Town of Marble

On-Site Wastewater Treatment System Regulations

2018

Adopted by Ordinance No. 4, Series of 2018, July 5, 2018

Effective August 19, 2018

1. Authority.

A. These regulations are promulgated pursuant to the On-site Wastewater Treatment System Act, 25-10-101, et seq. C.R.S., and Regulation 43.

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), as defined in section 25-10-103(12), C.R.S., in the Town of Marble, state of Colorado (the "Town"), and to provide the authority for the administration and enforcement of such minimum standards and regulations.

2. These regulations supersede all prior rules, regulations, ordinances, and resolutions of the Town that are inconsistent herewith, including the Town of Marble, Colorado, Individual Sewage Disposal System Guidelines.

B. Purpose. The purpose of these regulations as authorized by the OWTS Act is to establish minimum standards for the location, design, construction, performance, installation, alteration and use of OWTS within the Town of Marble, and establish the minimum requirements for permit applications; issuing permits; the inspection, testing, and supervision of installed systems; the maintenance and cleaning of systems; the disposal of waste material and the issuance of cease and desist orders.

C. Effluent Discharged to Surface Waters. 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 Town. Once approved by the Town, the application must be submitted to the Water Quality Control Division for review in accordance with the Water Quality Control Act, 25-8-101, et seq. C.R.S, and all applicable regulations of the Water Quality Control Commission. Compliance with such a permit will be deemed full compliance with the Marble OWTS Regulations.

D. Jurisdiction of the Town. The jurisdiction of the Town shall extend over the territory of the Town.

E. Regulation Coverage.

1. An OWTS with design capacity less than or equal to 2,000 gpd must comply with these Marble OWTS Regulations and the OWTS Act. These Marble OWTS Regulations govern all aspects of OWTS permits, performance, location, construction, alteration, installation, and use.

2. An OWTS with design capacity greater than 2,000 gpd must comply with these Marble OWTS Regulations, Regulation 43, site location and design approval in section 25-8-702, C.R.S., the discharge permit requirements in the Water Quality Control Act, 25-8-501, et seq. C.R.S., and any other applicable regulations of the Commission.

F. Effective Date. These Marble OWTS Regulations become effective 45 days after final adoption unless the Division notifies the local board of health before the forty-fifth day that the regulations or any portions of the local regulations determined by the Division are not as stringent as the OWTS Act or with Regulation 43. Any portions of the Marble OWTS Regulations determined by the Division not to be in compliance with the OWTS Act and Regulation 43 shall not take effect or be published as regulations of the local board of health. For those portions of its regulations that do not comply, the local board of health may submit revisions to the Division. Only after the Division has determined that the local board of health's revised regulations comply with the OWTS Act and Regulation 43 may the local board of health's revised regulations take effect and be published. Until the Division

makes this determination, Regulation 43 controls the unapproved portions of the local regulations.

G. Vested Rights: Nothing in the Ordinance shall be construed as affecting any vested right to complete any construction pursuant to a permit duly-issued prior to the effective date of these Marble OWTS Regulations. Notwithstanding the foregoing, portions of these OWTS Regulations of a generally applicable nature (for example, requirements for cleaning septic tanks as set forth in Section 14, below) shall apply to all OWTS within the Town.

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.

3. "Applicant" means a person who submits an application for a permit for an On-site Wastewater Treatment System.

4. "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.

5. "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.

6. "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.

7. "Bedroom" means a room with an egress window, a closet, and/or is intended for sleeping purposes.

8. Biochemical Oxygen Demand, Five-Day" (BOD5) means 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).

9. "Biochemical Oxygen Demand, Carbonaceous Five Day" (CBOD5) means 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).

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

11. "Carbonaceous Biochemical Oxygen Demand" See Biochemical Oxygen Demand, Carbonaceous.

12. "Cesspool" means an 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.

13. "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.

14. "Cistern" means an underground, enclosed unpressurized reservoir or tank for storing water

as part of a potable water supply system.

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

16. “Colorado Plumbing Code” means Rules And Regulations of the Colorado State Plumbing Board (3 CCR 720-1).

17. “Commission” means the Water Quality Control Commission created by section 25-8-201, C.R.S.

18. “Component” means a subsection of an On-site Wastewater Treatment System; a component may include multiple devices.

19. “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.

20. “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 UDSA-NRCS Field book for Describing and Sampling Soils; Version 3.0, Sept. 2012.

21. “Crest” means the highest point on the side of a dry gulch or cut bank.

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

23. “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 these Marble OWTS Regulations.

24. “Deficiency” See Malfunction.

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

26. “Design” means 1. the process of selecting, sizing, locating, specifying, and configuring treatment train 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.

27. “Design capacity” See Flow, Design.

28. “Design flow” See Flow, Design.

29. “Designer, on-site wastewater treatment system” means a practitioner who utilizes site evaluation and investigation information to select an appropriate OWTS and prepares a design document in conformance with these Marble OWTS Regulations.

30. “Distribution” means the process of conveying wastewater or effluent to one or more components, devices, or throughout a soil treatment area.

31. “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.

32. “Division” means the division of administration of the department of which the Water

Quality Control Division is a part.

33. “Domestic wastewater” See Wastewater, domestic.

34. “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.

35. “Dosing” means a high rate periodic discharge into a soil treatment area.

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

37. “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.

38. “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.

39. “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.

40. “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.

41. “Drainfield” See Soil treatment area.

42. “Drop box” means a device used for serial or sequential distribution of effluent by gravity flow to a lateral of a soil treatment area.

43. “Dry gulch” See Gulch, dry.

44. “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.

45. “Effective Size” means the size of granular media such that 10 percent by weight of the media is finer than the size specified.

46. “Effluent” means the liquid flowing out of a component or device of an On-site Wastewater Treatment System.

47. “Effluent filter” See Effluent screen.

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

49. “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 a specific size and/or

modulating effluent flow rate. An effluent screen may be a component of a pump installation. An effluent screen may also be installed following the septic tank but before higher level treatment components or a soil treatment area.

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

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

52. "Experimental system" means a design or type of system based upon improvements or development in the technology of sewage treatment that has not been fully tested.

53. "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 to be a threat to public health and/or safety may also be deemed a failure.

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

55. "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).

56. "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.

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

58. "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.

59. "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.

60. "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.

61. "Grease interceptor tank" means a watertight device located outside a facility 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.

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

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

64. "Gulch, dry" means a deep, narrow ravine marking the course of an intermittent or ephemeral

stream.

65. “Health officer” means the chief administrative and executive officer of the local public health agency, or the appointed health officer of the local board of health. The initial Health officer shall be the Town Clerk.

66. “Higher level treatment” means designated treatment levels other than treatment level 1. (See Table 7-3)

67. “Holding tank” See Vault.

68. “Individual Sewage Disposal System” means a term used for On-site Wastewater Treatment System in Colorado regulations from 1973 until 2013.

69. “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.

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

71. “Invert” means elevation of the bottom of the inside pipe wall or fitting.

72. “Lateral” means a pipe, chamber or other conveyance used to carry and distribute effluent.

73. “Leach field” See Soil treatment area.

74. “Limiting layer” means a horizon or condition in the soil profile or underlying strata that limits the treatment capability of the soil or severely restricts the movement of fluids. This may include soils with low or high permeability, impervious or fractured bedrock, or a seasonal or current ground water surface.

75. “Liner” means an impermeable synthetic or natural material used to prevent or restrict infiltration and/or exfiltration. For the purposes of these Marble OWTS Regulations, the minimum thickness of a liner must be 30 ml.

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

77. “Local board of health” means the Town of Marble Board of Trustees.

78. “Local public health agency” means the Town of Marble, which will oversee and administer a program of OWTS permitting and inspection within the Town.

79. “Long-term acceptance rate” (LTAR) means 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).

80. “Malfunction” means the condition in which a component is not performing as designed or installed and is in need of repair in order to function as originally intended.

81. “Manufactured media” See Media, other manufactured.

82. “Marble OWTS Regulations” shall mean these Town of Marble Onsite Wastewater Treatment System Regulations.

83. “Media” means solid material that can be described by shape, dimensions, surface area, void space, and application.

84. “Media, enhanced manufactured” means an accepted proprietary manufactured distribution product, wrapped in a specified fabric, and placed on a specified sandbase or media that does not mask the infiltrative surface of the in-situ soil.

85. “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.

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

87. “Mound” means a soil treatment area whereby the infiltrative surface is at or above original grade at any point.

88. “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 (2013 version).

89. “On-Site 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.

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

91. “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.

92. “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 public health agency.

93. “Permeability” means the property of a material which permits movement of water through the material.

94. “Permit” means a permit for the construction or alteration, installation, and use or for the repair of an On-site Wastewater Treatment System.

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

96. “Pressure distribution” See Dosing, pressure.

97. “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.

98. “Professional engineer” means an engineer licensed in accordance with section 12-25-1, C.R.S.

99. “Professional geologist” means a person 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, C.R.S.

100. "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.

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

102. "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 local public health agency.

103. "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.

104. "Regulation 43" means the Colorado Department Of Public Health And Environment Water Quality Control Commission On-Site Wastewater Treatment System Regulation, 5 CCR 1002-43.

105. "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.

106. "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.

107. "Replacement system" See Repair.

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

109. "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.

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

111. "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.

112. "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.

113. "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.

114. "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 the Division that the material meets the definition for septage set forth in this subsection. Septage does not include chemical toilet residuals.

115. "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.

116. "Sequential distribution" means a distribution method in which effluent is loaded into one trench and fills it to a predetermined level before passing through a relief pipe or device to the succeeding trench. The effluent does not pass through the distribution media before it enters succeeding trenches.

