b. Full time or limited use in new construction where the property can accommodate an OWTS with a soil treatment area.

13. Vaults may be permitted where any of the following conditions exists:

    a. For full time use when an exiting OWTS is in a state of failure and cannot be replaced.

    b. For full time or limited use on a property which cannot accommodate an OWTS with a soil treatment area.

    c. If the structure is on land where the installation of an OWTS with a soil treatment area is not permitted.

    d. For systems where a portion of the wastewater flows ~~are separated~~, such as toilet wastes only or a private recreational vehicle dump station, are separated into a vault. The portion not retained in the vault must be treated in an OWTS sized per the requirements of these regulations.

14. Design and Capacity Requirements

    a. A vault must be accessible for routine pumping and maintenance.

    b. A vault must have minimum 500-gallon effective volume or be capable of holding a minimum of the 48-hour design wastewater flow, whichever is larger.

    c. A vault must provide both a visual ~~or an~~ and audible signal device, indicating filling to a maximum 75 percent capacity, thus indicating when pumping is necessary.

    d. Concrete, fiberglass, and plastic tanks are allowed for use as a vault. All tanks must meet the structural design requirements of section 43.9.B.5 or 6, as applicable.

e. Vaults must be watertight, and meet the requirements of section 43.8.D and 43.9.A.1.a

f. Metal vaults are prohibited.

D. Privies

1. Vault Privy

a. EPCPH allows the construction of new vault privies.

b. EPCPH will allow the continued use of existing vault privies.

c. Effective volume of the vault must be no less than 400 gallons, and it must be constructed of concrete, fiberglass, or plastic. The vaults for privies must meet the structural and water tightness ~~standards~~ requirements of section 43.9.B.5 or 6, as applicable.

d. A vault privy must be built to include: fly- and rodent-tight construction, a superstructure affording complete privacy, an earth mound around the top of the vault and below floor level that slopes downward away from the superstructure base, a floor, and a riser of concrete or other impervious material with hinged seats and covers of easily cleanable, impervious material. All venting must be fly-proofed with No. 16 or tighter mesh screening.

e. Vault privy construction shall comply with 8.12.C.10.

f. Vault privies shall comply with 8.8.D.1 - 4. for serviceability.

2. Pit Privy

a. When EPCPH determines that all other OWTS options have been investigated, and site conditions preclude their installation, EPCPH may allow the construction of pit privies.

b. EPCPH may allow the continued use of existing pit privies.

c. The construction of pit privies shall adhere to the following design criteria:

1. The bottom of the pit must be located above at least 4 feet of suitable soil and 4 feet above a limiting layer;

2. The pit must have at least 400 gallons of effective volume; and

3. The superstructure must provide complete privacy and have fly- and rodent-tight construction, an earth mound around the top of the pit and below floor level that slopes downward away from the superstructure base, a floor, and a riser of concrete or other impervious material with hinged seats and covers of easily cleanable, impervious material. All venting must be fly-proofed with No. 16 or tighter mesh screening.

E. Incinerating, Composting and Chemical Toilets

1. EPCPH may permit incinerating, composting and chemical toilets. Chemical toilets are limited to situations identified in section 43.12.E.7 below.

2. The use of an incinerating, composting or chemical toilet will not reduce the required size of the OWTS as noted in section 8.8.A; except under the following conditions:

    a. EPCPH may choose to permit reductions in the size of soil treatment areas based on incinerating or composting toilets, only if:

        1. There are no flush toilets available in the structures.

        2. The septic tank size must meet the requirements of Table 9-1 with no reductions allowed.

        3. ~~Before permitting a~~ No reduction in the size of a soil treatment area for the use of incinerating or composting toilets will be allowed until EPCPH ~~must~~ has implemented the following programs:

            a. Transfer of Title inspection program per section 43.4.L. All acceptance documents must include notation of the alternative toilet system that is installed.

            b. An operating permit program. ~~per section 43.4.M with required inspections and permit renewals no greater than three years apart~~, Inspections must confirm that no flush toilets have been installed and provide observations relative to general maintenance of the alternative fixtures.

        4. The reduction in the soil treatment area will be calculated by reducing the estimated wastewater flows (as provided in section 43.6) from the structure by no more than 25%, unless the structure has no water source or plumbing fixtures (e.g., remote access structure with composting toilet only).

3. Permitting of an incinerating or composting toilet may also be subject to the jurisdiction of a local agency regulating plumbing or the Colorado Plumbing Board, whichever has jurisdiction over plumbing in the location.

4. An incinerating or composting toilet may be used for toilet waste where an OWTS is installed for treating wastewater remaining after removal of toilet waste. Subject to EPCBoH or other applicable regulations or codes (e.g., Colorado Plumbing Code if a local code does not exist), the compartment may be located within a dwelling or building provided the unit complies with the applicable requirements of these regulations, and provided the installation will not result in conditions considered to be a health hazard as determined by EPCPH. Compartment and appurtenances related to the unit must include fly-tight and vector-proof construction and exterior ventilation.

~~5. Incinerating Toilets: An approved incinerating toilet must be designed and installed in accordance with all applicable federal, state, and local air-pollution requirements and manufacturer's instructions.~~

6. Composting Toilets

    a. Composting toilets must meet the requirements of NSF/ANSI Standard 41 (2023 version) and bear the seal of approval of the NSF or an equivalent testing and certification program.

    b. An approved composting toilet must treat deposits of feces, urine, and readily decomposable household garbage that are not diluted with water or other fluids and are retained in a compartment in which aerobic composting will occur.

c. The effective volume of the receptacle must be sufficient to accommodate the number of persons served in the design of the unit installed. The effective volume of the unit must include sufficient area for the use of composting materials which must not be toxic to the process or hazardous to persons and which must be used in sufficient quantity to assure proper decomposition.

d. Residue from the composting toilet must be removed when it is filled to 75 percent of capacity. Residue from the unit must be properly disposed of by methods recommended by the manufacturer and acceptable to EPCPH. Disposal methods must prevent contamination of water and not cause a public health nuisance. Disposal using solid waste practices is recommended.

e. If a system will be installed where low temperature may be a factor, design and installation must address the effects of the low temperature.

f. Composting toilets must be operated according to manufacturer's specifications.

7. Incinerating Toilets Acceptance Requirements

a. Incinerating toilets must meet the requirements of the NSF Protocol P157 (2022 version) and bear the seal of approval of the NSF or an equivalent testing and certification program.

b. An approved incinerating toilet must be designed, installed, and maintained in accordance with all applicable federal, state, and local plumbing and air pollution requirements and manufacture's instructions.

8. Portable Chemical Toilets

a. EPCPH ~~or other agency with authority~~ may issue a permit for the use of a portable chemical toilet in its discretion ~~but is not required to~~.

b. Use of a portable chemical toilet in permanently occupied buildings is prohibited except during construction or under emergency circumstances as determined by EPCPH. Proper ventilation of a chemical toilet used inside must be required.

F. Disinfection Systems

1. Disinfections components must meet the requirements of NSF/ANSI Standard 385 (Version 2022), or prior acceptance through NSF/ANSI Standard 46 – version 2022 or earlier, and bear the seal of approval of the NSF or an equivalent testing program. This component may be installed between the higher-level treatment system and the pump tank or within the pump tank.

a. All methods of disinfection shall effectively reduce the fecal coliform count to ≤ 200 organisms per 100ml.

b. If chlorination is used as the disinfection method, a free chlorine residual of two tenths of a milligram per liter (0.2mg/L) must be maintained in the pump tank.

c. The use of a disinfection system is only allowed provided the effluent is treated to TL3N quality prior to entering the disinfection system. ~~, and the EPCPH has implemented an inspection and maintenance oversight program, as specified in the requirements of section 43.14.D.~~

G. Slit Trench Latrine

1. The use of a Slit Trench Latrine is prohibited.

H. Treatment Systems Other Than Those Discharging Through a Soil Treatment Area or Sand Filter System

1. For systems discharging to State Waters, see section 2.C.

2. Systems that discharge other than through a soil treatment area or a sand filter system must:

    a. Be designed by a professional engineer;

    b. Be reviewed by the EPCPH;

    c. Not pose a potential health hazard or private or public nuisance or undue risk of contamination; and

    d. Not allow drainage of effluent off of the property of origin.