117. "Serial distribution" means a distribution method in which effluent is loaded 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.

118. "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, domestic.

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

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

121. "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.

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

123. "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.

124. "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.

125. "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.

126. "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.

127. “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.

128. “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).

129. “Soil texture” means proportion by weight of sand, silt, and clay in a soil.

130. “Soil treatment area” means the physical location where final treatment and dispersal of effluent occurs. Soil treatment area includes drainfields, mounds and drip fields.

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

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

133. “State Waters” has the meaning set forth under section 25-8-103. C.R.S.

134. “Strength, wastewater” means the concentration of constituents of wastewater or effluent; usually expressed in mg/L.

135. “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 11-1, and has the required vertical thickness below the infiltrative surface and above a limiting layer.

136. “Systems cleaner” means a person 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.

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

138. “Total suspended solids” means measure of all suspended solids in a liquid; typically expressed in mg/L.

139. “Transfer of Title” means change of ownership of a property.

140. “Treatment level” means defined concentrations of pollutants to be achieved by a component or series of components of an OWTS.

141. “Treatment media” See Media, treatment.

142. “Treatment unit” means a component or series of components where solids or pollutants are removed from wastewater or effluent from a preceding component.

143. “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; and 2. excavation for placement of piping or installation of electrical wire or conduit.

144. “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 these Marble OWTS Regulations.)

145. “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 two thousand gallons per day or more at full occupancy, the vault is a domestic wastewater treatment works. Vaults are On-site Wastewater Treatment Systems.

146. “Visual and tactile evaluation of soil” means determining the properties of soil by standardized tests of appearance and manipulation in the hand.

147. “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.

148. “Wastewater, domestic” means 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.

149. “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 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 an infiltrative surface.

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

151. “Water Quality Control Commission” See Commission.

152. “Water Quality Control Division” See Division.

153. “Wetland, constructed” See Rock-plant filter.

154. “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
CPOW	Colorado Professionals in Onsite Wastewater
CSA	Canadian Standards Association
ETL	Electrical Testing Laboratories
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
NRTL	Nationally Recognized Testing Laboratory
NSF	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

4. Permit Application.

A. Requirements and Procedures. Prior to installing, altering, or repairing a system, the applicant must obtain a permit from the local public health agency, which the applicant shall request by submitting an application that includes, at a minimum, the following information:

1. Owner name and contact information;
2. System contractor name and contact information;
3. Designer name and contact information
4. Property address;
5. Property legal description;
6. Copy of the recorded deed conveying the subject property to the applicant
7. Type of permit (installation / alteration / repair);
8. Project description
9. If residential, the number of bedrooms, bathrooms, kitchen facilities, garbage disposals, and laundry facilities;
10. If commercial, the number and type of improvements that will drain into the OWTS system, the estimated number of persons who will use the improvements, and hours and seasons of operations;
11. Report from Site and Soil Evaluation (see Section 5, below);
12. Design Document (see Section 5, below) stamped by a licensed Engineer, including a legible, accurate site plan which shows pertinent physical features on subject property, and on adjacent properties, as noted in Table 8-1; and
13. Other information, data, plans, specifications and tests as required by local public health agency: 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 the local public health agency to develop its own information from its own source at its own expense.

B. Permit Fees

1. The local public health agency shall collect a non-refundable application fee for each application for a new installation or for repair or alteration of an existing system. Initially, the application fee shall be $100.

2. The local public health agency shall collect a permit fee which covers the cost of inspections, percolation tests, soil evaluation, and other services performed by the local public health agency. Any portion of the permit fee that is not used to cover out-of-pocket expenditures by the public health agency in reviewing the application shall be refunded if the permit is not issued. Initially, the permit fee shall be $900 for new installations and $200 for repairs and alterations.

3. The application fee and permit fee may be amended by resolution of the local board of health. The fees must be no greater than required to offset the actual indirect and direct costs of the local public health agency and that do not exceed the maximum fees established in section 25-10-107, C.R.S.

4. Surcharge - The local public health agency must collect a fee of twenty-three dollars for each permit issued for a new, repaired, or upgraded OWTS. Of that fee, the local public health agency must retain three dollars to cover the local public health agency's administrative costs and twenty dollars must be transmitted to theColorado Department of Public Health and Environment for use in funding the state's OWTS program.

5. Fees are due and payable, and must be paid by the applicant, upon submittal of a permit application.

C. Permit Term.

1. An OWTS permit expires one year after the date of issuance if construction has not been completed.

2. 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 the local public health agency for such changes.

D. Repair Permit

a. The owner or occupant of a property on which an OWTS is not in compliance must obtain a repair permit from the local public health agency. The applicant must apply for a repair permit within two business days after receiving notice from the local public health agency that the system is not functioning in compliance with the OWTS Act or applicable regulations, or otherwise constitutes a nuisance or a hazard to public health or water quality.

b. The repair permit must provide for a reasonable period of time within which the owner or occupant must make repairs. At the end of that period, the local public health agency must inspect the system to ensure it is functioning properly. Concurrently with the issuance of a repair permit, the local public health agency 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 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 will continue to make repairs to the system.

E. A permit is required for the expanded use of an OWTS. The OWTS must be replaced or modified to handle the increased design flow unless it is determined that the existing system is adequately designed and constructed for the higher design flow rate.

F. The issuance of a permit and specifications of terms and conditions therein does not constitute assumption of liability, nor create a presumption that the local public health agency or its employees may be liable for the failure or malfunctioning of any system. Permit issuance does not constitute a certification 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, the regulations adopted thereunder, or any terms and conditions of a permit.

G. Determination. The local public health agency must determine whether the information provided in the permit application, site and soil evaluations, assumptions and calculations, 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.

H. 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, the local public health agency 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 applicable regulations adopted pursuant thereto 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 an OWTS must permit the local public health agency access to the property to make inspections, conduct required tests, take samples, and monitor compliance.

I. Inspection Stages. The following inspections are required:

1. Site and soil inspection prior to application submittal. The applicant shall contact the local public health agency to schedule an on-site meeting.

2. Before a system is placed in use, the owner, the owner's agent or the systems contractor must provide the local public health agency and the engineer, if engineer designed, with notice that the progress of the work has been sufficiently completed to allow inspections to determine if all work has been performed in accordance with the permit requirements and to determine compliance of the system with the OWTS Act and the regulations adopted thereunder.

J. Final approval of the permit by the local public health agency must include, but is not limited to:

1. Receipt of letter from the engineer certifying construction of the OWTS as per the approved design plan, if the OWTS was engineer designed;

2. Receipt of a record drawing which includes a 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;

3. Final inspection prior to backfilling the OWTS by the local public health agency confirming that it was installed according to the permit requirements and regulations or variances to the regulations; and

4. Identification of system contractor.

K. Product Development Permit

1. For products that have not received Division acceptance under section 43.13 of Regulation 43, the manufacturer may apply to the local public health agency for a product development permit. Requirements for proprietary treatment product acceptance are located in section 13.D of Regulation 43.

2. For products or types of systems which have not been otherwise accepted by the Division pursuant to section 43.13 of Regulation 43, the local board of health may approve an application for product development permit only if the system has been designed by a professional engineer, and only if the application provides proof of the ability to install a replacement OWTS in compliance with all local requirements in a timely manner in the event of a failure or malfunction of the system installed.

3. Before a product development permit is issued, the Division must determine that the product

to be tested qualifies for testing under the product development evaluation based on information submitted to the Division in accordance with Section 43.4.I.3 of Regulation 43.

4. The local board of health must not arbitrarily deny any person the right to consideration of an application for such a system and must apply reasonable performance standards in determining whether to approve such an application; 25-10-108 (2), C.R.S.

5. A completed application for a product development permit must be submitted to the local public health agency at least 30 days in advance of installation of the product.

6. An application for a product development permit must include the following:

a. Proof of the ability to install a replacement OWTS in compliance with all local requirements in a timely manner in the event of a failure or malfunction of the system under testing;

b. A description of the product under development including performance goals;

c. Documentation signed by the owner of the proposed product development site allowing access to the local public health agency and Division for inspection of the site; and

d. Design documents as required in section 6.G of these Marble OWTS Regulations.

e. A copy of information submitted to the Division under Section 43.13.D of Regulation 43.

7. A product development permit is a site-specific permit. Product development testing at multiple sites requires a product development permit for each site.

8. During the term of the product development permit, all data collected is to be submitted to the Division and the local public health agency.

9. The local public health agency may revoke or amend a product development permit, if the continued operation or presence of the product under development:

a. Presents a risk to the public health or environment;

b. Causes adverse effects on the proper function of the OWTS on the site;

c. Leaks or discharges effluent on the surface of the ground; or

d. If the developer of the product fails to comply with any requirements stipulated on the permit by the local public health agency or the Division.

10. If the product development permit is revoked, the product developer must install the replacement system within the time frame established by the local public health agency.

11. Once the system is installed and approved, the local public health agency must supply the Division with a copy of the completed OWTS permit.

L. Variances.

1. General. The purpose of this section is to provide a procedure for the local public health agency to consider variances from the design and/or siting requirements of these Marble OWTS Regulations.

2. Requirements for Variance Consideration

a. The local board of health must approve all variance requests at a public hearing.

b. The applicant must contact the Town clerk to be placed on the agenda and to obtain the date, time, and location of the hearing. The applicant must provide written notice of such date, time, and location, along with a copy of the variance request, via certified mail, to all

adjacent property owners, no less than 21 days prior to the public hearing. The applicant shall submit return receipts to the Town Clerk prior to the public hearing.