3. EPCPH shall permit only systems that do not allow drainage of effluent off the property of origin, unless it determines it is appropriate to allow such effluent drainage.

4. The following minimum performance criteria ~~must~~ be are required for all permitted systems pursuant to this section:

    a. If effluent discharge is made into areas in which the possibility exists for occasional direct human contact with the effluent discharge, the effluent at the point of discharge must meet the minimum treatment criteria of TL3 effluent and specifically adhere to each of the following standards:

        1. The geometric mean of the *E. coli* density must not exceed 15 per 100 milliliters when averaged over any 5 consecutive samples, and no single sample result for *E. coli* can exceed 126 per 100 milliliters.

        2. The arithmetic mean of the standard 5-day carbonaceous biochemical oxygen demand ($CBOD_5$) must not exceed 10 milligrams per liter when averaged over any 3 consecutive samples.

        3. The arithmetic mean of the total suspended solids must not exceed 10 milligrams per liter when averaged over any 3 consecutive samples.

    b. If the effluent discharge is made into an area so restricted as to protect against the likelihood of direct human contact with the discharged effluent, the effluent at the point of discharge must meet the treatment criteria of TL2 effluent and specifically adhere to each of the following standards:

        1. The geometric mean of the *E. coli* density must not exceed 126 per 100 milliliters when averaged over any 5 consecutive samples, and no single sample can exceed 325 *E. coli* per 100 milliliters.

        2. The arithmetic mean of the standard 5-day carbonaceous biochemical oxygen demand ($CBOD_5$) must not exceed 25 milligrams per liter when averaged over any 3 consecutive samples.

        3. The arithmetic mean of the total suspended solids must not exceed 30 milligrams per liter when averaged over any 3 consecutive samples.

5. To determine compliance with the standards contained in this section, the required sampling frequency for *E. coli*, $CBOD_5$, and total suspended solid levels must be performed at least once per month when the system is in operation and the results submitted to EPCPH for compliance with the permit requirements.

6. Methods of Analysis - Sampling Points:

    a. All effluent samples must be analyzed according to the methods prescribed in the American Public Health Association, American Water Works Association, and Water Environment Federation: Standards Methods for the Examination of Water and Wastewater, 24th edition, 2022 (International Standard Book Number: ISBN -10-0875532992, ISBM-13: 978-0875532998).

    b. The sampling point must be a location that is representative of final discharge from the system.

8.13 Technology Review and Acceptance

Review and acceptance of technology shall be accomplished by the Division, and not by EPCPH, pursuant to the provisions of Regulation 43 as reiterated in this section 8.13.

A. OWTS technologies must either be public domain, including but not limited to rock and pipe distribution systems, sand filters with pressure distribution and mound systems, with criteria for design, installation, maintenance and use as described in Regulation 43, or proprietary products that have received Division review and acceptance before EPCPH may permit them for use.

~~The Division must review and provide either comment or acceptance to the manufacturer for proprietary products in these technology categories:~~

~~Proprietary treatment products (e.g. treatment systems);~~

~~Proprietary distribution products (e.g. manufactured distribution products or subsurface dripline);~~

~~Septic tanks;~~

~~Others as needed.~~

~~Product Acceptance Requirements – General:~~

~~To qualify for product acceptance, manufacturers desiring to sell or distribute proprietary products in Colorado must submit a completed application to the Division in the format provided by the Division and a report describing in detail the test procedures and data confirming the performance and properties of the product claimed by the manufacturer. Products within a single series or model line sharing distinct similarities in design, materials, capacities, configuration, and claiming the same level of treatment may be accepted under a single application. Products outside of the series or model line must be accepted under separate applications. The following information must be included in the application:~~

~~Manufacturer's name, mailing address, street address, and phone number;~~

~~Contact individual's name, mailing address, street address, phone number and email address. The contact individual must be vested with the authority to represent the manufacturer in the acceptance process;~~

~~Category of product (e.g., proprietary treatment product and treatment level requested, proprietary distribution product, septic tank);~~

~~Name, including specific brand and model, of the proprietary product;~~

~~A description of the functions of the proprietary product, along with any known limitations on the use of the product;~~

~~Product description and technical information, including dimensioned drawings; materials and characteristics; component design specifications; and volumes, design capacity, and flow assumptions and calculations, as relevant;~~

~~Siting and installation requirements;~~

~~Product performance information in appropriate product section;~~

~~Detailed description, procedure and schedule of routine service and maintenance events;~~

~~Copies of manufacturer's literature to include sales and promotion, design, installation, operation and maintenance, and owner instructions; and~~

~~Identification of information subject to protection from disclosure and trade secrets, if any.~~

~~Upon receipt of an application, the Division must verify that the application is complete and meets the requirements for which the product is being evaluated. If the application is found to be complete, and the requirements of this section needed to accept the product are met, the Division will place the product on a list of accepted proprietary products for the type of product. Installation and use of accepted products must comply with the requirements noted on the acceptance document provided by the Division.~~

~~Manufacturers must have readily accessible and up to date information for designers, regulators, product owners, and other interested parties about their product including:~~

~~Product manuals;~~

~~Design instructions;~~

~~Installation instructions;~~

~~Operation and maintenance instructions; and~~

~~A list of representatives and manufacturer-certified service providers in Colorado, if any. If none exist, information on how service on the product will be provided in Colorado.~~

~~If, at any time after a proprietary product has been accepted for use, the Division receives information that the product so accepted does not meet the required standards, or in any way constitutes a public health or environmental hazard, the Division may, at its discretion, revoke the product acceptance. The Division shall notify the manufacturer and EPCPH within 30 days of any revocation.~~

~~Proprietary Treatment Product Acceptance Requirements~~

~~If a proprietary treatment product is submitted to meet a specific treatment level, a report with test procedures and data must be submitted to the Division to demonstrate that it can meet the treatment level for which the approval is being requested on a consistent basis in actual installations. The Division must approve the test methods and programs. Test results from product certification testing must also be submitted.~~

~~If a product is accepted for a specific treatment level, the product may also be used for applications requiring lower treatment levels. Reductions based on higher level treatment may not be applied unless EPCPH has a maintenance oversight program in place as described in section 8.14.C.~~

~~Field Performance Testing~~

~~Testing must be performed by a neutral third party.~~

~~Testing for residential applications must be performed on a minimum of 12 single-family homes under normal operating conditions unless otherwise noted below:~~

~~If the proprietary treatment product is requesting TL2 acceptance and that product has received NSF/ANSI 40 (2023 or earlier version) certification, the number of home sites to be tested may be reduced to six. The NSF/ANSI 40 (2023 or earlier version) certification must be submitted if the reduced number of test sites is requested.~~

~~If the proprietary treatment product is requesting TL2N or TL3N acceptance and that product has received NSF/ANSI 245 (2023 or earlier version) certification, the number of home sites to be tested may be reduced to six. The NSF/ANSI 245 (2023 or earlier version) certification must be submitted if the reduced number of test sites is requested.~~

~~Each system must be tested over a period of at least one year.~~

~~Each system must be sampled at least four times during the year with the sampling evenly distributed throughout the year.~~

~~Laboratory results for all parameters for which acceptance is being requested must be submitted.~~