3. Variance requests must include the following information:

   a. Site-specific request identifying the specific criteria from which a variance is being requested;

   b. Technical justification by a professional engineer or professional geologist, which indicates the specific conditions which exist and/or the measures which will be taken that support a finding that the variance will result in no greater risk than that associated with compliance with the requirements of the regulation. Examples of conditions which exist, or measures which might be taken, include but are not limited to the following: evidence of a natural or manmade physical barrier to the movement of effluent to or toward the feature from which the variance is requested; placement of a manmade physical barrier to the movement of effluent to or toward the feature from which the variance is requested; soil replacement with sand filter media to reduce the infiltration rate of the effluent such that the travel time of the effluent from the absorption field to the physical feature is no less than the travel time through the native soils at the prescribed setback and Treatment Level 2;

   c. A discussion of alternatives considered in lieu of the requested variance;

   d. Technical documentation for 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; and

   e. A statement of the hardship that creates the necessity for the variance.

4. 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 the regulations.

5. The local board of health has the authority to impose site-specific requirements and conditions on any variance granted.

6. Outcome of the Variance Proceeding. The applicant must be notified, in writing, of the local board of health's decision regarding the request for a variance. The notice of a denial of a variance must include those reasons which form the basis for the denial. The notice of an approval of a variance must include any conditions of the approval. The variance, and any conditions thereof, must be recorded in the real property records of Gunnison County and any expenses associated with that recording must be the responsibility of the party obtaining the variance.

7. Prohibitions on the Granting of Variance Requests

   a. No variance shall be issued where the property can accommodate a conforming OWTS.

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

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

   d. No variance shall be issued, if it will result in a setback reduction to an offsite physical feature that does not conform to the minimum setbacks defined in Table 8-1 of these Marble OWTS Regulations without the board of health considering any concerns of the owner of property containing said feature. Property lines are considered offsite features. The property owner containing said feature must be notified of the time and date of the hearing.

   e. No variance shall be issued, if it reduces the separation to ground water or bedrock based

on the level of treatment in Table 8-2.

f. No variance from the horizontal setback from a well shall be issued unless it also meets the variance requirements of the Board of Examiners of Water Well Construction and Pump Installation Contractors.

g. No variance shall be issued for the installation of a higher level treatment system based on sizing or separation reductions without the local public health agency having a maintenance and oversight program as defined in section 15.D.

8. Variances for Repair of Failing 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 the Division, the hearing procedures in 4.L.2, Requirements for Variance Consideration above must be followed.

b. For the repair of or upgrade to an existing system where the existing system does not meet the required separation distances and where conditions other than lot size precludes adherence to the required distances, a variance to the separation distances may be requested. The repairs or upgrade must 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.

M. Appeal.

1. A request for review must be made within 60 days after denial of an application by the local public health agency. An applicant may request that the local board of health review any denial of any application by the local public health agency. Such request shall be made within 60 days of the denial. The local board of health shall review the application at any regular or special meeting of the local board of health within 30 days of receipt of a request for review. The local board of health shall provide written notice of the date, time, and location of the meeting to the applicant, no later than 5 days prior to the meeting.

2. The applicant must bear the burden of supplying the local board of health with sufficient evidence to document that the denied system will be constructed and used in such a manner that will result in no greater risk than that associated with compliance with the requirements and intent of these Marble OWTS Regulations, and comply with all applicable state and local regulations and required terms and conditions in any permit.

3. Such review must be conducted pursuant to the requirements of section 24-4-105, C.R.S.

5. General Prohibitions, Licensing, Enforcement.

A. Prohibition of OWTS in Unsuitable Areas. The local board of health may prohibit issuance of OWTS permits in accordance with applicable land use laws and procedures for defined areas in which the local board of health determines that construction and use of additional OWTS may constitute a hazard to public health or water quality.

B. Unless the subject building or structure is served by a central wastewater treatment system or the permitted use of the building or structure does not require the use of water, the Town will not issue to any person:

1. A permit to construct or remodel a building or structure that is not serviced by a sewage treatment works until the local public health agency 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 the local public health agency makes a final inspection of the OWTS, provided for in

section 25-10-106 (1) (h), C.R.S. and the local public health agency approves the installation.

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 11.I must be followed.

D. A person 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. 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.

F. 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.

G. Licensing of Systems Contractors and Systems Cleaners. The local board of health does not license systems contractors and systems cleaners. A systems contractor or systems cleaner that is licensed to perform such services in Gunnison County, Garfield County, Eagle County or Pitkin County may provide the same services in the Town of Marble. Notwithstanding the foregoing, the local board of health may suspend or revoke the privilege of a systems contractor or system cleaner to provide services in the Town for violation of the applicable provisions of the OWTS Act and the regulations adopted under said section or for other good cause shown after a hearing conducted upon reasonable notice to the systems contractor or systems cleaner and at which the systems contractor or systems cleaner may be present, with counsel, and be heard.

H. Enforcement.

1. Primary Enforcement Responsibility. The primary responsibility for enforcement of the provisions of the OWTS Act and the regulations adopted under said article will lie with the local board of health. In the event that the local board of health fails to administer and enforce the provisions of said section and the regulations adopted under the OWTS Act, the Division may assume such functions of the local public health agency or local board of health as may be necessary to protect the public health and environment. 25-10-110, C.R.S.

2. Division Authority to Administer and Enforce. Wherever the term local board of health or local public health agency is used in these Marble OWTS Regulations, said terms must also include the Division under its designated authority for the purposes of administering and enforcing the provisions of these Marble OWTS Regulations where necessary to protect the public health and environment.

I. Cease and Desist Orders. The local public health agency may issue an order to cease and desist from the use of any OWTS or sewage treatment works which is found by the health officer not to be functioning in compliance with the OWTS Act or with applicable regulations or 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 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 determined by the health officer, not to exceed 21 days, or thereafter cease and desist from the use of the system. A cease and desist order issued by the health officer shall be reviewable in the district court for the county wherein the system is located and upon a petition filed not later than ten days after the order is issued.

J. Penalties.

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 as defined in section 18-1.3-503, C.R.S.:

a. Constructs, alters, installs, or permits the use of any OWTS without first having applied for and received a permit as provided for in section 25-10-106, C.R.S.;

b. Constructs, 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 license provided for in section 25-10-109 (1), C.R.S., in areas which the local board of health has adopted licensing regulations pursuant to that section;

e. Conducts a business as a systems cleaner without having obtained the license provided for in section 25-10-109 (2), C.R.S., in areas which the local board of health 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 regulations adopted by the local board of health.

2. Upon a finding by the local board of health that a person is in violation of these Marble OWTS Regulations, the local board of health 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 local board of health 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 5.J may appeal the penalty to the local board of health by requesting a hearing before the appropriate body. The request must be filed within thirty days after the penalty assessment is issued. The local board of health shall conduct a hearing upon the request in accordance with section 24-4-105, C.R.S.

6. 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. The evaluation shall be completed by a professional engineer or by a trained person under the supervision of a professional engineer.

1. Each site evaluation must consist of:

a. Preliminary investigation;

b. Reconnaissance;

c. Detailed soil investigation; and

d. Report and site plan.

B. Preliminary 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. Local public health agency 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 8-1.
5. Preliminary soil treatment area size estimate based on information on existing or planned facility and local regulations.
6. Other information required by local public health agency.
7. Additional information that may be useful to the specific evaluation as available:
    a. Survey;
    b. Easements;
    c. Floodplain maps;
    d. Geology and basin maps and descriptions;
    e. Aerial photographs;
    f. Climate information; and
    g. Delineated wetlands 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.

D. Detailed Soil Investigation

1. Soil investigations 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 tests, and the results from these two evaluations do not coincide with the same LTAR as noted in Table 11-1, 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 of soil 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, and best depth for the infiltrative surface. The total number of soil profile test pit excavations beyond the required two shall be based on the judgment of the professional engineer performing or supervising the soil investigation.

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 conditions.

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

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

e. The soil 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.

f. 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.

g. The soil observation method must allow observation of the different soil horizons that constitute the soil profile.

h. 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.

i. 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 11-1 or Table 11-1A. 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 8-2.

j. Soils data, previously collected by others at the site can be used for the purposes of an OWTS design at the discretion of the local public health agency. 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.

4. Procedure for performing percolation tests:

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

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, percolation tests 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 eight to 12 inches and be terminated a minimum of six 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 8-2 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 over night. 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, 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 particles passing the #200 sieve, by weight, 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 local 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. Reserved.

(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 11-1.

(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 6.F.1.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) 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 the local public health agency of alternate percolation test procedures is required.

E. Marking of Soil Profile Test Pit Excavations or Percolation Holes

1. The engineer or technician conducting the soil profile test pit excavations or percolation tests must, upon completion of the tests, flag or otherwise mark each excavation or hole to allow easy location by others. Soil profile test pit excavations and percolation holes must remain open until after evaluation by the local public health agency, if required by the agency. Excavations must be suitably barricaded to prevent unauthorized access and to address safety concerns.

F. Report and Site Plan

1. A written report must describe the results of the preliminary investigation, reconnaissance, and detailed 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;

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 8-1;

f. Setback distances to features listed in Table 8-2, 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. The minimum drawing size is 8.5-inches by 11-inches. 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. If the property is too large to adequately show site evaluation information, a detail 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, 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;

(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.

k. Wright Report. The report prepared by Wright Water Engineers titled Geographic and Hydrologic Factors Governing Impacts of Development on the Crystal River near Marble, Colorado, Gunnison County, Colorado ("Wright Report"), an electronic copy of which can be obtained from the Town Clerk, identifies certain geologic and hydrologic constraints that could impact the proper functioning of an OWTS. The report shall include consideration of the geologic and hydrologic constraints identified, and demonstrate by site-specific data that each of the constraints identified in the Wright Report are not present or are effectively addressed with regard to the subject application.