~~Testing may be performed in Colorado under a Product Development Permit.~~

~~Testing may be performed in locations other than Colorado. However, as part of the testing, the manufacturer must define, to the acceptance of the Division, what adjustments or modifications to the product will be required to compensate for the following conditions:~~

~~Increased elevation results in lower atmospheric pressure and lower oxygen content. Adjustments or modifications to the treatment process may be required to compensate for these conditions and those adjustments or modifications must be specified.~~

~~Winter season conditions in Colorado include cold temperatures that may affect product performance. Adjustments or modifications to the treatment process may be required to compensate for these conditions and those adjustments or modifications must be specified. This item must be addressed if nitrogen reductions are claimed.~~

~~The report conclusions must indicate the proprietary treatment unit can consistently be expected to meet the treatment level for which acceptance is being requested.~~

~~The report must include estimated operating costs for the first five years of the treatment system's life. This must include both estimated annual electricity or other energy costs, and routine inspection and maintenance costs, including replacement of parts.~~

~~Energy and other costs are to be based on typical Denver, Colorado, costs at the time of the acceptance request.~~

~~Replacement part costs must include shipping and handling.~~

~~If media or other major part replacement is expected during the normal life of the system, the cost of replacement and the typical replacement interval must be included even if replacement is not expected within five years.~~

~~The manufacturer must identify the provisions that they have developed for the training of installers and service providers specific to their product line.~~

~~Following the adoption of Regulation 43 in 2013, that regulation provided limited provisions for the continued acceptance of Treatment Level 2 proprietary products that had been previously accepted for use in Colorado prior~~

~~to June 30, 2013, under NSF/ANSI 40 (2013 or earlier version) or equivalent testing. Only treatment products with a CDPHE acceptance letter dated after June 30, 2013 will be accepted for use in Colorado. If a proprietary product had been previously accepted for use in Colorado under NSF/ANSI 40 or equivalent testing and at least one product unit had been installed in Colorado prior to June 30, 2013, the acceptance for use in Colorado may continue as treatment level 2. A request for this continued acceptance must be submitted to the Division on the forms provided by the Division. Documentation of a product installation must be provided.~~

~~Proprietary Distribution Product Acceptance Requirements~~

~~Proprietary manufactured distribution products must:~~

~~Be constructed or manufactured from materials that are non-decaying and non- deteriorating and do not leach chemicals when exposed to septic tank effluent and the subsurface soil environment;~~

~~For gravity distribution systems, the product must provide a liquid storage volume at least equal to the storage volume within the assumed 30 percent void space in a rock and pipe distribution system assuming six inches of rock below the pipe and two inches above the pipe;~~

~~Maintain the integrity of the trench or bed. The material used, by its nature and its manufacturer-prescribed installation procedures, must withstand the physical forces of the soil sidewalls, soil backfill and the weight of equipment used in the backfilling; and~~

~~If the width of a proprietary manufactured distribution product is within 90 percent of the width of the excavation, it may be approved as being equivalent to the full width of the excavation, if information is provided that demonstrates distribution over the full width. Thus, the product must cover at least 90 percent of the excavated area in either a trench or bed configuration in order to receive sizing adjustments provided in Table 10-3.~~

~~Chambers:~~

~~Include a sidewall that is structurally sound and capable of allowing aeration of the infiltrative surface and exfiltration of effluent while minimizing the intrusion of soil.~~

~~Chamber construction shall mee IAPMO Property Standard, PS 63 (2019 version).~~

~~Enhanced manufactured media:~~

~~The product must include synthetic media contained within one or more external permeable outer layers that promote the movement of effluent and prevent the intrusion of soil from the above synthetic media. Be wrapped in a fabric that promotes movement of the effluent through the fabric and prevents intrusion of soil.Manufacturer must demonstrate that the product has been adequately tested and functions as intended.~~

~~For enhanced manufactured media that requires a specified layer of sand or other media to be placed below the actual product, the vertical separation requirements of this regulation will be determined from the base of the sand or other media, as the sand or media is an integral part of the component.~~