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 total dynamic head (TDH) and gallons per minute (GPM) 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, physical and health impact features on both the subject and adjacent properties requiring setbacks;

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

e. Elevation or depth of infiltrative surface of the soil treatment area, the septic tank invert, and all other components of the OWTS;

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

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

h. Installation procedures, as applicable;

i. Operation and maintenance manuals or instructions; and

j. 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.

7. Wastewater Flow and Strength

A. Wastewater Flows

1. The local public health agency 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 75 gallons per day (gpd).

b. The local public health agency 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 these Marble OWTS Regulations. The minimum design flow for the repair or replacement of an OWTS of an existing one-bedroom home must 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. Table 7-1 summarizes the design flows for single-family residential homes up to six bedrooms. The local public health agency has authority to adjust these values as described in Section 7.A.2.b.

g. If a new home has unfinished areas, the local public health agency 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, if the space can meet building code requirements for a bedroom.

Table 7-1 Single-Family Residential Design Flows

# Bedrooms	Occupancy (# of Persons)	Wastewater Flow Per Person (gallons/day)	Design Flow (gallons/day)
Studio	2	75	150
1	2	75	150
2	4	75	300
3	6	75	450
4	7	75	525
5	8	75	600
6	9	75	675

3. 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.

d. If the auxiliary building has a separate OWTS, the facility must be sized on the basis of Table 7-2 and a septic tank detention time of 48 hours.

4. 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 7-2; or

(2) An analysis of flows and strengths from at least three comparable facilities or from the facility, if it is an existing facility, must be submitted to the local public health agency 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.

5. 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 11-2) must not be used in addition to the flow equalization reduction.

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

TABLE 7-2 For Design Purposes, the Estimated Daily Wastewater Flow and BOD 5 Load Per Person Unless Otherwise Noted

RESIDENTIAL WASTEWATER	GPD	BOD 5 IN POUNDS PER DAY
Single-family dwellings	75	.20
AUXILIARY BUILDINGS, BY FIXTURE TYPE		
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
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 Homes3, per unit	150	.40
Mobile home	75	.20
Mobile home park per space	300	.80
COMMERCIAL WASTEWATER	GPD	BOD 5 IN POUNDS PER DAY
Facilities with short-term or transient visitors		
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
Barber and beauty shops per chair	100	.701
Bowling alleys per lane - toilet wastes only	5	.031
Country club per member	30	.02
County club per employee	20	.06
Dentist offices per non-wet chair	50	.141
Doctor offices per doctor	250	.801
Factories and plants exclusive of industrial wastewater per employee per eight-hour shift – no showers	20	.05
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	.501
Stores and shopping centers per square foot of retail space	.1	.011
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
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 served4	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
Luxury resort	125	.17

Resort night and day	50	.12
Campground per campsite2	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 need 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" 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: For churches with food service, the 4 gal/meal must be added to the 3.5 gal/seat to determine projected design flows.

B. Wastewater Strength

1. Table 7-3 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 under section 14. of these Marble OWTS Regulations. If soil treatment area or vertical separation distance reductions are permitted, the local public health agency must have a maintenance oversight program under section 15.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 7-3 Treatment Levels

Treatment Level	BOD5 (mg/L)	CBOD51 (mg/L)	TSS (mg/L)	Total Nitrogen (mg/L)
TL12	180	-	80	60-80
TL2	-	25	30	N/A3
TL2N	-	25	30	>50% reduction4
TL3	-	10	10	N/A3
TL3N	-	10	10	20 mg/L

Shading indicates higher treatment levels.
1: Requirements for CBOD5 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 BOD5 and TSS reductions.

4: NSF/ANSI Standard 245 – Wastewater Treatment Systems – Nitrogen Reduction requires reduction of 50 percent rather than an absolute value.

Table 7-4 High Strength Wastewater*

	BOD5 (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 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. 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 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 8-1. The setback requirements are applicable for minimum system performance and treatment levels with specific modifications allowed for higher treatment levels as provided in Table 8-2. All distance setback modifications must be analyzed and approved by the local board of health or local public health agency and be in complete compliance with the variance procedures of these Marble OWTS Regulations. 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 14.D.

C. Dry Gulches, Cut Banks and Fill Areas

1. Separation distances to dry gulches, cut banks and fill areas in Table 8-1 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 too close 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 8-1 shall be installed or located in accordance with the minimum distance requirements provided in the table or such increased distances provided by local board of health regulations.

E. Table 8-2 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 8-2 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;

    b. Setback distance from soil treatment area to water features; and

    c. Setback distance from soil treatment area to a dry gulch or cut bank.

2. Item 4 in Table 8-2 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 8-2 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 local public health agency.

Table 8-1 Minimum Horizontal Distances in Feet Between Components of an On-Site Wastewater Treatment System Installed After November 15, 1973 and Water, Physical and Health Impact Features

	Spring, Well,1 Suction Line, Potable Water Supply Cistern4	Potable Water Supply Line 2	Structure w/basement, crawl space or footing drains	Structure without basement, crawl space or footing drains	Property Lines, Piped or Lined Irrigation Ditch, upslope curtain drain	Subsurface Drain, Intermittent Irrigation Lateral, Drywell, Stormwater Structure	Lake, Water Course, Irrigation Ditch, Stream, Wetland	Dry Gulch, Cut Bank, Fill Area (from Crest)	Septic Tank, Higher level treatment Unit, Dosing Tank, Vault or Privy
Septic Tank, Higher Level Treatment Unit, Dosing Tank, 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 Evapo-transpiration Field or Outside of Berm of Lined Wastewater Pond	60	10 2	15	15	10	10	25	10	5
Unlined Sand Filter in Soil With a Percolation Rate Slower than 60 Minutes per Inch, Unlined or Partially Lined Evapotrans-piration System, Outside of Berm of Unlined Wastewater Pond, or System Not Relying on STA for	100	25 2	15	15	10	25	25	15	10

Treatment Other than Aerosol									
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	1255	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 local board of health 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 the local public health agency. Components that are not watertight should not 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.

2: Crossings or encroachments may be permitted at the points as noted above provided that the 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 D 3034-16 (2016 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 D 3034-16 (2016 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. Other methods of encasement that provide equal protection are allowed. These methods must be reviewed and approved by the local public health agency.

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 the local public health agency has a maintenance oversight program in accordance with section 14.D. of these Marble OWTS Regulations, 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 contamination as part of the Division site application and permitting process.

4: All horizontal setbacks to a 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 of the Water Well Construction Rules, 2 CCR 402-2. 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.

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

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

Table 8-2 On-site Wastewater 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	Treatment Level 3	Treatment Level 3N
	Horizontal Separation Distances				
1	Distance from soil treatment area to on-site well	Greater than or equal to 100 feet	Greater than or equal to 100 feet	Greater than or equal to 100 feet	Greater than or equal to 100 feet 1
2	Distance from soil treatment area to pond, creek, lake, or other surface water feature	Greater than or equal to 50 feet	Greater than or equal to 25 feet	Greater than or equal to 25 feet	Greater than or equal to 25 feet
3	Distance from soil treatment area to dry gulch or cut bank	Greater than or equal to 25 feet	Greater than or equal to 10 feet	Greater than or equal to 10 feet	Greater than or equal to 10 feet
	Vertical Separation Distances				
4	Treatment depth in feet from infiltrative surface to a limiting layer	4 feet2 (3 feet with pressure dosing)	Greater than or equal to 2.5 feet	Greater than or equal to 2.5 feet	Greater than or equal to 2 feet

NOTE: Treatment levels are defined in Table 7-3. Reductions in separation distances with higher level treatment may be granted only if the local public health agency 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 TL 3N effluent, a reduction to 75 feet is allowed if a variance from the Water Well Construction Regulations is obtained.
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.

9. Design Criteria – General

A. The OWTS for single-family homes shall be designed to accommodate the proposed flows from the structure as defined in 7.A.2. Flow estimates for multi-family or commercial OWTS must comply with 7.A.4 Expected waste strength as noted in Table 7-3 and Table 7-4 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.

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 or 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.

D. Accessibility for Inspection, Maintenance, and Servicing

1. Septic tanks must have watertight risers over each access manhole and all risers must extend to 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.

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. 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.

5. Components that require access for maintenance must include but not 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 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 Colorado Plumbing Code (3 CCR 720-1).

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).

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 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 the local public health agency or other

issuer of a permit.

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 of 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 have changed.

K. Floodplains

1. A new, expanded or repair/replacement OWTS installed in a 100-year floodplain must meet or exceed the requirements of the Federal Emergency Management Agency and the local emergency agency. Repairs of an existing system must meet the requirements as feasible. The system as approved by the local public health agency 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 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.

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 occur within the septic tank, any additional treatment unit and the soil treatment area; 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.

M. Lot Size / Contiguity.

1. To be eligible for issuance of an OWTS permit, the subject property must meet the applicable minimum lot size, as follows:

a. Original Town Plat Area: 20,000 square feet.

b. Newly annexed areas, including all areas annexed to the Town in or after 1922 and

including that area which is the subject of Ordinance 5, Series of 1995 (commonly called Marble Ski Area Filings One and Two, located West of 5th Street and North of State Street): One acre.

c. New Subdivisions / Planned Unit Developments: One acre.

2. Consolidation.

a. In determining lot size for issuance of an OWTS permit, at the election of the owner, contiguous lots under unified ownership may be considered as one lot (a "consolidated parcel").

b. No single tract of land may be part of more than one consolidated parcel.

c. The applicant shall be required to record in the real property records of Gunnison County a document memorializing the consolidation. Such document shall be duly executed by the owner.

3. Contiguity.

a. In determining contiguity, public rights of way (e.g. alley ways and streets) may be disregarded if the following conditions are met:

b. No more than one street, road, alley, or right-of-way separates the parcels to be considered contiguous;

c. The parcels would share a common property border if the public street, alley or right-of-way did not exist;

d. The parcels would share a common corner abutment if the public street, alley or right-of-way did not exist;

e. Any other combination of lot configuration shall not be considered contiguous.

f. No portion of any adjacent roads, streets, alleyways or public rights-of-way shall be used for any physical components of an OWTS without a variance and license to encroach.

10. 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 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.

3. Identification and Data Marking: All tanks and treatment units must be permanently and legibly marked in a location for the purpose of inspection 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 specification.

2. Sizing Requirements:

a. Sizing for residential capacity for new installations must be based upon the number of bedrooms according to Table 10-1:

Table 10-1 Minimum Septic Tank Size Based on Number of Bedrooms

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.

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 C1227-13 (2013 version) (Standard Specification for Precast Septic Tanks) for concrete tanks or in Standard IAPMO/ANSI Z1000-2013 (2013 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 the local public health agency 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. 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. 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 screen must be located so that the effluent screen has sufficient clearance to be removed through the access opening with a riser in place.

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

5. Concrete Septic Tank Structural Design

a. Concrete septic tanks must comply with the structural design criteria of ASTM C1227-13 (2013 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 these Marble OWTS Regulations.

c. Certification by a professional engineer must be submitted to the Division 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 Z1000-2013 (2013 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:

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 will be graded to surroundings, allowing for settling.

3. The local public health agency 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 3034-16 (2016 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 2729-17 (2017 version) or equivalent or greater strength. Corrugated polyethylene pipe with smooth interior that meets ASTM F405-13 (2013 version) or AASHTO M252-09 (2009 version) specifications or equivalent may be used.

d. Schedule 40 [ASTM Standard D 3034-16 (2016 version)] or pipe of equivalent or greater strength must be used for the placement of piping under driveways or roadways and 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.

2. Bedding: All system piping, except for distribution laterals within the soil treatment area, must be bedded with select material before final inspection by the local public health agency. 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.

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. 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.

b. Pumps must be certified to the UL778 (Edition 6 or earlier version) electrical safety standard, bear the seal of approval of CSA, UL or an equivalent testing program, and be constructed of corrosion resistant materials.

c. Grinder pumps must also be certified to NSF/ANSI Standard 46 (2017 or earlier version) and bear the seal of approval of the NSF or equivalent testing and certification program.

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.

c. Float switches must be certified to the UL60947-4-1 (Edition 3 or earlier version), or CSA C22.2 No. 205-17 (2017 or earlier version) electrical safety standards, 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 the local public health agency that the minimum 48-hour detention time will not be decreased. The pump must be screened or provided with an approved filtering device to assure 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 10.B.4.d. Siphons must not be installed in the second compartment of a two compartment tank.

c. 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 10.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 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 the Division 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

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 circuit 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 (Hand/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 (NRTL) (https://www.osha.gov/dts/otpca/nrtl/nrtllist.html), such as UL or ETL.

J. Effluent Screens

1. Effluent screens shall be installed in all septic tanks in new installations and repairs where the septic tank is replaced.

2. 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 screen, pump vault equipped with a filter cartridge, or a filter on the discharge pipe, would all be considered acceptable.

3. The effluent screen must be cleaned at manufacturer-recommended intervals, or more often, if use patterns indicate.

4. An alarm may be installed on an effluent screen indicating need for maintenance.

5. Where an ejector pump, grinder pump or non-clog pump is proposed for use prior to the septic tank, an effluent screen must be installed on the outlet of the septic tank.

6. The handle of the effluent screen must extend to within 12 inches of grade.

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. 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.

4. 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.

5. 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.

11. 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. The system must be designed by a professional engineer and approved by the local public health agency.

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.

2. Long-term acceptance rates (LTARs) are shown in Tables 10-1 and 10-1A.

3. Factors for adjusting the size of the 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 Factor(s).

b. Size adjustment factors for methods of application are in Table 11-2.

c. Size adjustment factors for types of distribution media are in Table 11-3.

d. A required soil treatment area receiving TL1 effluent may be multiplied by one size adjustment factor from Table 11-2, Table 11-3, or both.

e. A soil treatment area receiving TL2, TL2N, TL3, or TL3N effluent must be pressure dosed.

(1) 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.

(2) TL2 – TL3N effluent may be applied by gravity flow in soil types 3, 3A, 4, 4A, or 5 for designs where reductions in the soil treatment area size or vertical/horizontal separation reductions are not being requested.

f. The distribution media in Table 11-3 may be used for distribution of higher level treatment system effluent, but an additional reduction factor from Table 11-3 must not be used. Sizing reductions for higher level treatment systems are achieved through increased LTAR's provided in Table 11-1

Table 11-1 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 11	Treatment Level 21	Treatment Level 2N1	Treatment Level 31	Treatment Level 3N1*
R	>35% Rock (>2mm): See Table 11-1A					>35% Rock (>2mm): See Table 11-1A			
1	Sand, Loamy Sand	Single Grain	0 (Structureless)	5-15	0.80	1.40	1.40	1.55	1.55
2	Sandy Loam, Loam, Silt Loam	PR (Prismatic) BK (Blocky) GR (Granular)	(Moderate) 3 (Strong)	16-25	0.60	1.0	1.0	1.1	1.1
2A	Sandy Loam, Loam, Silt Loam	PR, BK, GR Massive	1 (Weak) 0 (Structureless)	26-40	0.50	0.80	0.80	0.90	0.90
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 Massive	1 0 (Structureless)	61-75	0.30	0.45	0.45	0.55	0.55
4	Sandy Clay, Clay, Silty Clay	PR, BK, GR	2, 3	76-90	0.20	0.30	0.30	0.30	0.30
4A	Sandy Clay, Clay, Silty Clay	PR, BK, GR Massive	1 0 (Structureless)	91-120	0.15	0.20	0.20	0.20	0.20
5	Soil Types 2-4A	Platy	1, 2, 3	121+	0.10	0.15	0.15	0.15	0.15

NOTE: Shaded areas require system design by a professional engineer.
1: Treatment levels are defined in Table 7-3.
* 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 a higher long-term acceptance rate can be substantiated.

Table 11-1A Design Criteria for Soils with High Rock Content (Type "R" Soils) 1,2,3,4

Soil Type, Percentage of Rock, LTAR, Distribution				Required Sand or Media Depth Relative to the Quality of Effluent Applied to the Distribution System				
Soil Type	Percentage and Size of Rock5	Maximum LTAR (Gal./sq.ft./ day)	Type of Distribution Required	Treatment Level 16	Treatment Level 2	Treatment Level 2N	Treatment Level 3	Treatment Level 3N
R-0	Soil Type7 1 with more than 35% Rock (>2mm)	Unlined Sand Filter: 1.0 for "Preferred Sand Media"; 0.8 for "Secondary Sand Media"	Pressure Distribution8	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
R-1; Option 1	Soil Type7 2 – 5, >35 - 65% Rock (>2mm) ; with >50% of the Rock <20 mm (3/4 inch)	Use TL1 LTAR from Table 11-1 for the soil type corresponding to the soil matrix, with a maximum LTAR of 0.8	Pressure Distribution8	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 Type7 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 column in this Table	Pressure Distribution8	Remove, mix, replace 4 feet of existing material; with a maximum LTAR of 0.6	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 0.7	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 Type7 2 – 5, >65 Rock (>2mm), OR >50% of Rock >20 mm (3/4 inch)	Use TL1 LTAR from Table 11-1 for the soil type corresponding to the soil matrix, with a maximum LTAR of 0.8	Timed, Pressure Distribution8	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

1: General guidance for Table 11-1A: The intent of the soil type R-0 is to define a material that consists of a high percentage of rock, or rock fragments, and has a percolation rate of less than 5 mpi. Soil types R-1 and R-2 consist of a high percentage of rock or rock fragments, but have a percolation rate of greater than 5 mpi. Soil types R-0 and R-2 are considered to be a "limiting layer".

2: No sizing adjustments are allowed for systems placed in type "R" soils. The maximum LTAR's are provided in this table

3: The design of type "R" soil treatment systems must conform to sections 12.C.2 and 3.

4: All systems installed in a type "R" soil must be designed by a professional engineer.

5: The percentage of rock may be determined by a gradation conducted per ASTM standard D 6913-17 (2017 version),

6: Type "R" soil treatment systems that are designed per the criteria noted in the Treatment Level 1 column of this table do not require O/M oversight by the LPHA.

7: The "Percentage and Size of Rock" column references the soil types noted in Table 11-1.

8: Design of the pressure distribution system for type "R" soils shall comply with the requirements of sections 12.C.2.b, c, e, f, g, h and i.

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 table, 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 for use of the higher level treatment categories listed in Tables 10-1 will only apply provided the system is inspected and maintained as specified in the requirements of section 15.D, 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 11-2 Size Adjustment Factors for Methods of Application in Soil Treatment Areas Accepting Treatment Levels 1, 2, 2N, 3 and 3N 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 11-3 Size Adjustment Factors for Types of Distribution Media in Soil Treatment Areas for Treatment Level 1 Systems

Type of Soil Treatment Area	Type of Distribution Media Used in Soil Treatment Area1		
	Category 1	Category 2	Category 3
	Rock	Manufactured Media	Chambers or Enhanced Manufactured Media
Trench or Bed	1.0	0.9	0.7

1: All proprietary distribution products must receive acceptance and the applicable reduction through Division review per the applicable requirements of section 14.