~~For products that allow for sand extensions beyond the actual manufactured component, the distance of sand allowed from the edge of the excavation to the manufactured component may be up to six inches in a trench system and 24 inches in a bed system.~~

~~If sand media is proposed by the manufacturer as an integral part of the distribution product, it must meet the size and uniformity specifications as noted by the manufacturer.~~

~~Other manufactured media:~~

~~In order to receive sizing adjustments provided in Table 10-3, the product must cover at least 90 percent of the excavated area in either a trench or bed configuration without the use of gravel, stone or other aggregate containing fines, which may compromise soil permeability.~~

~~Proprietary subsurface dripline products must:~~

~~Be warranted by the manufacturer for use with OWTS effluent;~~

~~Specify required treatment level of influent to the driplines;~~

~~Be designed for resistance to root intrusion; and~~

~~Incorporate emitters that may be controlled either by use of pressure- compensation emitters or with a pressure regulator.~~

~~Septic Tank Acceptance Requirements~~

~~Septic tank design must conform to the requirements of section 8.9.B. of this regulation.~~

~~Each manufacturer must annually test five percent of its tanks for watertightness at the manufacturing facility, unless the tanks are certified for use as a septic tank by the International Association of Plumbing and Mechanical Officials (IAPMO) or Canadian Standards Association (CSA), or the manufacturer participates in the Plant Certification Program of the National Precast Concrete Association (NPCA).~~

~~Watertightness results must be sent to the Division on an annual basis unless otherwise addressed in section 8.13.F.2 above. The manufacturer must provide information that specifies measures taken to repair a tank that fails the watertightness test. The manufacturer must also define the measures taken to prevent similar problems in future tanks.~~

~~IAPMO, CSA, and NPCA certifications must be submitted to the Division for acceptance. Current certifications must be submitted to the Division on an annual basis.~~

~~Other Product Acceptance Requirements~~

~~The Division may adopt review and acceptance requirements for additional products as needed.~~

8.14 Operation and Maintenance

A. Responsibility: The owner ~~must be~~ is responsible for maintaining an OWTS in compliance with state law and these regulations. Owners may perform such maintenance themselves or contractually assign maintenance responsibilities to a tenant, a third party, or a public, quasi-public, or political subdivision, but such contractual assignment does not relieve owners of the ultimate responsibility for their systems.

B. Service Label: For higher-level treatment systems or other components under a service contract, a clearly visible, permanently attached label or plate giving instructions for obtaining service must be placed at a conspicuous location.

~~C. EPCPH may adopt regulations for:~~

~~1. Scheduling maintenance for cleaning~~

~~2. Practices adequate to ensure performance of an OWTS; and/or~~

~~3. Submission of proof of maintenance and cleaning to the EPCPH by the owner of the system.~~

D. Operations and Maintenance Requirements ~~Permitting and Oversight of Maintenance for Soil Treatment Area Reductions and Vertical and Horizontal Separation Distance Reductions Based on Use of Higher Level Treatment~~

1. Applicability: The provisions of this Section 8.14.C apply to systems for which one or more of the following have been approved:

    a. Reduction in the size of the soil treatment area

    b. Reduction in horizontal separation distances

    c. Reduction in vertical separation distances

    d. Installation of a disinfection component

    e. Installation of an NDDS

2. Owner Responsibilities

    a. The owner is responsible for ensuring that EPCPH has current and accurate records that reflect:

        (1) Owner name and contact information

        (2) Address and legal description of property

        (3) Location of OWTS specifying location of septic tank, higher-level treatment system, soil treatment area, and other components

        (4) Description of OWTS installed

        (5) Level of treatment to be provided

        (6) Copy of current contract with a service provider

        (7) Inspection and maintenance performed, including but not limited to dates of inspection and/or maintenance, name and contact information of inspector and/or maintenance provider, condition of system at inspection, and maintenance of tasks performed