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 four 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 15.D. The depth of the infiltrative surface will be measured on the up-slope side of the trench or bed.

c. 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.

d. Pipe for gravity distribution must be no less than three inches in diameter.

e. A final cover of soil suitable for vegetation at least ten 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.

f. 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.

g. 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.

h. 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 10.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. Distribution laterals shall be a maximum of 100 feet long.

c. For absorption beds, the separating distance between parallel gravity distribution laterals must not exceed six feet (center-to-center), and a distribution lateral must be located within three feet of each sidewall and endwall.

d. The end of a distribution pipe must be capped, unless it is in a bed or trenches in a level soil treatment area, where the ends of the pipes may be looped.

e. To promote equal distribution to the soil treatment area, the forcemain or effluent pipe 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.

f. Orifices must be oriented downward unless pressure distribution is used and provision for pipe drainage is included.

3. Pressure Distribution

a. Design of pressure distribution systems must 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 size and spacing;

(4) A 30 – 72 inch operating head at the distal end orifice;

(5) Pump/siphon information; Total Dynamic Head; gallons/minute;

(6) Drain-back volume from forcemain; and

(7) Calculations, or a 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 than 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 four feet, and the outer distribution pipe must be located within two feet of each sidewall and endwall. Specific requirements for the design of sand filters are noted in section 12.C.

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 degree must be provided.

d. The local public health agency may 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.

F. Soil Treatment Area Requirements

1. Trenches

a. Trenches must be three feet wide or less.

b. The separating distance between trenches must be a minimum of four 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 six feet sidewall-to-sidewall.

3. Serial and Sequential Distribution:

a. 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.

b. 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.

c. 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 the top of the gravel or chamber outlet before flowing to succeeding treatment areas.

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 Marble OWTS 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 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

c. Additional inspection ports connected to distribution pipes may be installed.

d. 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.

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 approved by the Local board of health, which may range in size from 1/2 inch to 2 1/2 inches. AASHTO M 43-05 (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 two 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. Installation must be according to manufacturer's instructions.

c. Effluent may be distributed by gravity, pump or siphon.

d. For width and square footage requirements, refer to section 43.13.E.1.d of Regulation 43.

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-TL3N effluent, unless otherwise noted in these Marble OWTS Regulations.

4. Driplines

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.

b. Driplines must be installed on manufacturer's spacing recommendations.

c. Drainback must be provided for all drip lines, 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.

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 Marble OWTS 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 "preferred" or "secondary" sand filter media, as specified in section 12.C.2.

(2) The long-term applicable rates as specified in Table 11-1A must be used. No additional sizing adjustments are allowed.

(3) The depth of the added media must comply with the requirements of Table 11-1A.

(i) In order to utilize the reduced vertical separation requirements for TL2 or higher quality effluent, the local public health agency must have a program for inspection and oversight as specified in section 15.D.

(4) A gradation of the sand media used must be provided. The gradation 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 this soil type noted in Table 11-1A (Soil Type R-1, Option 2).

3. When a sand media is added to soil treatment area or to an excavation where a soil type 1-5 (Table 11-1) is the underlying soil, the following requirements must be met:

a. Added soil must meet the specifications of either “preferred” or “secondary” sand filter media, as specified in section 12.C.2.d.

b. Unless the design follows the criteria for a sand filter or mound system design as required in section 12, the TL1 long-term acceptance rate for the receiving soil must be used.

c. A gradation of the sand media used must be provided. The gradation 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, deep beds and seepage pits may be considered for repairs only.

2. Repairs to failing systems must conform to setbacks identified in Table 8-1 when possible. When this is not possible using all available methods described above, the jurisdiction with authority 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 existing OWTS. In maximizing this setback distance, all methods available in section 11.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 local board of health as outlined in section 4.L.

3. Wide Beds: For repairs, beds may be wider than 12 feet without being required to receive effluent meeting Treatment Level 2 quality or better.

4. Deep Beds: For repairs, the infiltrative surface of a bed may be no deeper than five feet. Size adjustments as provided for in Tables 10-2 and 10-3 must not be applied. System sizing will be based strictly on the soil type and corresponding LTAR.

5. Deep Gravel Trenches

a. The length of an absorption trench may be calculated by allowance for the sidewall area of additional depth of gravel in excess of six 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

b. Maximum allowable additional depth is five feet.

c. Percolation tests or soil profile test pit excavations must be performed at the proposed infiltrative surface depth.

d. 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, potential for risk to public health and water quality may be evaluated by the local public health agency. If risk is low in the determination of the local public health agency, a seepage pit without higher level treatment may be used.

b. If the risks are not low, higher level treatment of at least TL2 must be attained prior to discharge to these systems for final dispersal.

c. 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 43-05 (2005 version) 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 plus the bottom of the excavated area.

(7) The bottom of the pit excavation must be greater than four feet above a limiting layer.

d. Pits must be separated by a distance equal to three 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.

e. The requirements for the design and construction of seepage pits for the treatment and dispersal of on-site wastewater on new sites is defined in section 13.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 the local public health agency. If risk is low in the determination of the local public health agency, 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 five feet.

(3) A wastewater pond must have two feet of free board 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 these Marble OWTS Regulations 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. The use of vaults for repairs shall be determined on a case by case basis using the criteria set forth in Section 13.C of these Marble OWTS Regulations.

9. Higher Level Treatment Options. Reduction in required soil treatment area for repairs is possible with higher level treatment only when the requirements of section 15 have been satisfied, and only if and when the Town has implemented an oversight program for inspection, maintenance, and repair in accordance with the requirements of Regulation 43.

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 7-3 are not granted to remediation technologies.

b. The local public health agency 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 the local public health agency.

d. Upon approval of the local public health agency, 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 Marble OWTS Regulations within a time frame determined by the local public health agency.

g. The local public health agency may require monitoring and/or maintenance of the remediation technology or process as a stipulation of permit issuance.

12. 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 the local public health agency. When design criteria are not specifically provided in these Marble OWTS 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 Technology Review and Acceptance process, section 14.

3. Reductions to soil treatment area or separation distances based on higher level treatment must not be permitted unless the local public health agency has adopted a program for permitting and oversight of inspections and maintenance in section 15.D.

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, or 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 7-3 are specified in this section for public domain technology, and proprietary treatment systems will be assigned a treatment level by the technology review and acceptance process in section 14. Adequate maintenance for each must be required and documented as in section 15.D.

C. Sand Filters

1. A lined or unlined intermittent sand filter, or recirculating sand filter, may be used as a higher level treatment system prior to dispersing the effluent into a soil treatment area.

2. Intermittent (Single Pass) Sand Filters; General Requirements

a. The treatment level for intermittent sand filters is considered 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 – 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 12.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:

(1) Pressure distribution is required. The design of the distribution system must also comply with the requirements of 11.E.3.a.

(2) Number of cycles/day: Will vary with design (Short, frequent doses are preferred.)

(3) Proposed dose volume: Will vary with design (0.25 – 1.0) gallons/orifice/dose, or 3-5 times distribution pipe volume

(4) Timed dosing is recommended where design considerations allow.

d. 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 11-1A for type "R" soils.

(2) "Preferred" sand media requirements:

(i) Effective size: 0.25-0.60 mm

(ii) Uniformity coefficient: ≤ 4.0

(iii) Percent fines passing #200 sieve: ≤ 3.0

(3) "Secondary" sand media requirements:

(i) Effective size: 0.15-0.60 mm

(ii) Uniformity coefficient: ≤ 7.0

(iii) Percent fines passing #200 sieve: ≤ 3.0

(4) A gradation of the sand media used must be provided. The gradation 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.

e. Gravel Requirements

(1) Clean, graded gravel, or rock, must range in size from 1/2 inch to 2 1/2 inches. AASHTO M 43-05 (2005 version) 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.

f. 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.

g. Final Cover Material

(1) 8 inches – 10 inches of Type 1 or 2 soil with an additional 2 inches top soil

h. Size adjustment factors provided in Tables 10-2 and 10-3 are not applicable for sand filters.

i. Sand filters must not be used to treat wastewater that does not conform to TL1 treatment level or better.

3. Unlined (Open Bottom) Sand Filters

   a. All requirements of 12.C.2.a-i will apply to unlined sand filters.

   b. Application rates:

      (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 11-1) whichever results in the larger area.

      (2) Maximum hydraulic loading rate for TL1 effluent applied to "Secondary Sand Media" 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 11-1) whichever results in the larger area.

      (3) Maximum hydraulic loading rate for TL2, TL2N, TL3, or TL3N effluent applied to "Preferred" or "Secondary" Sand Media in an unlined sand filter must be the long-term acceptance rate of the receiving soil for TL3, (Table 11-1).

   c. The upper infiltrative surface of an unlined sand filter receiving TL1 – TL2 effluent must be at least three feet above a limiting layer.

   d. The upper infiltrative surface of an unlined sand filter receiving TL2N-TL3 effluent must be at least two and one-half feet above a limiting layer.

   e. The upper infiltrative surface of an unlined sand filter receiving TL3N effluent must be at least two feet above a limiting layer.

4. Lined Sand Filters

   a. All requirements of 12.C.2.a-i will apply to lined 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 two feet.

   d. An intermediate layer of pea gravel, two inches in thickness, must be placed between the sand filter media and the course under-drain media to prevent the migration of sand into the lower layer of under-drain gravel. ASTM C 33-16 (2016 version), No. 8, coarse aggregate meets this specification.

   e. A minimum four-inch diameter slotted Schedule 40 PVC [ASTM Standard D 2729-17 (2017 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 43-05 (2005 version), 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.

5. 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. 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 11.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 43-05 (2005 version), 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, two 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 33-16 (2016 version), No. 8 coarse aggregate meets this specification.

g. Under-drain requirements:

(1) A minimum four-inch diameter slotted Schedule 40 PVC [ASTM Standard D 2729-

17 (2017 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 43-05 (2005 version), 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.

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 media receiving wastewater effluent is at or above the natural ground surface at any point, it shall be considered a mound system.

2. Mound systems that provide a minimum of 24 inches of sand treatment media may use the application rates for the in-situ receiving soil for TL3 effluent (Table 11-1). Size adjustment factors within Table 11-3 must not be applied to mound designs where TL3 application rates are used. However they may be applied if TL1 application rates are used.

3. Mound systems must conform to the design requirements of sections 12.C.3.a through 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 than 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 11-3 may be used.

4. The basal area must be determined using the LTAR from Table 11-1 for the in-situ receiving soil under the mound.

5. Linear loading rates must be determined. The evaluation of many factors is required for 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 11-1), then the linear loading rate is extremely important and long narrow mounds are strongly recommended.

a. When TL1 effluent is applied to the distribution media of a mound system installed above in-situ soil types 1 through 3 (Table 11-1) and R-0 through R-2 (Table 11-1A), 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.

b. When TL2 through 3N effluent is applied to the distribution media of a mound system installed above in-situ soil types 1 through 3 (Table 11-1) and R-0 through R-2 (Table 11-1A), the linear loading rate may exceed 12 gpd/lin.ft.; subsequently the mound may be wider

than 12 feet.

c. When TL1 through TL3N effluent is applied to mound systems installed above in-situ soil types 3A through 5 (Table 11-1), 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.

6. The final cover over a mound system must extend at least twelve 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 three feet horizontal to one foot vertical.

7. The surface of the mounded area must be planted with a suitable vegetative cover.

8. A suggested reference for the design and installation of mound systems is, "The Wisconsin Mound Soil Absorption System: Siting, Design, and Construction Manual, January 2000". Note that this is suggested guidance, and where the requirements of these Marble OWTS Regulations differ from those in the referenced mound document, the requirements of these Marble OWTS Regulations will govern in those cases.

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.

13. Design Criteria – Other 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 as specific design criteria is provided for an NDDS, they are exempt from the additional requirements of section 13.A.2, 3 and 4.

b. The design of a 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), Revision: September, 2016. The document is available from Colorado Professionals in Onsite Wastewater (www.cpow.net).

c. 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 13-1 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.

g. Adjustment factors as provided in Tables 10-2 and 10-3 must not be used.

Table 13-1 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 6 to 8 feet on center. 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 the local public health agency, 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 6 to 8 feet on center. A thin non-woven fabric 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. 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 13.A.4.e below.

e. The following formula must be used for determining the minimum area necessary for evapotranspiration/absorption of septic tank effluent:

(1) Area (sq. ft.)* = $\frac{\text{Flow (gpd)}}{\text{(LTAR + ETR)}}$

(i) LTAR refers to the long-term acceptance rate of the underlying soil as provided in Table 11-1 for TL1 effluent.

(ii) 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 these Marble OWTS Regulations 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 TL2.

2. The design requirements for new seepage pits must also comply with requirements as defined in 11.I.6.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. Vaults for full time use may be permitted when a failing OWTS cannot be replaced.

3. Vaults may be permitted for limited use occupancy on a property which cannot accommodate an OWTS with soil treatment area.

4. A vault may be permitted if the facility is on land where the installation of an OWTS with soil treatment area is not permitted.

5. Vaults may be permitted for systems where some of the wastewater flows are separated, 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 these Marble OWTS Regulations.

6. Variances may be granted for specialized commercial uses.

7. A vault, if permitted by the local public health agency, 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.

8. A visual or an audible signal device or both, indicating filling to a maximum of 75 percent capacity, must be installed to indicate when pumping is necessary.

9. Concrete vaults must meet the strength and watertightness requirements for septic tanks. Prefabricated fiberglass, fiberglass-reinforced polyester, and plastic tanks may be used as vaults, if the tank manufacturer provides testing criteria certifying them for this use.

D. Privies

1. Vault Privy. New construction of vault privies is prohibited. The use of existing vault privies may be continued. Repair or replacement of an existing vault privy shall require a permit and shall comply with the following requirements: 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. Effective volume of the vault must be no less than 400 gallons and it must be constructed of concrete or plastic. The vaults for privies must meet the structural and watertightness standards of vaults.

2. Pit Privy. New construction of pit privies is prohibited. The local board of health may prohibit the continued use of existing pit privies on a case-by-case basis, and shall prohibit the continued use of an existing pit privy that fails to meet the following requirements: 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. The bottom of the pit must be located above at least four feet of suitable soil and four feet above a limiting layer; and the pit must have at least 400 gallons of effective volume.

E. Incinerating, Composting and Chemical Toilets

1. The local board of health may permit composting and chemical toilets. The use of a composting or chemical toilet will not reduce the required size of the OWTS.

2. Permitting of a composting toilet may also be subject to the jurisdiction of the local agency regulating plumbing or the Colorado Plumbing Board, whichever has jurisdiction over plumbing in the Town.

3. A composting toilet may be used for toilet waste where an OWTS is installed for treating wastewater remaining after removal of toilet waste. Subject to local board of health or other applicable regulations or codes (e.g., Colorado Plumbing Code, the compartment may be located within a dwelling or building provided the unit complies with the applicable requirements of these Marble OWTS Regulations, and provided the installation will not result in conditions considered to be a health hazard as determined by the local public health agency. Compartment and appurtenances related to the unit must include fly-tight and vector-proof construction and exterior ventilation.

4. Incinerating Toilets: Incinerating toilets are prohibited.

5. Composting Toilets

a. Composting toilets must meet the requirements of NSF/ANSI Standard 41 (2016 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 the local public health agency. 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.

6. Portable Chemical Toilets

a. A portable chemical toilet may be used by permit from the local public health agency or other agency with authority to issue permits for portable chemical toilets.

b. Use of a portable chemical toilet in permanently occupied buildings is prohibited except during construction or under emergency circumstances as determined by the local public health agency. Proper ventilation of a chemical toilet used inside must be required.

F. Slit Trench Latrine. Slit trench latrines are prohibited.

G. 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 local board of health; and

c. Not pose a potential health hazard or private or public nuisance or undue risk of contamination.

d. Not allow drainage of effluent off of the property of origin.

3. The local board of health may choose to permit only systems that do not allow drainage of effluent off the property of origin.

4. The following minimum performance criteria must be 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 five consecutive samples, and no single sample result for E. coli can exceed 126 per 100 milliliters.

(2) The arithmetic mean of the standard five-day carbonaceous biochemical oxygen demand (CBOD 5) must not exceed ten milligrams per liter when averaged over any three consecutive samples.

(3) The arithmetic mean of the total suspended solids must not exceed ten milligrams per liter when averaged over any three 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 five consecutive samples, and no single sample can exceed 325 E. coli per 100 milliliters.

(2) The arithmetic mean of the standard five-day carbonaceous biochemical oxygen demand (CBOD5) must not exceed 25 milligrams per liter when averaged over any three consecutive samples.

(3) The arithmetic mean of the total suspended solids must not exceed 30 milligrams per liter when averaged over any three consecutive samples.

5. To determine compliance with the standards contained in this section, the required sampling frequency for E. coli, CBOD5, and total suspended solid levels must be performed at least once per month when the system is in operation and the results submitted to the local public health agency 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, 22nd edition, 2012 (International Standard Book Number: 9780875530130).

b. The sampling point must be a location that is representative of final discharge from the system.

14. Technology Review and Acceptance

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, meeting the criteria for design, installation, maintenance and use as described in Regulation 43, or proprietary products that have received Division review and acceptance in accordance with Regulation 43 before the local public health agency may permit them for use.

B. In accordance with Regulation 43, please be advised that the Division must review and provide either comment or acceptance to the manufacturer for proprietary products in these technology categories:

1. Proprietary treatment products (e.g. treatment systems);

2. Propriety distribution products (e.g. manufactured distribution products or subsurface dripline);

3. Septic tanks;

4. Others as needed.

C. Please see Section 43.13 of Regulation 43 for further information.

D. 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 11-3.

15. Operation and Maintenance.

A. Responsibility: The owner must be responsible for maintenance of an OWTS unless the responsibility has been contractually assigned to a tenant or a third party or a public, quasi-public, or political subdivision.

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. Periodic Inspections and Transfer of Title Inspections.

1. Periodic Inspections

a. Systems shall be inspected at least once every three years, at the expense of the property owner, by an approved inspector, to verify that the system is functioning according to its design and in accordance with the minimum criteria set forth below, and to determine whether the system needs cleaning.

b. An initial inspection of all systems existing as of the effective date of these OWTS Regulations shall be completed before the later of (a) 1 year from the effective date of these OWTS Regulations; or (b) 3 years from the date of installation of the system or the date of the latest inspection of the system by an approved inspector, provided that all cleaning, maintenance, and repairs recommended in the Inspection Report.

c. The owner of a system shall cause to be performed, at the owner's expense, all cleaning, maintenance, and repairs identified in the Inspection Report, and submit a request for an inspection certificate, within 90 days of the date of the Inspection Report.