        (8) Condition of system at completion of any maintenance activity

    b. The owner must have the system inspected and maintained on a schedule being the most frequent of:

        (1) Manufacturer recommendations for proprietary systems or requirements for public domain technology as specified by the design engineer;

        (2) Every 12 months for higher-level treatment systems with no mechanical parts; or

        (3) For other higher-level treatment systems and disinfection systems, two inspections at 6-month intervals for the first year of operation, with the first inspection occurring no later than 60 days following installation approval, followed by annual inspections for the life of the system. ~~Purpose: Reductions in requirements for soil treatment areas, vertical separation distances to~~

~~limiting layers or reductions in horizontal separation distances by using higher level treatment systems are based on the criteria that these systems are functioning as designed. If these criteria are not met, failure or malfunction is likely, which could result in damage impairment to public health and water quality.~~

c. The owner has the following additional responsibilities:

(1) Ensure the OWTS is operating, maintained, and performing according to the required standards for the designated treatment level.

(2) EPCPH recommends that all TL1 systems be evaluated by an ~~licensed OWTS professional~~ OWTS maintenance provider a minimum of every 4 years.

(3) Must maintain an active service contract with a maintenance provider at all times for systems which utilize pressure distribution or provide treatment level 2 or higher.

(4) Within 30 days of signing, provide EPCPH with a copy any new contract when a maintenance provider is renewed or replaced.

~~3. Before permitting systems with a reduced~~ EPCPH may permit reductions in the size of soil treatment area or and reduced horizontal and vertical separation distances as a result of higher level treatment, the installation of a disinfection component, use of pressure distribution, or the installation of an NDDS, EPCPH based on higher level treatment of effluent, only if an must develop an oversight program for inspection, maintenance, recordkeeping and enforcement to ensure and document that systems are meeting the designed higher level treatment standards. Licensing of maintenance providers may be included in this program. And repair is implemented by EPCPH At a minimum:

~~EPCPH has developed a program of inspections, maintenance, recordkeeping and enforcement to ensure and document that higher level treatment systems are meeting the designed standards. At a minimum:~~

~~a. Maintain accessible records that indicate:~~

~~(1) Owner and contact information;~~

~~(2) Address and legal description of property;~~

~~(3) Location of OWTS specifying location of septic tank, higher level treatment system, soil treatment area and other components;~~

~~(4) Description of OWTS installed;~~

~~(5) Level of treatment to be provided;~~

~~(6) Copy of current contract with a service provider;~~

~~(7) Inspection and maintenance performed:~~

~~i. Dates system was inspected and/or maintained;~~

~~ii. Name and contact information of inspector and/or maintenance provider;~~

~~iii. Condition of system at inspection; and~~

~~iv. Maintenance tasks performed;~~

~~(8) Permits, if required by EPCPH for the work performed; and~~

~~(9) Condition of system at completion of any maintenance activity.~~

~~4. Require system inspection and maintenance on a schedule being the most frequent of:~~

~~a. Manufacturer recommendations for proprietary systems or requirements for public domain technology as specified by the design engineer; or~~

~~b. Every 12 months for higher level treatment systems with no mechanical parts.~~

~~c. For higher level treatment systems, two inspections at six-month intervals for the first year of operation, followed by annual inspections for the life of the system.~~

~~(1) The first inspection must be within 60 days of system installation approval.~~

~~5. Owner responsibilities:~~

~~a. Ensure OWTS is operating, maintained and performing according to the required standards for the designated treatment level;~~

~~b. It is recommended that all TL1 systems shall be evaluated by a licensed OWTS professional a minimum of every 4 years.~~

~~c. TL2 systems and higher or that utilize Pressure Distribution shall maintain an active service contract with a maintenance provider at all times; and,~~

~~d. Each time his/her current contract with a maintenance provider is renewed or replaced, send a copy to EPCPH within 30 days of signing.~~

6. Maintenance provider responsibilities:

   a. Must notify EPCPH when a service contract has been terminated.

   b. Must obtain appropriate training/certification for specific proprietary treatment products as provided by the manufacturer necessary to provide the required operation and maintenance for said products.