2. Transfer of Title Inspections

a. Prior to the transfer of title to property that is served by an OWTS, the owner of the property shall have an inspection performed to demonstrate that the system is functioning according to the design, and shall obtain an Inspection Certificate from the local public health agency, unless exempt or waived pursuant to these Marble OWTS Regulations.

b. The following properties and situations are exempt from the requirement to obtain a transfer of title inspection under this section 15.C.2:

(1) The property is served by an OWTS that was installed and given final approval by the local public health agency within three years preceding transfer of the property or received and finalized repair or alteration permits within three years preceding transfer of the property.

(2) The OWTS was previously inspected and issued an Inspection Certificate within 3

years immediately preceding the transfer of the property.

(3) An Inspection Certificate was issued within 3 years preceding the transfer.

(4) The system has been inspected but the necessary cleaning, maintenance, and repairs have not been completed, and the requirement to complete the cleaning, maintenance, and repairs has been disclosed to the party acquiring title to the property. The transferee shall obtain an Inspection Certificate in the timeframe required by these Regulations.

(5) The transfer of property is involuntary (e.g. a result of death, foreclosure, tax sale, or other forfeiture), in which case the transferee shall obtain an Inspection Certificate within six months of the date of the transfer, or within 3 years of the last issued Inspection Certificate, whichever is later.

c. Waiver of an Inspection Certificate. If it is determined by the local public health agency that an OWTS does not meet the requirements for issuance of an Inspection Certificate, a conditional Inspection Certificate may be issued, provided that any of the following conditions are met:

(1) The purchaser of the property agrees to obtain a permit and complete all necessary repairs to the system within a reasonable time frame established by the local public agency.

(2) Conditions, such as frozen ground, prevent the property owner from completing the necessary repairs or alterations. In this case, the property owner or person acquiring title to the property shall agree in writing to obtain a repair or alteration permit and complete necessary repairs within a reasonable time limit approved by the Town.

(3) Conditions, such as snow cover, prevent access to the property for performing an inspection. In this case, both of the following are required for the issuance of a Conditional Inspection Certificate:

(i) A NAWT-certified inspector certifies, in writing, that the property was inaccessible and that payment has been made up front for an inspection to be performed as soon as conditions allow.

(ii) The person acquiring title to the property agrees in writing to have the inspection completed when conditions allow and, if needed, to obtain a repair or alteration permit and complete all necessary repairs within 90 days of the inspection.

3. Inspection Reports; Minimum Criteria. The property owner shall submit to the Town of Marble a written report from the inspector ("Inspection Report"). The Inspection Report shall state all necessary cleaning, maintenance, and repairs identified during the inspection, and shall specifically address the criteria set forth below. Items noted in the inspection report that do not comply with the following criteria and conditions must be corrected (and repair permits must be obtained, if applicable) prior to the issuance of a final Inspection Certificate:

a. All tanks must be structurally sound and in good working order and provided with safe and secure lids;

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

c. Alarms, control devices, and components necessary for the operation of the system are present and in good working order;

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

e. There are no unapproved wastewater discharges from the system or structure; and

f. Any items meeting the conditions of a "Failure" as defined in these Marble OWTS Regulations have been corrected to the acceptance of the local public health agency.

4. Inspection Certificates. The health officer shall provide a certificate (an Inspection Certificate) to the property owner upon compliance with this section.

a. Applications for an Inspection Certificate must be made on a form furnished by the local public health agency. The applications must include:

(1) Owner's name and contact information;

(2) Physical address of property;

(3) Legal description of property;

(4) Name of Inspector, Inspector's NAWT or other applicable certification number;

(5) Date and time of the inspection(s);

(6) An inspection report, completed within the previous 12 months, meeting the minimum criteria provided above; and

(7) Where the inspection report recommends any cleaning, maintenance, or repairs, proof that such work was completed, including septic tank pumping receipt (as applicable).

b. Issuance of an Inspection Certificate. When the criteria set forth above have been met, the local public health agency must issue an Inspection Certificate, setting forth the terms and conditions of approval.

c. Revocation of an Inspection Certificate. An Inspection Certificate must be revoked if it is determined that the system is no longer functioning in accordance with these Marble OWTS Regulations or that false or misleading material statements were made on the application or inspection reports.

5. Inspectors and Systems Cleaners.

a. For the purpose of this Section 15, inspectors must be certified by National Association of Wastewater Technicians or an equivalent program approved by the local public health agency. Inspectors for higher level treatment systems must have training relevant to the specific system or certification by the equipment manufacturer.

b. Septic tanks shall be pumped by a Systems Cleaner licensed in Gunnison County, Garfield County, Eagle County or Pitkin County.

6. Tracking and Enforcement.

a. The health officer shall track the inspection, repairs, and cleaning of each system, and the issuance of Inspection Certificates.

b. Penalties. Failure to obtain an Inspection Certificate as provided by these Marble OWTS Regulations will subject the owner who failed to obtain the document to a penalty assessed under section 25-10-113, C.R.S. In addition to other penalties provided for violation of these regulations, no building permit, variance, re-zoning or other type of authorization shall be granted for a particular property if it is not in compliance with this section 15.C.

c. The issuance by the Town of an Inspection Certificate is not and shall not be construed to be a warranty or guaranty for any purposes whatsoever.

D. 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. 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 to public health and water quality.

2. As of the effective date of these Town of Marble OWTS Regulations, the local board of health does not an oversight program for inspection, maintenance, and repair of higher level treatment systems. Therefore, reductions in the size of soil treatment areas and horizontal and vertical separation distances based on higher level treatment of effluent are currently not allowed. The local board of health may choose to permit reductions in the size of soil treatment areas and horizontal and vertical separation distances based on higher level treatment of effluent, only if and when it has amended these Town of Marble OWTS Regulations to implement an oversight program for inspection, maintenance, and repair in accordance with the requirements of Regulation 43.

3. Owner responsibilities:

a. Ensure OWTS is operating, maintained and performing according to the required standards for the designated treatment level;

b. Maintain an active service contract with a maintenance provider at all times; and

c. Each time his/her current contract with a maintenance provider is renewed or replaced, send a copy to the local public health agency within 30 days of signing.

4. Maintenance provider responsibilities:

a. Must notify the local public health agency 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.

E. Monitoring and Sampling

1. For an OWTS for which monitoring of effluent is required, the local public health agency or delegated third party must collect and test effluent samples to ensure compliance with the provisions of these Marble OWTS Regulations.

2. Sampling may be required by the local public health agency in conjunction with an enforcement action.

3. Any owner or occupant of property on which an OWTS is located may request the local public health agency to collect and test an effluent sample from the system. The local public health agency may perform such collection and testing services. The owner or occupant must pay for these services.

a. If the local public health agency or a delegated third party collects and tests effluent samples, a fee not to exceed that which is allowed by the OWTS Act 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.

b. Conditions when the local public health agency can require routine monitoring:

(1) Indications of inadequate performance;

(2) Location in sensitive areas;

(3) Experimental systems; and/or

(4) Systems under product development permits.

c. 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, 22nd edition, 2012 (International Standard Book Number: 9780875530130).

16. Severability.

A. The provisions of these Marble OWTS 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 Marble OWTS Regulations shall not be affected thereby.

17. 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 12, 2018, 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 listed below.

AASHTO, American Association of State Highway and Transportation Officials
444 North Capitol Street, NW, Suite 249
Washington, DC 20001
Phone: 202-624-5800
Email: info@aashto.org
www.transportation.org

ANSI, American National Standards Institute
25 West 43rd Street, 4th floor
New York, NY 10036
Phone: 212.642.4900
www.ansi.org

ASTM, American Society for Testing and Materials
ASTM International
100 Barr Harbor Drive
PO Box C700
West Conshohocken, PA 19428-2959
Phone: 610.832.9500
Email: service@astm.org
www.astm.org

CPOW, Colorado Professionals in Onsite Wastewater
P.O. Box 918
Strasburg, CO 80136
Phone: 720-626-8989
www.cpow.net

CSA, Canadian Standards Association
CSA Group Testing and Certification Inc.
178 Rexdale Boulevard
Toronto, Ontario M9W 1R3

Canada
Phone: 800-463-6727
Email: sales@csagroup.org
www.csagroup.org

ETL, Electrical Testing Laboratories
The ETL Listed Mark is from Intertek Testing Services NA, Inc. (ITSNA)
545 East Algonquin Road, Suite F
Arlington Heights, Illinois 60005
Phone: 800 967 5352
www.intertek.com

IAPMO, International Association of Plumbing and Mechanical Officials
International Association of Plumbing and Mechanical Officials EGS (IAPMO)
4755 East Philadelphia Street
Ontario, CA 91761
Phone: 909-472-4100
Email: iapmo@iapmo.org
www.iapmo.org

NPCA, National Precast Concrete Association
1320 City Center Drive, Suite 200
Carmel, IN 46032
Phone: 800-366-7731
www.precast.org

NSF, National Sanitation Foundation
NSF International (NSF)
789 North Dixboro Road
Ann Arbor, Michigan 48105
Phone: 734-769-8010
Email: info@nsf.org
www.nsf.org

UL Underwriters Laboratories
Underwriters Laboratories Inc.
333 Pfingsten Road
Northbrook, Illinois 60062
Phone: 847.272.8800
Email: CustomerExperienceCenter@ul.com
www.ul.com

Standard Methods for the Examination of Water and Wastewater, 21st edition.
A joint publication of the American Public Health Association, American Water Works Association, and Water Environment Federation
Phone: 877-574-1233
Email: standardmethods@wef.org
www.standardmethods.org/Buy/