~~7. Operation and Maintenance of Pressure Distribution, treatment level 2 (TL2) or treatment level 3 (TL3) components may only be conducted by Certified O & M Specialists.~~

~~a. Operation & Maintenance Specialists shall be certified by National Association of Wastewater Technicians or an equivalent program approved by EPCPH. O & M Specialists of higher level treatment systems must have training and certification by the proprietary product manufacturer. The manufacturer shall be responsible for providing EPCPH a list of certified O & M Specialists annually.~~

~~(1) The service provider is responsible for providing manufacture certification for training and certification to service the proprietary product.~~

~~b. EPCPH shall provide and maintain a list of Certified Operation & Maintenance Specialists to the general public. A fee not to exceed actual costs may be charged by~~

~~EPCPH for the initial license of a Licensed and Certified O & M Specialist. A fee not to exceed actual costs may be charged by EPCPH for a renewal of the license. Licenses shall be valid for a period of two years from the date of issuance.~~

~~8. EPCPH may decertify any Certified Operation and Maintenance Specialist under any of the following circumstances:~~

~~a. The Certified Operation & Maintenance Specialist submits false or misleading information.~~

~~b. The Certified Operation & Maintenance Specialist does not maintain the required certification as required by these regulations.~~

~~c. Any situation that is determined by EPCPH which does not comply with the intent of this section~~

E. Monitoring and Sampling

~~For and OWTS for which monitoring of effluent is required, EPCPH or delegated third party must collect and test effluent samples to ensure compliance with the provisions of this regulation.~~

1. Sampling may be required by EPCPH in conjunction with an enforcement action or to ensure compliance with the provisions of these regulations, as provided in section E.2 below.

   a. Sampling and analysis must be performed according to American Public Health Association, American Water Works Association, and Water Environment Federation: Standards Methods for the Examination of Water and Wastewater, 24th edition, 2022 (International Standard Book Number); ISBN-10; 0875532993, isbn-13: 978-0875532998).

2. Any owner or occupant of property on which an OWTS is located may request EPCPH to collect and test an effluent sample from the system. ~~EPCPH may perform such collection and testing services.~~ The owner or occupant must pay for the cost of these services, and payment will be added to the permit as a condition for the continued use of the system.

   ~~a. As allowed by the OWTS Act, owner may be charged for each sample collected and tested. Payment of such charge must be stated in the permit as a condition for its continued use.~~

3. Conditions under which ~~that provide for when~~ EPCPH may can to require routine water quality monitoring include, but are not limited to:

   (1) Indications of inadequate performance;

   (2) Location in sensitive areas;

   (3) Systems designed to meet TL3ND standards;

   (4) Treatment systems other than those discharging through a soil treatment area or sand filter system (43.12.G)

   (5) ~~Experimental systems~~ Remediation systems; and/or

   (6) Systems ~~under use~~ having operating permits (43.4.M)., ~~or product development permits (43.4.I).~~

b. ~~Sampling and analysis must be performed according to American Public Health Association, American Water Works Association, and Water Environment Federation. Standards Methods for the Examination of Water and Wastewater, 21~~[ST] ~~edition.~~

8.15 Severability

The provisions of these regulations are severable, and if any provisions or the application of the provisions to any circumstances are held invalid, the application of such provision to other circumstances, and the remainder of these regulations will not be affected thereby.

8.16 Materials Incorporated by Reference

Throughout these regulations, standards and requirements by outside organizations have been adopted and incorporated by reference. The materials incorporated by reference cited herein include only those versions that were in effect as of March 10, 2024~~April 10, 2017~~, and not later amendments to the incorporated material.

Materials incorporated by reference are available for public inspection during normal business hours from the Water Quality Control Division, 4300 Cherry Creek Drive South, Denver, Colorado 80246. Copies may be purchased from the source organizations.